

## Radiology

System	Key Imaging Modalities & Techniques	Common Radiologic Findings & Pathologies
<b>General Radiology/Imaging</b>	- X-ray (plain film) – principles and indications - CT scan – contrast vs. non-contrast, cross-sectional anatomy - MRI – T1 vs. T2 weighting, functional MRI - Ultrasound – Doppler imaging, echogenicity - nuclear medicine – PET scan, bone scan - Fluoroscopy – dynamic imaging techniques	- Artifact recognition (motion, metal, beam hardening) - Contrast-induced nephropathy - Radiation exposure risks
<b>Hematopoietic &amp; Lymphoreticular</b>	- Lymph node evaluation (CT, PET scan) - Bone marrow changes (MRI) - Splenomegaly assessment (ultrasound, CT)	- Lymphadenopathy (reactive, lymphoma, metastatic disease) - Bone marrow infiltration (leukemia, metastases) - Splenic rupture, infarction
<b>Central &amp; Peripheral Nervous</b>	- CT for acute hemorrhage, stroke - MRI for demyelination, tumors - Angiography for vascular abnormalities - PET for metabolic brain activity	- Stroke (ischemic, hemorrhagic) on CT/MRI - Multiple sclerosis plaques on MRI (T2 hyperintensity) - Brain tumors (glioblastoma, meningioma) - Hydrocephalus (ventricular dilation)
<b>Skin &amp; Connective Tissue</b>	- Soft tissue ultrasound for masses, infections - MRI for deep soft tissue lesions	- Cellulitis (soft tissue edema, enhancement) - Abscess (fluid collection with rim enhancement) - Soft tissue tumors (lipomas, sarcomas)
<b>Musculoskeletal</b>	- X-ray for fractures, arthritis - CT for complex fractures, bone tumors - MRI for soft tissue injuries, ligament tears - Bone scan for metastatic disease	- Fractures (simple, comminuted, stress) - Osteoarthritis (joint space narrowing, osteophytes) - Osteomyelitis (bone destruction, periosteal reaction) - Ligament and tendon tears (ACL, rotator cuff)
<b>Respiratory</b>	- Chest X-ray for pneumonia, effusions, lung masses - CT for interstitial lung disease, PE, lung cancer staging - MRI for mediastinal and hilar masses - Pulmonary angiography for PE	- Pneumonia (airspace opacities, consolidation) - Pulmonary embolism (filling defect in pulmonary arteries) - Lung cancer (spiculated nodule, mediastinal lymphadenopathy) - Pleural effusion (blunted costophrenic angle)
<b>Cardiovascular</b>	- Echocardiography (transthoracic, transesophageal) - Coronary CT angiography for CAD - Cardiac MRI for myocarditis, cardiomyopathies - nuclear stress test for ischemia	- Myocardial infarction (hypokinesis, perfusion defect) - Aortic aneurysm (dilated aortic diameter) - Valvular heart disease (stenosis, regurgitation) - congenital heart disease (tetralogy of Fallot, septal defects)
<b>Gastrointestinal</b>	- Abdominal X-ray for bowel obstruction, free air - CT for appendicitis, diverticulitis, pancreatitis - MRI for liver lesions, biliary obstruction - Barium studies for dysphagia, GERD - Endoscopic ultrasound for pancreatic/biliary disease	- Bowel obstruction (dilated loops, air-fluid levels) - Appendicitis (enlarged appendix, periappendiceal fat stranding) - Liver cirrhosis (nodular contour, ascites) - Gallstones (echogenic shadowing on ultrasound)
<b>Renal/Urinary</b>	- Ultrasound for kidney stones, hydronephrosis - CT for nephrolithiasis, renal masses - MRI for renal	- Kidney stones (radiopaque calculi on CT) - Hydronephrosis (dilated renal pelvis) -

## Radiology

System	Key Imaging Modalities & Techniques	Common Radiologic Findings & Pathologies
	function assessment - Voiding cystourethrogram (VCUG) for reflux	Polycystic kidney disease (enlarged kidneys with multiple cysts) - Renal tumors (hypervascular mass)
<b>Reproductive</b>	- Pelvic ultrasound for ovarian and uterine pathology - Mammography for breast cancer screening - Hysterosalpingography (HSG) for fallopian tube patency - Testicular ultrasound for masses, torsion	- Ovarian cysts, polycystic ovaries - Uterine fibroids (hypoechoic mass on ultrasound) - Breast cancer (spiculated mass, microcalcifications) - Testicular torsion (absent blood flow on Doppler)
<b>Endocrine</b>	- Thyroid ultrasound for nodules - Sestamibi scan for parathyroid adenomas - Adrenal CT/MRI for adrenal masses - Pituitary MRI for adenomas	- Thyroid nodules (solid, hypoechoic with microcalcifications) - Hyperparathyroidism (enlarged parathyroid gland on scan) - Adrenal adenoma (well-circumscribed, lipid-rich mass) - Pituitary adenoma (enlarged sella turcica)