

Index

Note: page numbers in *italics* refer to figures; those in **bold** to tables.

- abdominal pain
 - case studies 155, 277
 - in girls **320**, 320–321
 - haemolytic uraemic syndrome 293, 305
- abduction, lower limb 350, 350
- A-beta fibres **138**, 140, 140
- ABO blood groups 106
- abscesses 94, 94
- accessory muscles, breathing 215
- acetylcholine 161
- acetylsalicylic acid 204
- acquired immunity 97–99, 100
- acquired immunodeficiency syndrome (AIDS) 109–110
- acromegaly 237
- actin 14
- active immunity 99, 100
- active transport 7–8
- acute kidney injury (AKI) 290–292, **291**, 293
- acute lymphoblastic leukaemia (ALL) **56**, 61, 62–64
- acute pain 141–142, 148
- acute tubular necrosis 291
- adaptive immunity 84, 86, **86**, 97–99
- Addison's disease 245–246
- adduction, lower limb 350
- A-delta fibres **138**, 138–139, 140, 140
- adenine (A) 29, 30, 35
- adenosine deaminase (ADA) deficiency 49
- adenosine triphosphate (ATP) 7–8, 12, 13
- adhesive dressings, epidermal stripping 373
- adipose tissue 22
- adolescents
 - causes of limp **346**
 - pain assessment **146**
 - pain management 154
 - pain perception 144
- adrenal crisis 246
- adrenal disorders 245–247
- adrenal gland **236**
- adrenaline *see* epinephrine
- adrenal insufficiency 59, 245–246
- afterload 125, **125**, **126**, 182
- airway assessment 130
- aldosterone 69, 69
- aldosterone antagonists **184**
- alleles 32–33
- allergens 101
- allergic march 101, 101
- allergy 101–103, **102**, 102
 - penicillin 206
- Alport syndrome 285, 287
- ambiguous genitalia 246, 249–250
- Anadin® **150**
- anaerobic metabolism 127
- analgesia 149, 150–154
 - case studies 155
 - non-opioid 150, **150**
 - nurse controlled 152
 - opioid 150–152, **151**
 - patient-controlled (PCA) 152, **153**
 - procedural pain 154
 - regional 152–153, **153**
 - WHO 3 steps 149
- anaphase 40, 41, 42
- anaphylactic shock 121
- anaphylaxis 103–105, 104, 111–112
- angiotensin-converting enzyme (ACE) 69, 69
- angiotensin-converting enzyme (ACE) inhibitors **184**
- ankle fractures **341**
- antenatal screening 74, 281, **281**
- antibodies 98, **98**
 - deficiencies 108–109
 - response to infection 98–99, 99
- anticoagulation **184**
- anti-diarrhoeal medications 260
- anti-diuretic hormone (ADH; vasopressin) 122, 237–238
- anti-emetics 260, 261
- antigen-presenting cells (APC) 97
- antigens 97
- antihistamines 103
- aorta, coarctation of 194, 194–195
- aortic atresia 193
- aortic stenosis 123, 192, 192–193
- aortic valve 192, 192
- apnoea 215
- appendicitis 263–265
 - case studies 110–111, 275–276, 277
 - location of pain 264
- arachnoid mater 168
- areolar tissue 21
- arginine vasopressin (anti-diuretic hormone; ADH) 122, 237–238
- arrhythmias, cardiac 182, 208–210
- arteries 180

- ascending pain pathways
 - 137–139, **138**
- ascites 74, 121–122
- aspirin 204
- asthma 227–230
 - acute/severe or life-threatening 230, **230**
 - allergic 101, **101**, **102**
 - anaphylaxis 103, 105
 - assessment 228–229
 - care and treatment 229
 - difficult 230
 - medication 103, 228
 - pathophysiology 227, 228
- astrocytoma 56, 171
- atenolol **184**
- atopic 101
- atopic eczema **102**, 367–368
 - allergic march 101, **101**
- atrial fibrillation 210
- atrial kick 129
- atrial septal defect (ASD)
 - 187–188, **188**
- autoimmune disease 105–106
- autosomal dominant
 - diseases 44, 45–46
- autosomal recessive
 - diseases 44–46
- autosomes 32, 43
- AVPU response scale 166, **166**
- avulsion fractures 339, 339
- axonal brain injury 168

- bacteria 87
- balanitis 299, 301
- balloon angioplasty 194
- balloon septostomy 197, 198, 202
- balloon valvuloplasty 192
- Barlow test 356, 356
- basement membrane 16, 17
- bases, nitrogenous 30
- Battle's sign **165**
- BCG (bacille Calmette–Guérin)
 - vaccine 224
- Beckwith–Wiedemann
 - syndrome **54**
- beclomethasone 228
- becotide 228
- bed wetting 298–299
- behavioural cues, pain
 - assessment 146, **146**
- benzylpenicillin 206
- beta-blockers **184**, 243
- bisphosphonates 59

- bleeding *see* haemorrhage
- blinatumomab 61–62
- blisters 363, 364, 366
- blood 23
- blood loss 71, 122–123
- blood pressure
 - post-operative changes **274**
 - regulation 69, 69
 - septic shock 117–118
 - see also* hypertension; hypotension
- blood transfusion 123, 124
- blood vessels 180
- B lymphocytes 86, **86**, 97, 98
- boil 94
- bone 21
 - growth 336
 - healing 340–342, 342
 - remodelling 336, 342, 342
- bone marrow 63, 98
- bradycardia
 - respiratory distress 217
 - shock 119, 120, 121, 129
- bradykinin 91, 371, 377
- brain injury, traumatic 167, 167–168
- brain tumours 171, **172**
 - see also* central nervous system tumours
- breathing
 - assessment 130, 215–216
 - paroxysmal 215
 - prolonged increased effort 227
- bronchiolitis 218–219
- bronchopneumonia 220
- bronchospasm 227
- Brudzinski's sign **174**
- Brufen® *see* ibuprofen
- buckle fractures 339
- bulla 361
- burns 373–380
 - calculation of area 374, 376
 - classification 374
 - depth (degrees) 374, **375**, 375
 - incidence 373
 - Jackson's zones 377, 377–378
 - mechanism of injury 374
 - pathophysiology 376–380
 - severity classification **375**
 - systemic response 378, 378–380
- callus 342, 342
- Calpol® **150**

- cancer 51–65
 - aetiology 53–54, **54**
 - biology 52–54
 - examples 62–64
 - familial 53–54
 - incidence 52, 52
 - investigations **58**
 - late effects (LE) 64
 - outcome and survivorship 64
 - pathogenesis 53
 - prevention 62
 - signs and symptoms 55, 55
 - staging 55–56
 - treatment 57–62
- capillaries 180
- capillary refill time 117, 122, 175
- captopril **184**
- carbimazole 243
- carbon dioxide (CO₂) 72, 73
- carbonic acid 72
- cardiac arrhythmias 182, 208–210
- cardiac
 - catheterisation 186–187
- cardiac failure (CF) 181–184
- cardiogenic shock 125, **125**, **126**
 - causes 181–183, **182**
 - management 184, **184**
 - signs and symptoms 183
- cardiac index 123
- cardiac muscle 24
- cardiac output (CO) 128, 128–129, 379
- cardiac tamponade 123
- cardiogenic shock **117**, 123–125
 - causes 123, **125**
 - goals of treatment **127**
 - left ventricular failure 125, **126**
 - right ventricular failure 125, **125**
 - signs and symptoms **126**
- cardiomyopathy 206–208
 - dilated 207
 - hypertrophic 207
 - restrictive 207–208
- cardiovascular system 180
 - burn injury 378–379
- carotid sinus massage 210
- cartilage 21, 22
- cauda equina syndrome 169
- cell cycle 39

- cell division 40, 41
- cell-mediated immunity 75, 97
- cell membrane (plasma membrane) 3–8
 - active transport 7–8
 - bilayer structure 4, 5
 - functions 5
 - movement of substances
 - across 5–8
 - passive transport 6–7
 - permeability 6
- cells 2–14
 - characteristics 2–3
 - different types 3
 - migration 15
 - organelles 8–14
 - reproduction 9–10, 38–41
 - structure 3–14, 4
- central blocks 152–153
- central nervous system (CNS) 135, 160, **160**, 161
- central nervous system tumours 171–172
 - radiation therapy 60
 - signs and symptoms 55, **172**
 - staging and grading 56, **57**
- central venous catheter (CVC) 61
- central venous pressure (CVP) **70**
- centrioles 14
- centromere 31, 31
- centrosomes 39–40
- cerebral blood flow 163
- cerebral contusions 167
- cerebral dysfunction 163–165
- cerebral lacerations 167
- cerebral palsy 169–170
- cerebral trauma 165–168
- cerebrospinal fluid (CSF) 163
 - shunts 165
- C fibres **138**, 138–139, 140
- Charcot–Marie–Tooth disease
 - type 1 37
- chemoreceptors 72, 73
- chemotaxis 15, 91
- chemotherapy 58–59, 63–64
- chest movement 215
- chest wall recession 215
- chest X-ray 226–227
- child abuse
 - burns and scalds 374
 - false accusations 19
 - fractures 339, 340
 - see also* sexual abuse
- child mortality 68
- Children's Cancer and Leukaemia Group (CCLG) 57
- chlorphenamine 104
- choking 220, 220
- chromatids 31, 31, 39–41, 40
- chromatin 30–31, 31
- chromosome disorders 162
- chromosomes 29, 30–33
 - cell reproduction 9–10
 - human complement 31–32, 32
 - interphase 39
 - meiosis 41, 42, 43
 - mitosis 39–41, 40
 - structure 30–31, 31
- chronic granulomatous disease 90
- chronic kidney disease (CKD) 74, 287–289
 - causes in children 287, **287**
 - clinical consequences **288**
 - stages **288**
 - treatment 288–289, 289, 290
- chronic pain 141–142, 148
- cilia 14
- circadian rhythm
 - disturbances 241
- circulation, assessment 130
- circumcision 301–302
- cisternae 10
- clavicle fractures **341**
- cleft lip and palate 270–271, 271, **273**
- clotting, blood 92
- clubbing 196
- coarctation of aorta 194, 194–195
- codeine **151**, 152
- CODE RED protocol 123, 124
- coeliac disease 268–269, **269**
- cognitive impairment 144, **146**
- collagen 20, 21, 372
- columnar epithelium
 - simple 17, 17
 - stratified 18
- commensal
 - micro-organisms 87–88
- comminuted fractures 339, 339
- compensated shock 117–118, 120, 123, 125
- compensatory mechanisms
 - dehydration 69, 71
 - renal impairment 74
- complement system 76, 91
- computed tomography (CT) 239, 282
- concentration gradient 6
- concordance, medication 230
- concussion 168
- confidentiality 326
- congenital adrenal hyperplasia (CAH) 246–247
- congenital heart defects (CHD) 181–202
 - acyanotic 185, 185, 187–195
 - cardiac failure 181–184
 - causes **182**
 - classification 184, 184
 - cyanotic 185, 185, 195–202
 - decreased pulmonary flow 195–197
 - increased pulmonary blood flow 187–191
 - investigations 184–187
 - mixed blood flow 197–202
 - ventricular outflow obstruction 191–195
- conjunctivitis, allergic **102**
- connective tissue 20–23
 - blood supply 21
 - dense 21
 - function 15, 17, 20
 - loose 21–23
 - types 21–25
- conscious level, assessing **166**
- consent 321
- constipation 260, 298
- contraception 325–329
- contractures, wound 373
- convulsions, febrile 77, 177
- coronary artery aneurysms 203, 204
- corticosteroids
 - adrenal **236**
 - allergy 103
 - asthma 228
 - cancer therapy 59
 - Kawasaki disease 204
 - nephrotic syndrome 284
- cortisol 59
- counselling *see* psychological care
- craniopharyngioma 239, 240
- C-reactive protein (CRP) 106
- Crohn's disease 37, **265**, 265–266
- croup 219
- crusts 361

- cryptorchidism 314–315
 CT *see* computed tomography
 cuboidal epithelium
 simple 16–17, 17
 stratified 18
 cultural aspects, pain 144–145
 Cushing disease/syndrome 240
 Cushing's triad 164, 165
 cyanosis
 congenital heart defects 196, 197, 198
 respiratory distress 216
 cyst 361
 cystic fibrosis
 genetics 36, 38, 45
 oxygen administration 72–74
 recurrent infections 88
 cytokines 90, 95, 96
 cytoplasm 4, 8–9
 cytosine (C) 29, 30, 35
 cytoskeleton 13, 13–14
 cytotoxic chemotherapy 58, 63
 cytotoxic T cells **98**

 daytime wetting 298
 dehydration 68–71, 69
 blood loss 71
 diagnosis **70**, 70–71
 gastrointestinal fluid
 loss 68–71
 hypovolaemic shock 122
 infections 77
 pre-operative fasting 71
 respiratory infections 222
 deletions 36–37
 deoxyribonucleic acid *see* DNA
 deoxyribonucleotides 29–30
 descending pain
 pathways 139–140, 140
 desmopressin (DDAVP) 238
 developmental dysplasia of the
 hip (DDH) **353**, 353–356
 care and treatment 354, 354–356, 355
 diagnosis 354, 356, 356
 dexamethasone 59
 diabetes insipidus 121, 237–238, 251–252
 diabetes mellitus 71, 77–79, 248–249
 diabetic ketoacidosis (DKA) 78–79, 122, 248–249
 dialysis 288–289, 289, 290, 291
 diamorphine, intranasal 151
 diaphoresis 183
 diaphragmatic breathing 215
 diaphysis 347
 diarrhoea 259–260
 case study 80
 causes **259**
 dehydration 68–69, 71
 hypovolaemic shock 121
 dietary restrictions 294–295
 dietary supplements 282, 294–295
 diethylstilboestrol (DES) 54
 diffusion 6, 7
 DiGeorge syndrome 245
 digestive disorders 257–277
 digoxin **184**
 dilated cardiomyopathy 207
 diploid cell 41
 disability, assessment 130
 dislocation, hip **353**
 disorders of sex development (DSD) 249–250
 disseminated intravascular
 coagulation (DIC) 118
 distraction, psychological 137, 154
 distraction osteogenesis 344, 344
 distributive shock 116–121, **117**
 diuretics **184**
 DMSA (dimercaptosuccinic acid) scan 282
 DNA 29
 cell nucleus 9, 28
 chromosomal 30–31
 double helix 29, 29–30
 mutations 36–38
 processing genes 53
 protein synthesis 33–35, 35
 replication 34, 39
 structure 29–31, 30
 transcription 33–35
 dominant genes 33, 44
 dopamine 161
 dorsal horn 137, 140
 double helix, DNA 29, 29–30
 Down syndrome 53, **54**, 162, 195
 dressings 366, 373
 Duchenne muscular
 dystrophy 46
 ductus arteriosus 123, 190
 maintaining patency 193, 197
 patent (PDA) **190**, 190, 190–191
 duplications, genetic 37
 dura mater 168
 dysmenorrhoea 318–320, 330
 dysplasia, hip **353**, 355
 dystrophic epidermolysis
 bullosa (DEB) 363, 363, 364

 ECG *see* electrocardiogram
 elastic fibres 20
 electrocardiogram (ECG) **70**, 129, 202, 203
 electroencephalogram (EEG) 176
 electromagnetic radiation 60
 embryonal central nervous
 system tumours 56, 171
 emergency
 contraception 325–329
 emotional effects *see*
 psychological/emotional
 effects
 emotional support *see*
 psychological care
 empyema 222
 encephalitis 175
 endocarditis, infective 204–205
 endocrine disorders 235–253, **236**
 childhood obesity 247
 emotional and psychological
 effects 250
 hormone therapy 238, 241, 247
 investigations 238–239
 multi-system effects 240–241
 endocrine glands 20, 234, 235, **236**
 endocrine system 234, 235, **236**
 endocytosis 5
 endoplasmic reticulum (ER) 10, 11
 end-organ perfusion,
 monitoring 129–130
 end-stage renal disease
 (ESRD) 287, **288**
 enuresis 298
 enzymes 13
 ependymoma 56
 epidermal stripping,
 iatrogenic 373
 epidermolysis bullosa
 (EB) 362–367
 care and management
 365–367
 case studies 18–19, 364–365, **365**

- diagnosis 362
- pathophysiology 363, 364
- types 362–364
- epidermolysis bullosa simplex (EBS) 363, 363, 364
- epididymitis 299–300
- epidural analgesia 152–153, **153**
- epiglottitis 219
- epilepsy 176
- epinephrine (adrenaline)
 - adrenal gland **236**
 - anaphylaxis 103–104, *104*, 111
 - autoinjector 105
 - pathophysiology 79, 95
- epiphyseal growth plate 347
- epiphyseal injuries **341**
- epithelial tissue 15–20, 17
 - classification 16–18
 - glandular 20
 - simple 16, 16–17, 17
 - stratified 16, 16, 17–18
- Epstein–Barr virus (EBV) 54
- erythema marginatum **205**
- erythrocyte sedimentation rate (ESR) 106
- Escherichia coli* O157:H7 292, 293
- eukaryotes 9
- exocrine glands 20
- exocytosis 11
- exploitation, sexual 326
- exposure 130
- external fixation 343–344
- extracellular matrix 20

- facial bone injuries **341**
- facilitated diffusion 6–7, 7
- Fallot's tetralogy (TOF) 195, 195–196
- Fanconi anaemia **54**
- fasting, pre-operative 71
- fat tissue 22
- febrile convulsions 77, 177
- febrile neutropenia 63
- feedback control 73, 78
- female genital mutilation (FGM) 329–333
 - classification **330**
 - consequences 330–331
 - legal position 331–332
 - prevalence 331, 332
- female reproductive health issues 318–324, **319**
- female reproductive system 318, 319
- femoral fractures 337, **341**
- femoral osteotomy 352
- femur, growth plates 347
- fentanyl **153**
- fetal alcohol syndrome 162
- fever (pyrexia) 77, 95–96
- fibrin 91, 92
- fibroblasts 21, 92, 372
- fibular fractures **341**
- filaggrin 367
- filgrastim *see* granulocyte colony-stimulating factor
- filtration 7
- fission, simple 2
- fissures
 - bone 339, 339
 - skin 361
- fistula 94
- flagella 14
- fluid losses 68–71, 121–122, 378
- fluid overload 127, **286**, 294
- fluid resuscitation 127
- fontanelles 70
- food allergy 101, *101*, **102**, 103
- foot fractures **341**
- foramen ovale 187
- forearm fractures **341**
- foreign body
 - aspiration 220
 - vaginal 322, 323
- fractures 336–345
 - case study 337, 338
 - diagnosis 340
 - infancy and early childhood 339
 - location and features 340, **341**
 - management 342–345
 - pathophysiology 340–342, 342
 - types 337–339, 339
- fragile X syndrome 37
- frameshift mutations 37
- Fraser guidelines 326–327, 329
- free radicals 12
- fungi 87
- furosemide **184**

- gallop rhythm 183
- gametes 41
- gametogenesis 44
- gastric acid 88
- gastroenteritis 259–260
- gastrointestinal (GI) disorders 257–277
 - burn injury 380
 - case studies 275–276, 277
 - hernias 271–274
 - inflammatory 263–266
 - malabsorption 268–269
 - motility 259–263
 - obstructive 266–268
 - structural defects 269–271
- gastrointestinal fluid loss 68–71, 121
- gastrointestinal infections 68–69
- gastro-oesophageal reflux (GOR) 261–262, **262**
- gate control theory 139–140, 140
- gender aspects, pain assessment 144–145
- gender dysphoria 250
- genes 29
 - cancer 53
 - crossover 42, 42
 - dominant 33, 44
 - loci 32–33
 - recessive 33, 44
 - transference 38–43
- gene therapy 49
- genetic disorders
 - inheritance 44–47
 - neurological disorders 162
 - spontaneous mutations 47
 - support and counselling 37–38
- genetic mutations *see* mutations
- genetics 27–49
 - cancer 53–54, **54**
 - role in inheritance 43–44
- genotype 33, 43
- gestational diabetes 248
- gigantism 237
- Gillick competence 321, 326–327, 329
- glandular epithelium 20
- Glasgow Coma Scale (GCS) 166, **166**
- glial tumours 171
- gliomas 171
- glomerular filtration rate (GFR) 288, **288**
- estimated (eGFR) 285, **291**

- glomerulonephritis 74, 285–286, **286**
- glucagon 77, 78, **236**, 249
- glucocorticoids (GCs) 59
- glucose
 - blood **70**, 77, 78, 248
 - transport 6–7
- gluten 268
- glycaemic control 77–78, 79
- glycosuria 78
- goblet cells 17, 88
- goitre 242
- Golgi complex 4, 10–11
- gonadotrophin-releasing hormone (GnRH)
 - analogues 250, 251
- gonads, disorders of 249–251
- graft-versus-host disease 107
- granulation tissue 372
- granulocyte colony-stimulating factor (GCSF) 61, 89
- granulomas 90, 91
- Graves' disease 243
- gray (Gy) 60
- greenstick fractures 339, 339
- ground substance 20
- Group B streptococcus 173
- growth disorders 237
- growth factors 371, 372
- growth hormone, human 237
- growth plates, femoral 347
- grunting, respiratory 216
- guanine (G) 29, 30, 35

- haematoma, fracture site 340, 342
- haematopoietic stem cell transplantation (HSCT) 61
- haematuria 287
- haemodialysis 289, 290
- haemoglobin (Hb) **70**, 71
- haemoglobin A_{1c} (HbA_{1c}) 77
- haemolysis 7, 8
- haemolytic disease of newborn 106
- haemolytic uraemic syndrome (HUS) 292–293, 305, 306–307
- haemophilia 46
- Haemophilus influenzae* 92, 219
- haemorrhage 71, 122–123, 124
- haemorrhagic shock 122–123
- hair colour 32, 44
- haploid cell 41
- hay fever **102**, 103

- head bobbing 215
- head injury 167–168
- head lice 380, 380–381
- Health Play Specialist (HPS) 60
- heart
 - anatomy 180–181, 181
 - oxygen saturation levels 186
 - pressures within 186
- heart disease 181–211
 - acquired 203–211
 - congenital 181–203
- heart failure see cardiac failure
- heart rate (HR) 118, 128–129
 - post-operative changes **274**
 - respiratory distress 216–217
 - see also tachycardia
- heatstroke 47, 48
- helper T cells **98**, 110
- hemidesmosomes 364
- Henoch–Schönlein purpura 285, 286
- heparin **184**
- hepatomegaly 183
- herbal remedies 282
- hernias 271–274
- heterozygous 33
- Hickman line 61
- hip
 - developmental dysplasia **353**, 353–356
 - fractures **341**
- hip spica 355, 355–356
- Hirschsprung disease 262–263, 263
- histamine 91, 101, 121, 367
- histones 30–31, 31
- hives **102**
- homeostasis 67–80
- homozygous 33
- hormones 234
 - laboratory tests 238–239
 - long-term effects of deficiency 244
 - replacement therapy 238, 247
 - routes of administration 241
 - therapy to suppress or counteract 250
- human immunodeficiency virus (HIV) 109–110
- human papillomavirus (HPV) vaccine 62
- humeral fractures **341**
- humoral immunity 75
- Huntington's disease 46

- hydration 70, 366
- hydrocele 273, 300
- hydrocephalus 164–165
- hydrocortisone 59, 104
- hydronephrosis **281**, 295
- 21-hydroxylase deficiency 246
- hypercalcaemia 244
- hypercalciuria 287
- hypercapnia 72
- hypercyanotic spells 196
- hyperglycaemia 77, 78, 248, 379
- hyperinsulinaemia, congenital (CHI) 249
- hypernatraemic dehydration 71, 122
- hyperparathyroidism 244
- hypersensitivity reactions 99–105, **100**
- hypertension 294
- hyperthyroidism 242–244, 250
- hypertrophic cardiomyopathy 207
- hypertrophic scars 373
- hypoalbuminaemia 74
- hypoglycaemia 79, 249
- hyponatraemic dehydration 71, 122
- hypoparathyroidism 244–245
- hypoperfusion 116, 127
- hypopituitarism 237
- hypoplastic left heart syndrome 197–202
- hypospadias 300–301, 301, 308
- hypotension 69, 74
 - cardiogenic shock 123, 125
 - neurogenic shock 120
 - septic shock 117
- hypothalamic disorders 235
- hypothalamus 69, 77, 95, **236**
- hypothermia 379
- hypothyroidism 242
 - case study 253
 - congenital (CH) 242, 244
- hypovolaemia 74
 - burn injury 378, 379
 - neurogenic shock 120
 - third-spacing 121–122
- hypovolaemic shock **117**, 121–123
- hypoxia 72, 216, 217
- hypoxic brain injury 168

- ibuprofen (Brufen®) **150**, 286, 316
- Ilizarov frame 344, 344

- immune deficiency 107–110
 primary (PID) 107–109, 108
 secondary 107, 109, 109–110
- immune system 84–112
 adaptive 84, 97–99
 alterations 99–112
 blood cells 85–86, **86**
 burn injury 380
 innate *see* innate immune system
 response to infection 75, 75–77
- immunisation 99
- immunoglobulin A (IgA) **98**, 99
- immunoglobulin D (IgD) **98**
- immunoglobulin E (IgE) **98**, 101, 367
- immunoglobulin G (IgG) **98**, 99
- immunoglobulin M (IgM) **98**, 99
- immunoglobulin therapy 108–109, 204
- immunosuppressive therapy 107
- impacted fractures 339, 339
- infants
 cardiac failure **182**, 183
 dehydration 68–69, 70
 immunity 75–76
 pain 141, 143, **146**, 154
 positioning 262
 respiratory disorders 214, 215
 urinary tract infections **297**
- infection control
 precautions 218
- infections 75–77
 autoimmune disease and 105
 defence against 87
 epidermolysis bullosa 365
 immune deficiencies 107, 108
 inflammatory response 76, 76–77, 92
 intracranial 173–175
 prenatal 162
 primary and secondary response 98–99, 99
 respiratory 218–219, 220–225
 systemic effects 94–97, 95
 transplant recipients 107
see also sepsis; septic shock
- infective endocarditis 204–205
- infibulation 330, **330**, 331
- inflammation 90–97
 acute 90, 91–92
 airway 227, 228
 alterations 99–112
 atopic eczema 367
 causes 90–91
 chronic 90–91
 fracture site 340
 in infection 76, 76–77, 92
 process 91, 92, 93
 systemic effects 94–97, 95
 wound healing 91–92, 371–372
- inflammatory bowel disease (IBD) **265**, 265–266
- inflammatory mediators 91, 117
- influenza vaccine 64
- infoKID 283
- inguinal hernia 272–274, 273
- inhalers 228
- inheritance 43, 43–47
- innate immune system 84, 87, 87–97
 cells **85**, **86**
see also inflammation
- inotropic drugs, positive **184**
- insect sting
 hypersensitivity **102**
- insertion mutations 37
- instability, hip **353**, 355
- insulin 77, 78, 79, **236**, 248–249
- integumentary system 360
- interatrial septum 187
- interleukin 1 (IL-1) 95
- interleukin 6 (IL-6) 95
- intermediate filaments 14
- International Classification of Diseases for Oncology* (ICD-O) 56
- interphase 39, 39, 40
- interventricular septum 189
- intracerebral haemorrhage 167
- intracranial haemorrhage 167
- intracranial infection 173–175
- intracranial pressure (ICP), raised 163, 163–165, 166
- intramuscular (IM) injections 151
- intrathecal (IT) chemotherapy 58–59, 63
- intravenous urogram 282
- intussusception 267, 267–268
- ionising radiation (IR) 54, 60
- ion transport 6
- ischaemic heart disease 183, 204
- isonatraemic dehydration 71, 122
- itching 367
- junctional epidermolysis bullosa (JEB) 363, 363, 364
- Kawasaki disease 183, 203–204
- keloid 373
- Kernig's sign **174**
- ketamine sedation 322–323
- kidney
 biopsy 283
 congenital anomalies 74, 281, **281**, 287
 duplex **281**, 282
 ectopic **281**
 horseshoe **281**
 solitary **281**
- Kindler syndrome 364
- kinins 91, 371
- lactic acid/lactate 127
- late effects (LE), cancer 64
- left ventricular failure 125, **126**
- leukaemia 54, 55
 case study 62–64
 risk stratification 55–56, **56**
 treatment 59, 61–62
- levobupivacaine **153**
- levonorgestrel 325, 327, 328, 329
- lice 380, 380–381
- lichenification 361
- lifestyles, healthy 62
- Li–Fraumeni syndrome 53, **54**
- ligaments 21
- limbic system 137
- limps, childhood 345–353, **346**
- lipid bilayer 4, 5
- lipopolysaccharides (LPS) 117
- live vaccines 64
- locus, gene 32–33
- lower urinary tract 280
- lower urinary tract disorders 280, 297–304
 medical 297–300
 surgical 300–304
- Lund and Browder chart 374, 376
- lymphatic system 85, 97
- lymph nodes 85
- lymphocytes 86, **86**, 97–98

- lymphoma 54, 55, 59, 61–62
- lysosomes 4, 11–12
- lysozyme 88
- macrophages 76, 77, **86**, 88, 90
 - inflammation 91, 92
 - wound healing 371, 372
- macule 361
- MAG3 scan 283
- magnetic resonance imaging (MRI) 239, 351
- major histocompatibility complex (MHC) 107
- malabsorption
 - syndromes 268–269
- male reproductive system 300, 312–313, 313
 - development 314
 - disorders **313**, 313–318
- mast cells **86**, 91, 101
- maturity-onset diabetes of young (MODY) 248
- McBurney's point 264, 264
- Medicines and Healthcare products Regulatory Agency (MHRA) 204
- medulloblastoma 56, 64, 171
- meiosis 9–10, 41–43
- melatonin **236**, 241
- memory B cells 86, 98
- memory T cells **98**
- menarche 318
- Mendelian genetics 43–44
- meninges 168, 173
- meningitis 173–174, **174**
- meningocele 170
- meningococcal disease **174**, 174–175
- meningoencephalitis 175
- menstrual problems 318–320
- mental status, assessment 217
- metabolic acidosis 77, 78
- metabolic disorders 162
- metabolic rate, increased 77, 379
- metaphase 40, 40
- metaphysis 347
- microfilaments 14
- micro-organisms 87–88
- microtubules 14
- micturating cystourethrogram (MCUG) 283
- midstream urine sample 316
- mineralocorticoids 59, **236**
- missense mutations 36
- mitochondria 4, 12–13
- mitosis 9, 15, 38–41, 40
- mitotic spindle 40, 40
- monoclonal antibody (mAb)
 - drugs 61–62
- monocytes 88, 90
- morphine **151**, 152
- motor dysfunction 169–170
- MRI *see* magnetic resonance imaging
- mRNA (messenger RNA) 29, 34–35
- mucosal surfaces 88
- mucous membranes 17
- mucus 88
- multicystic dysplastic kidneys (MCDK) **281**
- muscle tissue 15, 23–24
- musculoskeletal
 - disorders 335–357
- mutations 36–38
 - causing cancer 53
 - spontaneous 47
 - types 36–37
- Mycobacterium tuberculosis* 91, 224–225
- myelinated nerve fibres 138–139, 139
- myelomeningocele 170
- myocardial contractility 182, 379
- myocardial ischaemia 129, 183, 204
- myosin 14
- myxoedema 242
- nasal flaring 216
- nasal secretions,
 - clearing 217–218
- National Cancer Research Institute (NCRI) 57
- National Institute for Health and Care Excellence (NICE) 95–96, 97
- National Patient Safety Alerts (NPSA) 59
- natural killer (NK) cells 85, **86**
- nausea 261
- Neisseria meningitidis* 173, 174
- neonates
 - cardiac failure **182**
 - ductus
 - arteriosus-dependent 193
 - pain 143, **146**
 - skin care **369**, 373
- nephrectomy 294, 295–296
- nephroblastoma *see* Wilms' tumour
- nephron 285
- nephrotic syndrome 284
- nerve impulse transmission 161
- nervous system 135, 160–161
 - development 161–162
 - structure **160**, 160–161, 161
 - see also* neurological disorders
- nervous tissue 15, 24–25
- nesidioblastosis 249
- neural tube defects 170
- neuraxial analgesia 152–153
- neuroblastoma 172
- neurofibromatosis type 1 (NF1) **54**, 172–173
- neurogenic shock 119–121
- neuroglia 25
- neurological disorders 161–177
 - causes 161–162
 - endocrine disorders 240
 - neurological tumours 171–173
- neurons (nerve cells) 24–25, 25, 160
- neuropathic pain 141
- neurotransmitters 161
- neutropenia 63, 89
- neutrophils 76, **86**, 88–89, 91, 371
- nociceptive pain 136, 136–139
- nociceptors 137
- nocturnal enuresis 298–299
- nodule 361
- non-accidental injury *see* child abuse
- nonsense mutations 36
- non-steroidal anti-inflammatory drugs (NSAIDs) 286, 316, 340, 353
- Noonan syndrome **182**
- norepinephrine (noradrenaline) 95, 161, **236**
- nucleosomes 30, 31
- nucleus, cell 4, 9, 28
- nurse controlled analgesia (NCA) 152
- nutrition 366
- obesity 247
- oedema
 - burn injuries 377
 - cardiac failure 183

- inflammatory response 91
- renal disorders 74, 284
- oesophageal atresia 269, 269–270
- oestrogen **236**
- oncogenes 53
- opioid analgesics
 - (opiates) 150–152, **151**
 - epidermolysis bullosa 365, 366
 - patient-controlled analgesia (PCA) 152, **153**
 - routes of administration 151–152
- opioid receptors 150
- opioids, endogenous 137
- oral secretions, clearing 217–218
- Oramorph® **151**
- orchiectomy 317
- orchiopexy 317
- organelles, cellular 8–14
- orthopnoea 183
- Ortolani test 356, 356
- osmolality, plasma **70**, 71
- osmoreceptors 237–238
- osmosis 7
- osmotic pressure 7
- osteogenesis imperfecta 339
- osteonecrosis 59
- ovaries **236**
- overactive bladder 298
- ovum (egg) 2, 10, 41
- oxidative burst 90
- oxygen delivery (DO_2) 128, 129
- oxygen saturation (SaO_2)
 - cardiac failure 184
 - effects of clubbing 196
 - haemorrhagic shock 123
 - within the heart 186
 - respiratory disorders 74, 216
- oxygen therapy
 - bronchiolitis 218–219
 - cardiac failure 184
 - chronic respiratory disease 72–74
 - respiratory distress 217
 - shock 123, 130
- p53 gene 53
- packed cell volume (PCV) **70**, 71
- paediatric early warning system *see* PEWS
- Paediatric Glasgow Coma Scale (PGCS) **166**
- pain 133–155
 - acute 141–142, 148
 - anatomy and physiology 135–142
 - ascending pathways 137–139, 138
 - chronic 141–142, 148
 - definition 134
 - descending pathways 139–140, 140
 - effects of unrelieved 147
 - effects on vital signs 141
 - factors affecting 134–135, **135**, 143
 - gate control theory 139–140, 140
 - modulation 137
 - myths 141
 - neuropathic 141
 - nociceptive 136, 136–139
 - perception 137
 - procedural 148, 154
 - recurrent 142
 - transduction 137
 - transmission 137
 - wound healing 372
- pain assessment 142–147
 - behavioural cues 146, **146**
 - cognitive development and 143–144
 - context of pain experience 142
 - gender and cultural aspects 144–145
 - methods 145–147, **146**
 - myths 147
 - parents and family 147
 - QUESTT approach 145
 - self-report 145
- pain management 147–154
 - epidermolysis bullosa 365, 366
 - methods 149
 - multimodal approach 150
 - myth 149
 - non-pharmacological 154
 - pharmacological 149, 150–154
 - WHO analgesic ladder 149
- palate, development 270, 272
- pamidronate 59
- Panadol® **150**
- pancreas
 - disorders 247–248
 - endocrine **236**
- pancytopenia 58, 63
- panda eyes **165**
- papule 361
- parasympathetic nervous system 161
- parathyroid disorders 244–245
- parathyroid gland **236**
- parathyroid hormone (PTH) **236**, 244
- passive immunity 99, 100
- passive transport 6–7
- patellar fractures **341**
- patent ductus arteriosus (PDA) **190**, 190, 190–191
- patent foramen ovale 188
- pathogens 87
- patient-controlled analgesia (PCA) 152, **153**
- Pavlik harness 354, 354, 356
- pCO_2 73
- peak flow readings 229
- pediculosis 380–381
- pelvic fractures **341**
- pelvic osteotomy 352
- penicillin 206
- Perfalgan® **150**
- perfusion pressure 129
- peripheral blocks 153
- peripheral blood stem cells (PBSC) 61
- peripheral nervous system (PNS) 135, 160, **160**, 161
- peristalsis 24, 24
- peritoneal dialysis 288, 289
- peroxisomes 4, 12
- Perthes disease 348–353
 - care and treatment 351–353
 - diagnosis 350, 350–351, 351
 - investigations 351
 - stages 349, 349–350
- pertussis 223
- petechiae 361
- PEWS (paediatric early warning system) 79, 130
 - appendicitis 275–276, 277
 - femoral shaft fracture 337, 338
 - haemolytic uraemic syndrome 305, 306–307
 - hypoplastic left heart syndrome 200–201
 - severe sunburn 47, 48
- pH, blood 72, 73
- phagocytosis 5, 88–90, 89, 91
- phenotype 33, 43

- phenoxymethylpenicillin 206
- phenylketonuria 162
- phimosis 301
- phospholipids 4, 5
- pia mater 168
- pilonidal abscess 94
- pineal gland **236**, 241
- pinocytosis 5
- pituitary adenoma 239, 240
- pituitary disorders 237–240, 251–252
- pituitary gland **236**
- pituitary tumours 239–240
- plaque 361
- plasma cells 86, 98
- plasma membrane *see* cell membrane
- plasma membrane proteins (PMPs) 4, 5
- play, as coping strategy 147
- pleural effusions 74
- pneumonia 220–222
 - bacterial 221
 - interstitial 220
 - lobar 220
 - viral 221
- pO_2 73
- polyarteritis nodosa 285
- porins 13
- positioning, infant 262
- posterior urethral valves **281**, 303–304, 305
- post-operative vital signs **274**
- post-streptococcal
 - glomerulonephritis (PSGN) 285, 286
- Potter syndrome **281**
- precocious puberty 250
- prednisone 59
- pregnancy
 - female genital mutilation and 331
 - teenage 324, **324**
- pregnancy test 328
- preload 127–128, 181
- premature infants **190**, **369**
- pre-school children
 - cardiac failure **182**, 183
 - limps **346**
 - pain 143–144, **146**, 154
 - skin care **369**
- primary treatment centres (PTCs) 57, 62–63
- procedural pain 148, 154
- processus vaginalis 272, 273
- prokaryotes 9
- prolactinoma 239, 240
- prophase 39–40, 40, 42
- proptosis 243
- prostaglandins 77, 95, 193, 197, 372
- protein synthesis 33–35, 35
- proteinuria 283, **284**
- protozoa 87
- pseudopodia 14
- pseudosyndactyly 363
- psychological care
 - cryptorchidism 315
 - genetic disorders 37–38
 - inflammatory bowel disease 266
 - suspected sexual abuse 323
 - testicular torsion 318
- psychological/emotional effects
 - endocrine disorders 250
 - female genital mutilation 331
 - pain 143–144, 147
- puberty
 - delayed 251
 - precocious 250, 251
- pulmonary oedema 127
- pulmonary stenosis 191, 191–192
- pulse pressure 118, 123
- pus 76, 92, 94
- pustule 361
- pyeloplasty 295
- pyloric stenosis 266, 266–267, 277
- pyogenic bacteria 88, 90, 91, 92
- pyrexia (fever) 77, 95–96
- pyrogens, endogenous 95
- QUESTT approach, pain assessment 145
- raccoon eyes **165**
- radiation, ionising (IR) 54, 60
- radiation therapy 60, 64, 294
- radioimmunoassay 238–239
- rape, statutory 327
- rashes 96, 174
- receptor-mediated endocytosis 5
- recessive genes 33, 44
- red blood cells 9
 - antigens 106
 - solute concentration effects 7, 8
- reflex arc 139
- regional analgesia 152–153, **153**
- regulatory T cells **98**
- renal agenesis **281**
- renal ectopia **281**
- renal impairment 74
- renal pelvic dilatation (RPD) 281
- Renal Registry, UK 287
- renal system 280, 280
 - assessment 282–283, **283**
 - congenital anomalies 74, 281, **281**, 287
- renal system disorders 279–308
 - antenatal screening 74, 281, **281**
 - burn injury 379
 - case studies 305–308
 - herbs and supplements causing 282
 - lower urinary tract 297–304
 - upper urinary tract 283–297
- renal transplantation 289, 290
- renin-angiotensin-aldosterone system 69, 69, 74
- reproduction, cell 9–10, 38–41
- reproductive health/ill health 311–333
- respiration, internal 12
- respiratory acidosis 72
- respiratory arrest 227
- respiratory
 - assessment 215–216
- respiratory centre 72
- respiratory disorders 213–230
 - burn injury 379
 - case studies 80, 217–218, 226
 - clearance of secretions 217–218
 - endocrine disorders 240–241
 - infection control precautions 218
 - investigations 226–227, 229
 - pathophysiology 72–74
 - upper airway 219–220
- respiratory distress 215–217, 225
- respiratory distress syndrome, neonatal **190**
- respiratory infections 218–219, 220–225
- respiratory noises 216
- respiratory rate 215, **274**
- respiratory syncytial virus 218

- restrictive cardiomyopathy 207–208
- reticular connective tissue 22
- reticular fibres 20
- retinoblastoma, familial 53, **54**
- rhesus (Rh) incompatibility 106
- rheumatic fever **205**, 205–206
- rhinitis, allergic 101, 101, **102**, 103
- rib fractures **341**
- ribonucleic acid see RNA
- ribosomes 10, 11
- right ventricular failure 125, **125**
- RNA 10, 29
 - DNA transcription to 33–35
 - types 34
- rough endoplasmic reticulum 10, 11
- rRNA (ribosomal RNA) 34, 35
- rule of 9s 374
- salbutamol 228
- saltatory conduction 161
- Sandifer syndrome 262
- SBAR (Situation, Background, Assessment, Recommendations) 79
- scalds 373
- scales 361
- school-age children
 - cardiac failure **182**, 183
 - limps **346**
 - pain 144, **146**, 154
 - skin care **369**
- secretions, nasal and oral 217–218
- seizure disorders 175–177
- seizures 175–176
- self–non-self differentiation 84, 97
- sensory nerve fibres **138**, 138–139
- sepsis 96–97, 117–119, **119**, 380
- septic shock 96–97, 117–119, **119**
 - compensated 117–118
 - decompensated 117, 119
 - life-threatening complications 120
- serotonin 91
- Sevredol® **151**
- sex chromosomes 31–32, 32, 43
- sex hormones **236**
- sexual abuse 312, 322, 323
- sexual activity 324
- sexual exploitation 326
- sexual health 324–329
- sexual history 325, 327–328
- sexually transmitted infections 324
- sexual partner, age of 327
- shelf acetabuloplasty 352
- shock 115–131
 - ABCDE approach 130
 - anaphylactic 121
 - cardiogenic **117**, 123–125
 - classification **117**
 - cold 117, 118, 119, 120
 - compensated 117–118, 120, 123, 125
 - decompensated 117, 119, 125
 - definition 116
 - dehydration 69
 - distributive 116–121, **117**
 - haemorrhagic 122–123
 - hypovolaemic **117**, 121–123
 - monitoring end-organ perfusion 129–130
 - neurogenic 119–121
 - obstructive **117**
 - pathophysiology 127–129
 - refractory 117
 - septic see septic shock
 - signs and symptoms 70, **70**
 - spinal 169
 - strategies for managing 129
 - warm 117, 120
- short stature 237
- sickle cell anaemia 36
- simple epithelium 16, 16–17, 17
- sinus bradycardia 208
- sinus tachycardia 208
- Situation, Background, Assessment, Recommendations (SBAR) 79
- skeletal muscle 23, 24
- skeleton 336
- skin 18, 360
 - barrier to infection 87–88
 - biopsy 19
 - colour 216
- skin care
 - age-related factors **369**
 - epidermolysis bullosa 366
- skin disorders 359–381, **361**
 - endocrine disorders 240
 - lesion types 361–362
 - renal system disorders **283**, 295
- skull fractures **165**, 165–166, **341**
- sleep problems 241
- slipped capital femoral epiphysis (SCFE) 345–348, 346
 - care and management 348
 - classification 347, **348**
 - pathophysiology 347, 347
- slough 92
- smooth endoplasmic reticulum 10, 11
- smooth muscle 23, 24
- sodium, plasma **70**, 70–71, 122
- sodium cromoglycate 103
- sodium retention 74
- somatosensory cortex 137, 138
- sperm (spermatozoa) 2, 10, 41
- spina bifida 162, 170
- spinal cord 137–138, 168
 - injury (SCI) 119–121, 168–169
 - tumours 171
- spinal shock 169
- spinal trauma 168–169, **341**
- spiral fractures 339, 339
- spironolactone **184**
- splinting 345, 354–355
- spontaneous mutation 47
- squamous epithelium 16, 18
- Staphylococcus aureus* 91, 92
- status epilepticus 176
- stratified epithelium 16, 16, 17–18
- strawberry tongue 203
- streptococcal throat
 - infection 205–206, 285, 286
- Streptococcus pneumoniae* 92, 173, 220
- Streptococcus pyogenes* 91, 92
- stridor 121, 216, 219
- stroke volume 128, 128
- subarachnoid
 - haemorrhage 167
- subarachnoid space 168
- subcutaneous nodules **205**
- subdural haemorrhage 167
- subluxation, hip **353**, 355

- sunburn, severe 47, 48
- support, emotional *see* psychological care
- supraventricular tachycardia (SVT) 210
- surgery 61, 71
- Sydenham chorea **205**
- sympathetic nervous
 - system 95, 118, 161
 - tumours 171–173
- synacthen test 59
- synapses 25
- systemic inflammatory
 - response syndrome (SIRS) 117, **119**
- systemic lupus erythematosus (SLE) 285
- systemic vascular resistance (SVR) 117

- tachycardia
 - extreme or prolonged 128–129
 - haemorrhagic shock 122, 123
 - septic shock 118, 119
- tachypnoea 183
- targeted cancer
 - therapies 61–62
- Tay–Sachs disease 37
- teenage pregnancy 324, **324**
- telangiectasia 361
- telophase 40, 41, 42
- temperature, body
 - increased 77, 95
 - post-operative changes **274**
 - recording 95–96
- tendons 21
- testes **236**
 - ascending 314
 - ectopic 314
 - undescended 314–315
- testicular torsion 315, 316–318
- testosterone **236**
- tetralogy of Fallot (TOF) 195, 195–196
- thalamus 137, 138, 138
- thermoregulation 379
- third-spacing 121–122
- thirst 69, 238
- 13q syndrome **54**
- thymine (T) 29, 30, 35
- thymosin **236**
- thymus gland 97, **236**, 245

- thyroid disorders 241–244
- thyroid gland **236**
- thyroid-stimulating hormone (TSH) 241, 242, 243
- thyrotoxicosis 242–244
- thyroxine (T4) 12, **236**, 242, 243–244
- tibial fractures **341**
- tissues 2, 15–25
 - repair 25
 - types 15–25
- T lymphocytes 86, **86**
 - functions 97, **98**
 - transplant rejection 107
 - wound healing 371
- topical medications 367
- torus fractures 339
- total body irradiation (TBI) 64
- total body surface area (TBSA) 374
- tracheal tug 216
- tracheoesophageal fistula (TOF) 269, 269–270
- traction 342–343, **343**, 343
- tramadol **151**
- transcription 33–35, 34
- transfusion reactions 106
- transitional epithelium 18
- translation 33
- transplantation 61, 106–107, 289, 290
- transposition of great arteries (TGA) 197–198, 198
- transverse fractures 339, 339
- traumatic brain injury (TBI) 167, 167–168
- Trendelenburg gait 351, 351
- tricuspid atresia 196–197, 197
- tripoding 227
- tRNA (transfer RNA) 34, 35
- tuberculosis (TB) 91, 224–225
- tubulin 14
- tumour necrosis factor (TNF) 95, 379
- tumour suppressor genes 53
- Turner syndrome 162, **182**
- 22q11.2 deletion syndrome 37

- ulcer 361
- ulcerative colitis **265**, 265–266
- ulipristal acetate 327, 328, 329
- ultrasound 239, 282, 317

- umbilical hernia 271
- unlicensed medicines 204
- unmyelinated nerve fibres 139
- upper airway
 - disorders 219–220
- upper urinary tract 280
- upper urinary tract
 - disorders 280, 283–297
 - medical 283–295
 - surgical 295–297
- uracil (U) 34–35
- urea, plasma **70**
- ureteropelvic junction
 - obstruction 295, 296
- ureterostomy, temporary
 - cutaneous 302
- ureterovesical junction
 - obstruction 302, 302
- urge incontinence 298
- urinalysis **283**, 285, 316
- urinary catheters 291
- urinary retention 297
- urinary tract *see* renal system
- urinary tract infections (UTI) 297–298
 - signs and symptoms **297**
 - surgical urinary tract disorders 296, 303
- urine output 119, **283**
- urine samples
 - collection 297, 298, 315–316
 - midstream 316
- urticaria **102**

- vaccination 64, 99, 224
- vaginal discharge 321–324
- vaginal examination 322
- vaginal infections 322, 323
- Valsalva manoeuvre 210
- vanillylmandelic acid (VMA) 172
- vasopressin (anti-diuretic hormone; ADH) 122, 237–238
- veins 180
- ventricular septal defect (VSD) 189, 189–190
- vesicle 361
- vesicostomy 303–304

- vesicoureteric reflux (VUR) 283, 295, 303, 304
- vincristine 58
- viral meningitis 173
- viruses 54, 87
- Voltarol® **150**
- vomiting 260–261
 - case studies 80, 277
 - causes **261**
 - dehydration 68–69, 71
- vulvovaginitis 322
- water retention 74
- Wegener vasculitis 285
- weight measurement 70
- wheal 361
- wheeze 121, 216, 228
- white blood cells 85–86, **86**
- WHO 3-step management of pain 149
- whooping cough 223
- Wilms' tumour 293–294, **294**
- Wolff-Parkinson-White (WPW) syndrome 209–210
- wound healing 370–373
 - complications 373
 - inflammation 91–92, 371–372
 - primary (first intention) 92, 370, 370
- secondary intention 92, 370–371, 371
- stages 93, 370, 371–372
- wounds 94, 368–373
- wrist fractures **341**
- X chromosome 31–32, 32, 43
- X-linked recessive disorders 46, 46–47
- X-rays 351
- Y chromosome 31–32, 32, 43
- Zika virus 162
- Zydol® **151**

