

Subject Index

- Acid phosphatases 111
- Acupuncture 231
- Alcohol injection 233
- Alimentary tumours 55
- Alkaline phosphatase 135
- Alkaline phosphatase bone isoenzyme (ALP-BI) 109, 117
- Alphafetoprotein (AFP) 115
- Alprostadil 228
- Aminoglutethimide 124, 129
- Amitriptyline 230
- Amphetamine 224
- Anaemia 235
- Anaesthesia dolorosa 231
- Analgesic consumption 114
- Angiosarcoma 69
- Anticonvulsants 230
- Anxiety 237–8
- Arachidonic acid 227
- Aspirin 224
- Atropine 226

- Basic multicellular unit (BMU) 16
- Bence-Jones protein 152, 155
- Benign disorders of the skeleton 220
- Beta human chorionic gonadotrophin (β-HCG) 115
- BGP 109, 117
- Biochemical monitoring 107–14, 117
- Bisphosphonates 135–42, 160, 165, 229
- Bladder carcinoma 51, 52
- Bone formation 131
- Bone formation markers 109–10
- Bone GLA protein 109
- Bone irradiation, pathological changes after 173–4
- Bone marrow 85
 - changes in 94
 - involvement of 121
 - normal 86
 - pathological 86–7
 - primary disorders 89–90
 - smears 122
 - transplantation 12
- Bone metastases
 - biology of 1–3
 - from solid tumours 90–1
 - imaging of 99–107
 - morbidity from 7–8
 - patterns of 3–5
 - UICC criteria for assessment of response in 100
- Bone modelling 12–13
- Bone pain *See* Pain and pain control
- Bone remodelling 11–30
 - growth factors in 20
 - macrophages in 21
 - normal 13–14
 - regulation of 17–21
- Bone resorption 25, 131, 142, 150–2
 - factors which stimulate 18–20
 - malignant cells in 23
 - osteoclasts in 17–18
 - tumour-associated immune cells in 23–4
- Bone resorption markers 111–114
- Bone scan 31–61, 102
 - imaging 32–40
 - new agents 41–4
 - recommended protocol 33
- Bone-seeking isotopes 123
- Bone structure 11–12
- Breast cancer 4, 5, 26, 38–41, 45–8, 75–7
 - bone scan 33, 35, 71, 73
 - cell line MCF7 25
 - chemotherapy 126–8
 - clinical trials using UICC criteria 100
 - cranial nerve lesions 181
 - direct anti-tumour therapy 123–31
 - endocrine therapy 100, 124–6
 - MRI findings 88
 - pathological fracture 209–10
 - psychological morbidity 237
 - response to treatment 100
 - systemic treatment 121, 122, 138, 142, 143
- Bronchial carcinoma 210

- Bronchogenic cancer 64
 Bupivacaine 231
 Buprenorphine 225, 226
 Buserelin 130
- CA 15-3 115
 CA-125 115
 Cachexia 27
 Calcitonin 132-5, 162, 228-9
 Calcium excretion 111, 141
 Cancellous bone 12
 remodelling of 15-17
 Carbamazepine 230
 Carcinoembryonic antigen (CEA) 115
 Cauda equina compression 7-8, 217-20
 Cerebrospinal fluid (CSF) 66
 Cervical carcinoma 52, 66, 76
 Chemotherapy 123
 in breast cancer 126-8
 in prostatic cancer 130
 Clinical nurse specialist 234-5
 Clodronate 135, 137, 141, 161, 162, 165
 Clomipramine 230
 Clonazepam 230
 Clonidine 227
 Codeine 224
 Collagen 26
 Collagenase 20
 Colonic carcinoma 70
 Compact bone *See* Cortical bone
 Computed tomography (CT) 6, 8, 70-4, 105-7
 Coproxamol 224
 Cord compression 180
 Cortical bone 11-12, 85
 remodelling of 14
 Cortical metastases 64
 Corticosteroids 162, 164, 227, 228
 Cyproterone acetate 129
 Cytokeratin antibody 122
 Cytokine-releasing factor 24
 Cytokines 23
 Cytotoxic drugs 8
- Degenerative disease 72
 Depression 237-8
 Dexamethasone 227, 228
 Dextromoramide 225
 Dextropropoxyphene 224
 Diagnostic efficiency (DE) 117
 Diamorphine 224, 225, 226
 Dichloromethylene bisphosphonate 137
 Diethylstilboestrol 129, 130
 1,25-dihydroxycholecalciferol (1,25-DHCC)
 153-5, 158
 Dimethylamino diphosphonate (DMAD) 42,
 44
 Diphosphonate 31-2, 135
 Direct anti-tumour therapy 123-31
 Doctor in support team 235
- Dopamine agonists and antagonists 229
 Dorsal root ganglion rhizolysis 232
- Electron capture 189
 Endochondral bone formation 12-13
 Endocrine therapy 111, 123, 140
 breast cancer 100, 124-6
 prostatic cancer 129-30
 Endometrial carcinoma 52
 Epidermal growth factor (EGF) 23, 26, 151
 Estramustine 130
 Etidronate 135, 140, 161, 162, 165
 Etidronate disodium 229
 External beam irradiation 171
 External beam radiotherapy 122
- Fast Field Echo (FFE) 86
 Femoral fractures 212
 Fentanyl 226
 Flare phenomenon 39
 Flutamide 129, 130
 Fractures 207-9
 see also Pathological fracture
- Gallium nitrate 141-2, 163
 Genetic basis of cancer 3
 Genital tract 52
 Genito-urinary tract tumours 51-3
 Gold-198 193
 Granulocyte-monocyte colony-stimulating
 factor (GM-CSF) 18, 24
 Growth factors 19, 23, 151
 in bone remodelling 20
- ³H-HEDP 32
 Haematogenous spread 65-6
 Haematological malignancies 26-7
 Haloperidol 226
 Head and neck tumours 55
 Hemibody irradiation 231
 Highly vascular lesions 213
 Hodgkin's disease 131
 Hospice admission 237
 Hounsfield number 105-7
 Howship's lacunae 21
 Humeral fractures 213
 Hydrocortisone 129
 Hydromorphone 226
 Hydromorphone 225, 226
 5-hydroxy indolacetic acid 195
 Hydroxyapatite 135
 Hydroxyproline 111, 135, 141, 142
 Hyoscine 226
 Hypercalcaemia 5, 40, 132, 135, 138, 142,
 149-69, 207, 235
 classification 149-50
 clinical assessment 157

- drugs used in treatment of 158
- humorally mediated 149
- indications for treatment 157
- life-threatening 158–60
- long-term control 164–5
- management of 157–65
- mechanisms of 155–7
- mediators of 150–5
- metastatic 149
- moderate 160–6
- pathogenesis of 149, 155–6
- principles of medical management 158
- specific management problems 158–65
- Hypercalciuria 141
- Hypernephroma 142
- Hypertrophic pulmonary osteoarthropathy (HPOA) 53–4
- Hypocalcaemia 111
- Immunoglobulins 196
- Insulin-like growth factor-1 (IGF-1) 20
- Intercostal nerve block 231
- Interleukin-1 (IL-1) 19–21, 23, 27, 131, 152, 155
- Intraspinal spread 66
- Inversion Recovery (IR) 86
- Iodine-123 192
- Iodine-123 labelled metaiodobenzylguanidine (mIBG) 55
- Iodine-131 188, 191–3, 197
- Iodine-131 antifibrin 196
- Iodine-131 labelled metaiodobenzylguanidine (mIBG) 55, 195, 197–200, 202
- Ionising radiation, biological effects of 172–3
- Isotope scans 8, 76–7
- Isotope scintigraphy 121
- Isotope therapy 187–205
 - dosimetry 190–1
- Ketoconazole 129
- Kidneys 49
- Leucoerythroblastic anaemia 8
- Leukaemia 26, 89
- Leukotrienes 227
- Levodopa 229
- Local therapy 122
- Long bones 69
- Lung cancer 5, 6, 53–4, 75, 121, 122, 142
 - small cell 183
- Luteinising hormone releasing hormone (LHRH) agonists 129, 130
- Lymph node deposits 66
- Lymphangiography 49
- Lymphatic spread 65
- Lymphokines 152
- Lymphoma 26, 27, 89, 152, 155
- Lymphotoxin 27
- Lytic metastases 67, 77, 207–8
- Macrophages in bone remodelling 21
- Magnetic resonance imaging (MRI) 7, 73–4, 83–97, 107, 182–3
 - bone metastases from solid tumours 90
 - principles of 83–5
 - sensitivity 89–91
 - spinal cord compression 92–3
 - technical considerations 85–6
- Malignant cells in bone resorption 23
- Malignant lymphoma 27
- MDP scan 44
- Medroxyprogesterone acetate (MPA) 124
- Medullary thyroid cancer (MTC) 199
- Melanoma 24, 55, 142
- Membranous ossification 12–13
- Metalloproteinases 20
- Metastatic bone disease 1–10
 - assessing response to treatment 8–9
 - assessment of 8
 - incidence of 4
 - pathogenesis 2
- Metastatic tumour deposits in osteolysis 21
- Methotrimopazine 226, 229
- Metoclopramide 226
- Midazolam 226
- MIRD schema 190
- Misoprostol 228
- Mithramycin 132, 162
- Monitoring response to treatment 93–5
- Monoclonal antibodies 195–7
- Morphine 223–7, 230
- Multiple fractures 213
- Multiple myeloma 34, 115, 141
- Myelofibrosis 25
- Myelography 7, 74
- Myeloma 63, 75, 89, 115, 141, 152, 155
- Nausea 235
- Nerve blocks 233
- Neuroblastoma 54–5, 197
- Neurological symptoms, prevention of 182
- Neurolytic block 231
- Non-Hodgkin's lymphoma (NHL) 131
- Non-metastatic orthopaedic conditions 220
- Non-pathological fracture 215
- Non-steroidal anti-inflammatory drugs (NSAIDs) 227–8
- Noradrenaline 227, 230
- Norpethidine 225
- Nortriptyline 230
- Occupational therapist in support team 236
- Oestrogen therapy 129
- Opiate analgesia 223–7
- Orchidectomy 130
- Osteoarthritis 221
- Osteoblast stimulating factor(s) 25, 27
- Osteoblastic metastasis 25

- Osteoblasts**
autocrine role in bone remodelling 20–1
paracrine role 18–20
Osteocalcin 109
Osteoclast-activating factor (OAF) 131, 152
Osteoclast-mediated mechanisms 132
Osteoclasts
function of 12
in bone resorption 17–18
Osteolysis, metastatic tumour deposits in 21
Osteolytic metastases 22
Osteoporosis 8, 142, 143, 208
Osteosclerosis 24–6
Ovarian cancer 52, 115
Oxycodone 225
Oxymorphone 226
- Paget's disease** 69, 132, 135, 137
Pain and pain control 7, 73, 114, 122, 129, 130, 138, 140–2, 171, 174–8, 208, 223–30
localised 175–6
multiple sites 176–8
questionnaire 114
Pamidronate 135–8, 140–2, 161, 162, 165
Pancoast tumour 64
Pancytopenia 8
Paracetamol 224
Parathyroid hormone (PTH) 18, 153
Parathyroid hormone-related peptide 131
Parathyroid-hormone-related protein (PTHrP) 26, 152, 154–7, 161, 163
Paravertebral block 232
Pathological fracture 7, 39, 69, 122, 209–15
evaluation of patient with 211
local irradiation 178, 210
management of 210–11
post-operative irradiation 214
prevention of 182
surgical fixation 178
survival rate 210
Pelvic tumours 40
Percutaneous cervical cordotomy 232
Pethidine 225
Phenobarbitone 226
Phenol 231
Phenothiazines 229
Phenytoin 230
Phosphorus-31 EHDP 192
Phosphorus-32 188, 193
Physiotherapist in support team 235–6
Pituitary alcohol injection 233
Platelet-derived growth factor (PDGF) 20, 23, 25
Polycythaemia rubra vera 193
Predictive values (PV+ and PV–) 117
Prednisolone 100, 101, 104, 227
Primary internal stabilisation 209
Procathepsin D 26
Prostaglandin-stimulating factors 151
Prostaglandins 20, 23, 26, 150, 227, 228
Prostate-specific antigen (PSA) 50, 115
Prostatic acid phosphatase (PAP) 50, 115
Prostatic cancer 4, 6–7, 24, 25, 36, 48–51, 75–6, 88, 100, 115, 121, 140, 142, 181, 210
chemotherapy 130
endocrine therapy 129–30
Psychological morbidity 237–8
Pyrophosphate 160
- Radicular pain** 8
Radiobiology research 189
Radiography 8, 66–70
Radiology 63–81, 99–101
appearances at specific sites 74–5
Radionuclide bone scanning 8
Radionuclide imaging 102–4
Radionuclides
alpha particle-emitting 188–9
beta-particle-emitting 188
characteristics of 187–9
criteria for selection 189–93
current status 197–201
internal conversion decaying 189
mechanisms for localisation 191–3
use for therapy 193–7
Radiopharmaceuticals, development for therapy 194–5
Radiotherapy 8, 122, 171–85, 230–1
clinical use of 174–83
prophylactic 182–3
treatment techniques 172
Receiver operating characteristic (ROC) analysis 93
Recombinant DNA technology 197
Regions of interest (ROI) scans 104, 106
Renal carcinoma 75, 210, 213
Renal cell carcinoma 51
Renal obstruction 40
Resorption inhibitors 132, 142
Rhenium-186 194
Rhenium-186 DMSA 194
Rhenium-186 EHDP 192, 194
- Sacro-iliac joint** 71
Samarium-153 EDTMP 192, 194, 201
Sarcomas 21
Sciatica 73
Sclerotic metastases 67, 71
Seed and soil hypothesis 121
Seminoma 53
Serotonin 230
Short Tau Inversion Recovery (STIR) 86
Skeletal disease, assessment of 8–9
Skeletal growth factor (SGF; IGF-II) 20
Skeletal metastases 4
isolated 213
role of orthopaedic surgeon in 207–22
Skeletal survey 63
Skull 74

- Skull base infiltration 181
Social worker in support team 236–7
Soft tissue reaction 69
Solid tumours, bone metastases from 90–1
Spinal cord compression 7–8, 92–3, 179,
182–3, 217–20, 231
Spinal instability 215–19
Spinal stabilisation 216
Spine 74, 88
Steroids 227–8
Stromal cells 23
Strontium-89 192, 194, 200–1
Support team 233–8
Supportive care 223–41
Surgical treatment 207–22, 230
Symptomatic care 223–41
Systemic therapy 102, 103, 121–47
- Tamoxifen 100, 104, 124, 126
Tartrate-resistant acid phosphatase (TRP) 109
Technetium-99m diphosphonate (MDP) 31,
32, 40, 41, 42, 47, 102
Teratoma 53
Testicular cancer 115
Testicular germ cell tumours 130
Thermo luminescent dosimeters (TLD) 191
Thyroid cancer 55, 75
Tibia 64
Tibial fractures 212
Transcervical femoral fractures 211–12
Transcutaneous nerve stimulation 231
Transforming growth factors alpha and beta
(TGF α , TGF β) 20, 21, 23, 25, 26, 131,
151
- Trazadone 230
Treatment response assessment 99–120
Tricyclic antidepressants 230
Tumour angiogenesis factor 2
Tumour-associated immune cells, in bone
resorption 23–4
Tumour effects on bone 21–3
Tumour markers 115–17
Tumour necrosis factors (TNF) 19, 20, 23, 27,
131, 152, 155
Tumour regression 100
- Uterine cancer 76
- Valproate 230
Valsalva's manoeuvre 4
Vertebral collapse 74, 178, 182
comparison of malignant and osteoporotic
87
Vertebral metastases 87–8
Vertebral-venous system 5
Vinyloestradiol 192
Vitamin D 158
Vitamin-D metabolites 152–3
- Yttrium-90 193, 194
Yttrium-90 EDTMP 192
- Zoladex 233