

CT

Procedure Name	Brief Description	Exam Clarifications
CT	Computed Tomography—cross sectional imaging done on any part of the body; frequently done with IV contrast to highlight vascular structures and oral contrast to highlight bowel.	Allergies to IV contrast and kidney issues do not typically contraindicate the use of oral contrast (see page 2).
CT Head Without IV Contrast	Cross sectional imaging of the brain/skull.	Bleeding, subdural hematoma, headache, stroke, trauma, and fracture.
CT Head With IV Contrast	Cross sectional imaging of the brain looking for mass/tumor.	Mass, follow up mass and brain tumor.
CT Angio Head With IV Contrast	Arterial phase imaging of the intracranial vessels.	Aneurysm, arterial stenosis, and vascular malformation.
CT Angio Neck With IV Contrast	Arterial phase imaging of the vessels in the neck.	Carotid stenosis and CVA.
CT Thorax With IV Contrast	Venous phase imaging from top of chest to just below the diaphragm.	Mass, tumor, abscess, pneumonia, lung cancer, staging and lymphadenopathy (not for pulmonary embolus). Initial characterization of solitary lung nodule.
CT Thorax Without IV Contrast	Non-contrast imaging of the chest.	Lung nodule follow-up, high resolution, and interstitial lung disease.
CT Angio Thorax With IV Contrast	Arterial imaging of the thoracic aorta. (may have pre-images and venous imaging as needed per diagnosis)	Thoracic aortic aneurysm, Aortic coarctation, thoracic aortic stent graft planning, Thoracic aortic stent graft follow-up, Thoracic trauma suspected vascular injury,
CT Pulmonary Embolism		R/O pulmonary embolism (specify PE protocol) Chest Pain, Shortness of breath
CT Angio Thorax and Abdomen with iv contrast	Arterial imaging of the thoracic and abdominal aorta. (may have pre-images and venous imaging as needed per diagnosis)	Aortic dissection (diagnosis or follow-up), thoracic-abdominal aneurysms, Takayasu's arteritis
CT Angio Abdomen and Pelvis with iv contrast	CT angio abdomen pelvis arterial phase imaging of the abdominal aorta and iliacs (may have pre-contrast images and venous imaging as needed per diagnosis)	Abdominal aortic aneurysm or pseudoaneurysm (screening, f/u, or pre-graft planning) Iliac aneurysm or pseudoaneurysm (external or internal) Common femoral aneurysm or pseudoaneurysm
CT Abdomen With and Without IV Contrast	Non-contrast and contrast images of liver, kidney, or adrenals (may have both arterial, and venous imaging, as needed per diagnosis). Typically done with oral contrast.	Renal mass, renal cell carcinoma, adrenal adenoma, post ablation, post partial nephrectomy follow-up
CT Abdomen With IV Contrast	Venous phase imaging from above diaphragm to iliac crest.	Liver mass, hepatocellular carcinoma, cirrhosis (liver protocol, dual phase liver).

CT Abdomen and Pelvis With IV Contrast	Venous phase imaging from above diaphragm to below pelvis (typically done with oral contrast).	Abdomen pain, appendicitis, RLQ pain, diverticulitis, abscess, lymphadenopathy, metastasis, and cancer staging.
CT Abdomen and Pelvis Without IV Contrast	Non-contrast imaging either because of renal insufficiency or for renal stones.	Kidney stones—no oral contrast necessary. Renal insufficiency—oral contrast does not harm the kidneys and can be helpful.
CT Urogram	Non-contrast, venous phase and delayed phase imaging done for urinary system problems (with IV contrast and no oral contrast).	Full evaluation of the collecting system, ureters, and bladder in case of hematuria (adult only).
CT Lung Cancer Screening	Lung cancer screening for high-risk patients. This is a low dose, non-contrast exam.	Patients 50 to 80 years of age and 20 or more packs per year smoking history and currently smoke or have quit within the past 15 years.

CT PREMEDICATION FOR PATIENTS WITH CONTRAST ALLERGY

Patients with history of mild or moderate prior allergic reaction to iodinated contrast (such as hives, rash, pruritis, itchy or scratchy throat, or throat tightness or hoarseness without dyspnea) must be pre-medicated prior to IV contrast CT scan (not oral contrast).

- Patients with prior history of physiologic reactions to iodinated contrast (such as nausea, vomiting, isolated chest pain, vasovagal reaction, or dizziness) and patients with history of shellfish allergy do not require premedication.
- For patients with prior history of severe life-threatening reaction to iodinated contrast (such as anaphylactic shock or laryngeal edema), speak with a radiologist before ordering the exam. Consider non contrast CT (no IV and no oral iodinated contrast) or alternate imaging modality. A barium-based oral contrast should be used if deemed necessary in this group.

Premedication protocol

- Prednisone:

50 mg PO (three doses total) to be taken 13 hours, 7 hours and 1 hour prior to exam

- Diphenhydramine (Benadryl):

50 mg PO to be taken 1 hour prior to exam

MRI		
Body Part	Reason for Exam	Exam to be Ordered
Head	Headache without focal symptoms Stroke, CVA, TIA Dizziness and giddiness Seizures (children) Alzheimer's, dementia, memory loss Injury (please specify) Mental status changes, confusion CSF flow study for Chiari Cranial nerve lesions Dizziness, vertigo IAC/hearing loss Multiple sclerosis Tumor/mass/cancer/mets Headache with focal symptoms Vascular lesions Neurofibromatosis HIV Seizures (adult new onset) Infection Vision changes Mets Pituitary lesion, elevated prolactin (Please add comment: pituitary) Tumor perfusion for necrosis, etc. (needs radiologist approval, also specific note for gamma knife protocol) Tumor spectroscopy (needs radiologist approval, also specific note for gamma knife protocol) Trigeminal neuralgia	MRI Brain (Used to be split out into IAC's, Pituitary, CSF flow, MRA, MRV, Perfusions)
Head	Infection Tumor/mass/cancer/mets Pain Vocal cord paralysis Parotid gland Submandibular glands	MRI Neck Current (used to be MRI Soft Tissue Neck)
Head	Optic neuritis Grave's disease Trauma Exophthalmos, proptosis Tumor/mass/cancer/mets Pseudotumor Vascular lesions	MRI Orbits/Sinus (used to be MRI Orbits/Face/Neck)
Spine	Injury, plexopathy Tumor/mass/cancer/mets Plexitis (viral, radiation, autoimmune)	MRI Pelvis (used to be lumbo-sacral plexus)
Spine	Injury, plexopathy Tumor/mass/cancer/mets Plexitis (viral, radiation, autoimmune)	MRI Brachial Plexus (shoulder)
Lower Extremity	Trauma Muscle tear Muscle strain	MRI Lower Leg (used to be tibia/fibula)

	Pain Pain with history of cancer Metastasis Tumor/mass/cancer/mets Lump Infection Osteomyelitis Abscess	
Arthrograms	Cartilage abnormality Meniscus abnormality Labrum abnormality Loose bodies	Arthrogram Joint With and Without

PET CT

Area of Concern	Reason for Exam	Exam to be Ordered	CPT Code
Brain	FTD (frontotemporal dementia) vs AD (Alzheimer's dementia)	PET BRAIN DEMENTIA	78608
Brain	Epilepsy	PET BRAIN SEIZURE	78608
Brain	Brain tumor, Tumor vs Necrosis	PET BRAIN TUMOR *INITIAL TREATMENT	78608
Brain	Brain tumor, Tumor vs Necrosis	PET BRAIN TUMOR **SUBSEQUENT TREATMENT	78608
Brain	Cognitive decline, β -amyloid plaque evaluation	PET CT BRAIN AMYLOID IMAGING	78814
Cardiovascular	Cardiac Sarcoidosis	PET CT MYOCARDIAL IMAGING FOR SARCOIDOSIS W TRANS	78433
Cardiovascular	Assessment of myocardial viability: differentiating ischemia from scar and predicting improvement	PET CT MYOCARDIAL IMAGING FOR VIABILITY W TRANS	78433
Cardiovascular	Coronary artery and microvascular disease Risk assessment for major surgery after myocardial infarction For patients with a large body habitus	PET CT MYOCARDIAL PERF MULTIPLE STUDIES REST OR STRESS W TRANS	78431 + 78434
Cardiovascular	Coronary artery and microvascular disease with viability assessment	PET CT MYOCARD PERFUSION/METABOLIC VIABILITY STRESS	78433
Neuroendocrine	Well-differentiated neuroendocrine tumor Carcinoid tumor, Paraganglioma	PET CT DOTATATE TORSO *INITIAL	78815
Neuroendocrine	Well-differentiated neuroendocrine tumor Carcinoid tumor, Paraganglioma	PET CT DOTATATE TORSO *SUBSEQUENT	78815
Neuroendocrine	Medullary thyroid cancer Tumor induced osteomalacia	PET CT DOTATATE WHOLE BODY *INITIAL	78816
Neuroendocrine	Medullary thyroid cancer Tumor induced osteomalacia	PET CT DOTATATE WHOLE BODY *SUBSEQUENT	78816
Prostate	Prostate cancer with suspected metastasis who are candidates for initial definitive therapy.	PET CT PSMA TORSO *INITIAL	78815
Prostate	Prostate cancer with suspected recurrence based on elevated serum prostate-specific antigen (PSA) level.	PET CT PSMA TORSO *SUBSEQUENT	78815
Tumor	Diagnosis -Clarify abnormal CT -Determine biopsy site/location -Determine benign vs. malignant pulmonary nodule, masses, or adenopathy Staging all cancer types except prostate Whole body, Melanoma, Myeloma	PET CT TORSO *INITIAL TREATMENT	78815

Tumor	Diagnosis -Clarify abnormal CT -Determine biopsy site/location -Determine benign vs. malignant pulmonary nodule, masses, or adenopathy Staging all cancer types except prostate Whole body, Melanoma, Myeloma	PET CT WHOLE BODY *INITIAL TREATMENT	78816
Tumor	Restaging most cancer types	PET CT TORSO *SUBSEQUENT TREATMENT	78815
Tumor	Restaging most cancer types	PET CT WHOLE BODY *SUBSEQUENT TREATMENT	78816

*Initial=diagnosis and staging of cancer.

**Subsequent= treatment monitoring, restaging, and detection of suspected recurrence.

PET CT Scheduling Contact Information

Location	Phone	Fax
Corewell Health East		
Lenox, Royal Oak, St. Clair Shores & Troy	248-898-5785	248-898-1964
Canton, Dearborn, Farmington Hills, Livonia, Southgate, Trenton, Wayne	734-274-5114	734-259-6241

Nuclear Medicine

Area of Concern	Reason for Exam	Exam to be Ordered	CPT Code
Bone Imaging	Osteomyelitis; Stress Fracture; Complex regional pain syndrome (or RSD), avascular necrosis, Heterotrophic ossification, Loosening of prosthesis, Osteoid Osteoma, Osteochondritis juvenilis, compression fracture	NM BONE 3 PHASE LIMITED NM BONE 3 PHASE WITH SPECT CT	Limited: 78315 SPECT CT 78830
Bone Imaging	Fracture/Pain/pain injury in specific area	NM BONE LIMITED	78830
Bone Imaging	Metastasis, elevated alkaline phosphatase, skeletal pain, and aseptic necrosis of bone, occult fracture diagnosis, arthritis, and heterotopic ossification, various carcinomas	NM BONE TOTAL BODY	78306
Bone Imaging	Pain, lesion, compression fracture, spondylosis	NM BONE WITH SPECT CT	78830
Bone Infection	Infection, loosening of joint	NM INFECTION WBC LIMITED	78800
Cardiovascular	Chest pain, coronary artery disease, pre-op clearance	CV NM STRESS MPI EXERCISE CV NM STRESS MPI PHARMACOLOGICAL CV NM STRESS CARDIOLOGY INTERP** (EAST ONLY) **HAS TO BE ORDERED WITH THE MPI EXERCISE OR MPI PHARMACOLOGICAL	MPI Exercise: 78452 MPI Pharmacological: 78452 Cardiology Interp: 93015, 93016, 93018 Stress Test: 93017
Cardiovascular	Evaluate Ejection Fraction, pre-chemotherapy, post chemotherapy	CV NM MUGA SCAN	78472
Cardiovascular	Amyloidosis, unspecified	NM CARDIAC AMYLOID SPECT CT	78830
Gastro-intestinal/Hepatobiliary	Gastroparesis	NM GASTRIC EMPTYING	78264
Gastro-intestinal/Hepatobiliary	RUQ Pain, cholecystitis, acute	NM HEPATOBILIARY	78226
Gastro-intestinal/Hepatobiliary	RUQ Pain, cholecystitis, chronic, dyskinesia	NM HEPATOBILIARY FOR EJECTION FRACTION	78227
Gastro-intestinal/Hepatobiliary	Dysfunction of sphincter of oddi, Hopkins	NM HEPATOBILIARY FOR POST CHOLE PAIN SYNDROME	78227
Pulmonary	Evaluate for Pulmonary Embolism	NM LUNG VENTILATION AND PERFUSION (Most common) **NEEDS CHEST XRAY WITHIN 24 HOURS OF LUNG SCAN	78582
Pulmonary	Lung Cancer, evaluate differential pulmonary function, surgical evaluation	NM LUNG PERFUSION QUANTITATIVE	78815
Lymphoscintigraphy Breast	Sentinel Node Localization, Breast cancer	NM LYMPHOSCINTIGRAPHY BREAST INJ ONLY RIGHT NM LYMPHOSCINTIGRAPHY BREAST INJ ONLY LEFT	38792

		NM LYMPHOSCINTIGRAPHY BREAST INJ ONLY BILATERAL NM LYMPHOSCINTIGRAPHY BREAST WITH SCAN RIGHT NM LYMPHOSCINTIGRAPHY BREAST WITH SCAN LEFT NM LYMPHOSCINTIGRAPHY BREAST WITH SCAN BILATERAL	78815
Lymphoscintigraphy Lymphedema	Swelling, extremity	NM LYMPHOSCINTIGRAPHY LYMPHEDEMA	78195
Lymphoscintigraphy Melanoma	Melanoma, vulvar cancer, sentinel node localization	NM LYMPHOSCINTIGRAPHY MELANOMA	78195
Thyroid	Hyperthyroidism, hypothyroidism, goiter, graves' disease	NM THYROID I123 UPTAKE AND SCAN (MOST COMMON)	78014
Thyroid	Hyperthyroidism, hypothyroidism, goiter, graves' disease	NM THYROID SCAN TC99M (WITHOUT UPTAKE)	78013
Thyroid	Thyroid Carcinoma	NM THYROID BODY SCAN I131 AND UPTAKE (EAST) NM THYROID BODY SCAN I123 AND UPTAKE (WEST)	78018, 78020
Thyroid Therapy	Hyperthyroidism, hypothyroidism, goiter, graves' disease, thyroid cancer	NM THYROID THERAPY CANCER ABLATION NM THYROID THERAPY HYPERTHYROID	79005
Parathyroid	(SPECT CT Preferred study method), hypercalcemia, kidney stones, Primary hyperparathyroidism, elevated blood calcium, elevated PTH, neck mass, thyroid / parathyroid nodule	NM PARATHYROID WITH SPECT CT (MOST COMMON) NM PARATHYROID WITH SPECT	SPECT CT: 78072
Renal	Hydronephrosis, ureteral stricture, congenital malformation of kidney, prior renal stenting, obstructing renal calcification, no obstructing renal calcification, evaluate renal function, DMSA: Renal scarring, renal mass	NM RENAL LASIX FLOW AND FUNCTION (MOST COMMON)	78708
Renal	Hydronephrosis, ureteral stricture, congenital malformation of kidney, prior renal stenting, obstructing renal calcification, no obstructing renal calcification, evaluate renal function, DMSA: Renal scarring, renal mass	NM RENAL FLOW AND FUNCTION (WITHOUT LASIX)	78707
Renal	Hydronephrosis, ureteral stricture, congenital malformation of kidney, prior renal stenting, obstructing renal calcification, no obstructing renal calcification, evaluate renal function, DMSA: Renal scarring, renal mass	NM RENAL STATICS ONLY (DMSA RENAL)	78700

Neuro	Seizures, Parkinsonian-like symptoms	NM BRAIN DATSCAN SPECT	78803
Neuro	Memory loss, amnesia, assess cerebral blood flow, seizure disorder (epilepsy)	NM BRAIN PERFUSION SPECT	78803
Neuro	Shunt Patency	NM BRAIN SHUNT	78645
Neuro	Normal Pressure Hydrocephalus	NM BRAIN CISTERNOGRAM	7863

Ultrasound

Body Part	Reason for Exam	Exam to be Ordered	Preparation
Abdominal	Nausea/vomiting Abdominal pain Bloating/abdominal distension Assess multiple organs Metastasis Personal history of cancer	US Abdomen Complete	Nothing to eat or drink for 8 hours
Abdominal	Gallstones Elevated LFT's Pancreatic pathology Hepatomegaly Hemangioma Cholecystitis Splenomegaly Splenic trauma	US Right Upper Quadrant- US Gallbladder (Unless specified all these orders include a full right upper quadrant scan)	Nothing to eat or drink for 8 hours
Abdominal	Gallstones Elevated LFT's Pancreatic pathology Hepatomegaly Hemangioma Cholecystitis Splenomegaly Splenic trauma	US Right Upper Quadrant- US Pancreas (Unless specified all these orders include a full right upper quadrant scan)	Nothing to eat or drink for 8 hours
Abdominal	Gallstones Elevated LFT's Pancreatic pathology Hepatomegaly Hemangioma Cholecystitis Splenomegaly Splenic trauma	US Right Upper Quadrant- US Liver with Ducts (Unless specified all these orders include a full right upper quadrant scan)	Nothing to eat or drink for 8 hours
Kidneys	Hydronephrosis/ obstruction Renal cancer Neurogenic bladder Dialysis Pyelonephritis/ cystitis/UTI Renal stone Flank pain Elevated labs (BUN/CR) Hematuria Post void residual Urinary retention Bladder diverticula Renal failure Trauma/hematoma	US Renal Complete with Bladder	Encourage oral hydration prior to exam. Do not empty bladder for 1 hour prior to exam.
Kidneys	Hypertension Renal vein and artery patency Renal artery stenosis Renal artery aneurysm Renal vein thrombosis	USV Renal Artery Duplex Bilateral	Nothing to eat or drink for 8 hours prior to exam
Pelvis	Pelvic/adnexal pain Ovarian cyst	US Pelvis Complete with Endovaginal	Drink 32 ounces of fluids one hour prior to

	Ovarian torsion Fibroids Enlarged uterus/ovaries Dysfunctional uterine bleeding Post menopausal bleeding Menorrhagia Abnormal CT/MRI Abnormal pelvic exam Mass/ovarian neoplasm Precocious puberty Polycystic ovarian disease Amenorrhea Dysmenorrhea Localization of IUD Retained products of conception Pelvic congestion Fibroid embolization Metastasis	(Transabdominal and endovaginal imaging- use this exam for all postmenarchal females)	exam and DO NOT void.
Pelvis	Pelvic/adnexal pain Ovarian cyst Ovarian torsion Fibroids Enlarged uterus/ovaries Dysfunctional uterine bleeding Post menopausal bleeding Menorrhagia Abnormal CT/MRI Abnormal pelvic exam Mass/ovarian neoplasm Precocious puberty Polycystic ovarian disease Amenorrhea Dysmenorrhea Localization of IUD Retained products of conception Pelvic congestion Fibroid embolization Metastasis	US Pelvis Complete with Doppler and Endovaginal (Transabdominal and endovaginal imaging with Doppler) Doppler: indicates that endovaginal and ovarian doppler will be performed. Use this order for postmenarchal females with ovarian doppler for acute pain, enlarged ovary, and rule out torsion.	Drink 32 ounces of fluids one hour prior to exam and DO NOT void
Pelvis	Pain Ectopic Miscarriage Viability Vaginal bleeding Dating for early pregnancy	US OB <14 weeks Single Gestation	Drink 32 ounces of fluids one hour prior to exam and DO NOT void.
MSK	Muscle tears Ruptures Carpal tunnel Bursitis Tenosynovitis Tendon/ligament injury Fluid in join capsule	US Extremity Joint	No prep
Hernias (some MSK)	Abscess/mass/swelling/lump Hernia Cyst Hematoma	US Extremity Soft Tissue	No prep

	Lymph node Fluid collection		
Aortas	AAA Pulsatile aorta Bruit	USV Aorta Duplex Complete	Nothing to eat or drink 4 hours prior to exam
Aortas	Use if meet category 3 risk factors, history of tobacco use, male aged 65- 75, family history	USV AAA Screening	Nothing to eat or drink 4 hours prior to exam
Lower Extremity	(Awaiting response from vascular lab- some scans performed in vascular lab and some in US department)	USV Venous Lower Extremity Duplex	No prep
Lower Extremity	(Awaiting response from vascular lab- some scans performed in vascular lab and some in US department)	USV Arterial Lower Extremity Duplex Bilateral	No prep
Lower Extremity	(Awaiting response from vascular lab- some scans performed in vascular lab and some in US department)	USV Arterial Lower Extremity Duplex with ABI	No prep
Breast	Outpatient to evaluate any breast concern: -Adult male patients -Adult female patients -Post-menarchal pediatric female patients	BCS Breast	No prep
Breast	ER/inpatient to evaluate for abscess in: -Adult male patients -Adult female patients	US Breast	No prep
Axilla	Outpatient to evaluate axillary lump/concern in: -Adult female patients	BCS Axilla	No prep
Axilla	Outpatient/inpatient/ER to evaluate any breast concern in: -All pediatric male patients (<18 years old) -All pre-menarchal female patients To evaluate non-breast concern in chest: -Adult male patients	US Axilla	No prep

Mammography Ordering Decision Tree

