**Bone Diseases**

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| Condition | Signs and Symptoms | Pathophysiology | Etiology | Clinical Manifestations | Possible Complications | Treatment |
| Osteoporosis | Recurrent back pain, height loss, and bone fracturing (Imperial Valley College, 2008). | Mineralization breakdown and softening of the bone (McCarthy & Frassica, 2014). | Estrogen deficiency, calcium deficiency, and testosterone deficiency (Imperial Valley College, 2008). | Skeletal disorder caused by bone fractures (McCarthy & Frassica, 2014). | Hip and spine fractures (McCarthy & Frassica, 2014). | Bisphoshate medications, such as Ibandronate, Risedronate, Alendronate, and Zoledronic acid (Imperial Valley College, 2008). |
| Osteomalacia | Bone fracturing and muscle weakness (McCarthy & Frassica, 2014). | Mineralization breakdown and softening of the bone tissue (McCarthy & Frassica, 2014). | Vitamin D deficiency, kidney and liver disorders, and celiac disease (Imperial Valley College, 2008). | Weakness of the muscles and pain in the bones (McCarthy & Frassica, 2014). | Breaking of bones especially in the ribs, legs, and spine (McCarthy & Frassica, 2014). | Vitamin D supplements, calcium and phosphorous supplements (Imperial Valley College, 2008). |
| Rheumatoid Arthritis | Prolonged fatigue, weight loss, fever, and stiffness (McCarthy & Frassica, 2014). | Joint synovitis (inflammation of the joints) and pannus (infiltration of newly formed synovial tissue with inflammatory cells) (McCarthy & Frassica, 2014). | A mild deficiency of cortisol, deficiency of dehydro-epi-androsterone (DHEA), and infection by mycoplasma among other organisms (Imperial Valley College, 2008). | Intermittent joint complications, monoarticular disease, and complications of the lungs, heart, eyes, nerve tissue, kidneys, and skin among other organs (McCarthy & Frassica, 2014). | Abnormal proportion of body fat to lean mass, carpal tunnel syndrome, lung disease, heart disease, and lymphoma (Imperial Valley College, 2008). | Intake of disease-modifying anti-rheumatoid drugs (DMARDs) (McCarthy & Frassica, 2014). |
| Gout | Acute infection involves painful swollen joints, while chronic infection involves joints aching (Imperial Valley College, 2008). | Irregular lines of MSU crystals on the articular cartilage, hyperechoic, and bony erosions near tophaceous deposits (McCarthy & Frassica, 2014). | Excess uric acid in the blood or hyperuricemia and gene inheritance. | Migratory polyarthritis, posterior intersseus nerve syndrome, and general inflammation (erythema, swelling, and tenderness) (Imperial Valley College, 2008). | Recurrent gout, kidney stones, uric acid nephropathy, and spinal cord impingement (McCarthy & Frassica, 2014). | Corticosteroids, colchione, and non-steroidal anti-inflammatory drugs (NSAIDs). |
| Osteoarthritis | Cardinal joint pain upon bearing weight, abnormal swelling, and nerve impingement (McCarthy & Frassica, 2014). | Unprotected subchondral bone develops into scherosis, capsules of the joints thickens, and loss of cartilage. | Aging, obesity, infections, mechanical misalignment, and medications that stimulate digestive enzymes (McCarthy & Frassica, 2014). | Nocturnal pain that is not relieved by rest, pain in the joints, and paraesthesia (Imperial Valley College, 2008). | Joint complication, particularly in the spine, hips, and knees (Imperial Valley College, 2008). | General rest, weight reduction and management, steroid injection, and regular exercises. |

**References**

Imperial Valley College. (2008). Musculoskeletal system. Retrieved from

<http://www.imperial.edu/admin/Media/File_Upload/153-Files/Orthochronic%20Conditions%20For%20Immune%20Handouts.pdf>

McCarthy, E. F., & Frassica, F. J. (2014). *Pathology of bone and joint disorders*. Cambridge, MA: Cambridge University Press.