



CLINICAL GUIDELINES

Preface to the Imaging Guidelines

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eviCore healthcare Clinical Decision Support Tool Diagnostic Strategies: This tool addresses common symptoms and symptom complexes. Imaging requests for individuals with atypical symptoms or clinical presentations that are not specifically addressed will require physician review. Consultation with the referring physician, specialist and/or individual's Primary Care Physician (PCP) may provide additional insight.

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Preface to the Imaging Guidelines

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Preface-1: Guideline Development

- The eviCore healthcare (eviCore) evidence-based, proprietary clinical guidelines evaluate a range of advanced imaging and procedures, including CT, MRI, PET, and Radiation Oncology, Sleep Studies and Cardiac and Spine interventions.
- eviCore reserves the right to change and update the guidelines. The guidelines undergo a formal review annually. eviCore's guidelines are based upon major national and international association and society guidelines and criteria, peer-reviewed literature, major treatises and, input from health plans, practicing academic and community-based physicians.
- These Guidelines are not intended to supersede or replace sound medical judgment, but instead, should facilitate the identification of the most appropriate imaging procedure given the patient's clinical condition. These guidelines are written to cover medical conditions as experienced by the majority of patients. However, these guidelines may not be applicable in certain clinical circumstances, and physician judgment can override the guidelines.
- Clinical decisions, including treatment decisions, are the responsibility of the patient and his/her provider. Clinicians are expected to use independent medical judgment, which takes into account the clinical circumstances to determine patient management decisions.
- eviCore supports the Choosing Wisely initiative (www.choosingwisely.org) by the American Board of Internal Medicine (ABIM) Foundation and many national physician organizations, to reduce the overuse of diagnostic tests that are low value, no value, or whose risks are greater than the benefits.

Preface-2: Benefits, Coverage Policies, and Eligibility Issues

- Benefits, coverage policies, and eligibility issues pertaining to each Health Plan may take precedence over eviCore's guidelines. Providers are urged to obtain written instructions and requirements directly from each payor.

Medicare Coverage Policies

- For Medicare and Medicare Advantage enrollees, the coverage policies of CMS (Centers for Medicare and Medicaid Services) take precedence over eviCore's guidelines.

Investigational and Experimental Studies

- Certain imaging studies described in these guidelines are considered investigational by various payers, and their coverage policies may take precedence over eviCore's guidelines. Certain advanced imaging studies, or other procedures, may be considered investigational and experimental if there is a paucity of supporting evidence; if the evidence has not matured to exhibit improved health parameters or; the advanced imaging study/procedure lacks a collective opinion of support.

Clinical and Research Trials

- Similar to investigational and experimental studies, clinical trial imaging requests will be considered to determine whether they meet Health Plan coverage and eviCore's evidence-based guidelines.
 - ◆ State and federal legislations may need to be considered in the review of advanced imaging requests. For example:
 - Various Breast Density Laws
 - Texas HB 1290 Coronary Calcium CT Law

Reference

1. https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AcuteInpatientPPS/Downloads/FY_14_Definition_of_Medicare_Code_Edits_V_31_Manual.pdf.

Preface-3: Clinical Information

- eviCore guidelines use an evidence-based approach to determine the most appropriate imaging procedure for each patient, at the most appropriate time in the diagnostic and treatment cycle. eviCore guidelines direct by:
 - ◆ Clinical presentation of the patient, not by the studies requested
 - ◆ Current evaluation (within 60 days), to include any of the following: a recent detailed history, physical examination, or appropriate laboratory studies. The Spine and Musculoskeletal guidelines require x-ray studies from when the current episode of symptoms has started or changed; x-ray imaging does not have to be within the past 60 days.
 - Advanced imaging should not be ordered prior to clinical evaluation of a patient by the physician treating the individual. This may include referral to Consultant Specialist who will make further treatment decisions.
 - Other meaningful contact (telephone call, electronic mail or messaging) by an established patient can substitute for a face-to-face clinical evaluation.
 - An exception can be made if the patient is undergoing a guideline-supported, scheduled follow-up imaging evaluation. These routine surveillance indications are addressed in the applicable guideline sections.

Imaging – General Process

- “Standard” or “conventional” imaging is most often performed in the initial and subsequent evaluations of malignancy. Standard or conventional imaging includes plain film, CT, MR, or US.
- Often, further advanced imaging is needed when initial imaging, such as ultrasound or CT does not answer the clinical question. Uncertain, indeterminate, inconclusive, or equivocal may describe these situations.
- Requests for many Healthcare Common Procedure Coding System (HCPCS) codes, including nonspecific codes such as S8042 [Magnetic resonance imaging (MRI), low-field], should be redirected to a more appropriate and specific CPT® code. Exceptions are noted in the applicable guidelines

Imaging – Contrast Media

- Contrast is the second important component, along with the advanced imaging modality (refer to specific guideline contrast section)
 - ◆ If, during the performance of a non-contrast imaging study, there is the need to use contrast in order to evaluate a possible abnormality, then that is appropriate.¹

Imaging – Metal devices or implants

- Most orthopedic and dental implants are not magnetic. These include hip and knee replacements; plates, screws, and rods used to treat fractures; and cavity fillings. Yet, all of these metal implants can distort the MRI image if near the part of the body being scanned.

- ◆ Other implants, however, may have contraindications to MRI. These include:
 - Pacemakers
 - ICD or heart valves
 - Metal implants in the brain
 - Metal implants in the eyes or ears
 - Infusion catheters and bullets or shrapnel.
- ◆ CT can therefore be an alternative study to MRI in these scenarios.

Computed Tomography (CT):

- CT can be performed without contrast, with contrast, or without and with contrast depending on the clinical indication and body part.
- CT without contrast maybe appropriate if clinical criteria are met AND:
 - ◆ Patient has elevated BUN and/or creatinine
 - ◆ Renal insufficiency
 - ◆ Renal failure and allergies to iodinated CT contrast
 - ◆ Or thyroid disease.
- There are significant adverse effects associated with the use of Iodinated contrast media. These include hypersensitivity reactions, thyroid dysfunction, and contrast-induced nephropathy (CIN). Patients with impaired renal function are at increased risk for CIN.².
- Both contrast CT and MRI may be considered to have the same risk profile with renal failure (GFR < 30 mL/min).
- The use of CT contrast should proceed with caution in pregnant and breast feeding patients. There is a theoretical risk of contrast to the fetal and infant thyroid. The procedure can be performed if the specific need for that procedure outweighs risk to the fetus. Breast feeding patients may pump and discard breast milk for 12-24 hours after the contrast injection.

Magnetic Resonance Imaging (MRI):

- MR imaging may be utilized through these guidelines, when further definition is needed based on CT imaging.
- MRI imaging may be preferred in cases of renal failure, and in patients allergic to intravenous CT contrast.
 - ◆ Both contrast CT and MRI may be considered to have the same risk profile with renal failure (GFR < 30 mL/min).
 - ◆ Gadolinium can cause Nephrogenic Systemic Fibrosis (NSF). The greater the number exposure of gadolinium in patients with a low GFR (especially if on dialysis), the greater the chance of NSF.
 - ◆ Multiple studies have demonstrated potential for gadolinium deposition following the use of gadolinium-based contrast agents (GBCAs) for MRI studies.^{3,4,5,6,7} The FDA has advised: *Minimize repeated GBCA imaging studies when possible, particularly closely spaced MRI studies.*⁸

- A CT (contrast mirrors what is appropriate for MRI) may be approved in place of an MRI when:
 - ◆ Clinical criteria are met for MRI AND there is a contraindication to having an MRI (pacemaker, ICD, insulin pump, neurostimulator, etc.)
 - ◆ Caution should be taken in the use of gadolinium in patients with renal failure
 - ◆ The use of gadolinium contrast agents is contraindicated during pregnancy unless the specific need for that procedure outweighs risk to the fetus.
 - ◆ MRI can be performed for non ferromagnetic body metals, although some imaging facilities will consider it contraindicated if recent surgery, regardless of the metal type
- MRI should not be used as a replacement for CT, for the reason of lack of ionizing radiation, especially when the indication does not meet these Guidelines, since it does not solve the problem of over-utilization.

Overutilization of Advanced Imaging:

- An increasing number of current reports describe over-utilization in all areas of advanced imaging, which may include:
 - ◆ High level testing without consideration of lesser invasive, lesser cost and low technology options
 - ◆ Excessive radiation and costs with unnecessary testing
 - ◆ Defensive medical practice
 - ◆ CT without and with contrast (so called “double contrast studies) requesting, which are needed less often
 - ◆ MRI trading in place of CT scanning to avoid radiation without considering the primary need for imaging
 - ◆ Adult CT settings used for smaller people and children
 - ◆ Unnecessarily ordering imaging procedures when the same or similar studies have already been conducted.
- A review of the imaging histories of all patients presenting for studies has been recognized as one of the more important processes that can be implemented. By recognizing that a duplicate or questionably indicated examination has been ordered for patients, it may be possible to avoid exposing them to unnecessary risks.^{9,10} To avoid these unnecessary risks, the precautions below should be considered.
 - ◆ The results of initial diagnostic tests or radiologic studies to narrow the differential diagnosis should be obtained prior to performing further tests or radiologic studies.
 - ◆ The clinical history should include a potential indication such as a known or suspected abnormality involving the body part for which the imaging study is being requested. These potential indications are addressed in greater detail within the applicable guidelines.
 - ◆ The results of the requested imaging procedures should be expected to have an impact on patient management or treatment decisions.

- ◆ Repeat imaging studies are not generally necessary unless there is evidence of disease progression, recurrence of disease, and/or the repeat imaging will affect a patient's clinical management.

References

1. Bettmann MA. Frequently Asked Questions: Iodinated Contrast Agents. *Radiographics* 2004; 24:S3–S10
2. Andreucci M, Solomon R, Tasanarong A. Side Effects of Radiographic Contrast Media: Pathogenesis, Risk Factors, and Prevention. *BioMed Research International*. 2014;2014:1-20.. <https://doi.org/10.1155/2014/741018>.
3. McDonald RJ, McDonald JS, Kallmes DF, et al. Intracranial Gadolinium Deposition after Contrast-enhanced MR Imaging. *Radiology*. 2015;275(3):772-782.
4. Kanda T, et al. High signal intensity in the dentate nucleus and globus pallidus on unenhanced T1-weighted MR images: relationship with increasing cumulative dose of a gadolinium-based contrast material. *Radiology* 2014;270:834–841. pmid:24475844
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7. Radbruch A, et al. Intraindividual Analysis of Signal Intensity Changes in the Dentate Nucleus After Consecutive Serial Applications of Linear and Macrocyclic Gadolinium-Based Contrast Agents. *Investigative Radiology* 2016;51:683–690. pmid:27495187
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9. ES Amis, et al. American College of Radiology White Paper on Radiation Dose in Medicine. *J Am Coll Radiol* 2007;4:272-284.
10. FDA. White Paper: Initiative to Reduce Unnecessary Radiation Exposure from Medical Imaging. Page Last Updated: 02/05/2018. <https://www.fda.gov/Radiation-EmittingProducts/RadiationSafety/RadiationDoseReduction/ucm199994.htm>

Preface-4: Coding Issues

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Preface-4.1: 3D Rendering

CPT® 76376 and CPT® 76377:

- Both codes require concurrent supervision of the image post-processing 3D manipulation of the volumetric data set and image rendering.
- These two codes differ in the need for and use of an independent workstation for post-processing.
 - ◆ CPT® 76376 reports procedures not requiring image post-processing on an independent workstation.
 - ◆ CPT® 76377 reports procedures that require image post-processing on an independent workstation.
- These 3D rendering codes should not be used for 2D reformatting.
- Two-dimensional reconstruction (e.g. reformatting an axial scan into the coronal plane) is now included in all cross-sectional imaging base codes and is not separately reimbursable.
- Some payers do not reimburse separately for CPT® 76376 or CPT® 76377. In addition, these CPT® codes are not included in every eviCore patient's radiology management program.
 - ◆ The codes used to report 3D rendering for ultrasound and echocardiography are also used to report the 3D post processing work on CT, MRI, and other tomographic modalities.
- Providers may be required to obtain prior authorization on these 3D codes even if prior authorization is not required for the echocardiography and/or ultrasound procedure codes. It may appear that eviCore pre-authorizes echocardiography and/or ultrasound when, in fact, it may only be the 3D code that needs the prior authorization.
 - ◆ Prior authorization requirements are established on a CPT® code level and vary by the individual health plan payor.
 - ◆ Providers are urged to obtain written instructions and requirements directly from each payor.
- CPT® codes for 3D rendering should not be billed in conjunction with computer-aided detection (CAD), MRA, CTA, nuclear medicine SPECT studies, PET, PET/CT, CT colonography (virtual colonoscopy), cardiac MRI, cardiac CT, or coronary CTA studies.
- In general, eviCore maintains that CPT® 76376 (3D rendering not requiring image post-processing on an independent workstation) should not be separately reimbursed, since this function is built into the imaging software and generally takes less than 15 minutes to perform.

- CPT® 76377 (3D rendering requiring image post-processing on an independent workstation) can be considered in the following clinical scenarios:
 - ◆ Bony conditions:
 - Evaluation of congenital skull abnormalities in babies/toddlers (usually for preoperative planning)
 - Complex joint fractures or pelvis fractures
 - Spine fractures (usually for preoperative planning)
 - Complex facial fractures
 - ◆ Preoperative planning for other complex surgical cases
 - ◆ Pelvis conditions:
 - Uterine intra-cavitary lesion when initial US is indeterminate (See **PV-2.1: Abnormal Uterine Bleeding (AUB)** and **PV-12.1: Leiomyomata**)
 - Hydrosalpinxes or peritoneal cysts when initial US is indeterminate (See **PV-5.2: Complex Adnexal Masses – Pre-Menopausal**, **PV-5.3: Complex Adnexal Masses – Post-Menopausal**)
 - Lost IUD (inability to feel or see IUD string) with initial US (See **PV-10.1: Intrauterine Device**)
 - Uterine anomalies with initial US (See **PV-14.1: Uterine Anomalies**)
 - Infertility (See **PV-9.1: Infertility Evaluation, Female**)

Preface-4.2: CT-, MR-, or Ultrasound-Guided Procedures

- CT, MR, and Ultrasound guidance procedure codes contain all the imaging necessary to guide a needle or catheter. It is inappropriate to routinely bill a diagnostic procedure code in conjunction with a guidance procedure code.
- Imaging studies performed as part of a CT-, MR-, or Ultrasound-guided procedure should be reported using the CPT® codes in the following table.

TABLE: Imaging Guidance Procedure Codes

CPT®	Description
19085	Biopsy, breast, with placement of breast localization device(s), when performed, and imaging of the biopsy specimen, when performed, percutaneous; first lesion, including MR guidance
19086	Biopsy, breast, with placement of breast localization device(s), when performed, and imaging of the biopsy specimen, when performed, percutaneous; first lesion, including MR guidance; each additional lesion, including MR guidance
75989	Imaging guidance for percutaneous drainage with placement of catheter (all modalities)
77011	CT guidance for stereotactic localization
77012	CT guidance for needle placement
77013	CT guidance for, and monitoring of parenchymal tissue ablation
77021	MR guidance for needle placement
77022	MR guidance for, and monitoring of parenchymal tissue ablation
76942	Ultrasonic guidance for needle placement

CPT® 75989:

- This code is used to report imaging guidance for a percutaneous drainage procedure in which a catheter is left in place.
- This code can be used to report whether the drainage catheter is placed under fluoroscopy, ultrasound, CT, or MR guidance modality.

CPT® 77011:

- A stereotactic CT localization scan is frequently obtained prior to sinus surgery. The dataset is then loaded into the navigational workstation in the operating room for use during the surgical procedure. The information provides exact positioning of surgical instruments with regard to the patient's 3D CT images.
- In most cases, the preoperative CT is a technical-only service that does not require interpretation by a radiologist.
 - ◆ The imaging facility should report CPT® 77011 when performing a scan not requiring interpretation by a radiologist.
 - ◆ If a diagnostic scan is performed and interpreted by a radiologist, the appropriate diagnostic CT code (e.g., CPT® 70486) should be used.
 - ◆ It is not appropriate to report both CPT® 70486 and CPT® 77011 for the same CT stereotactic localization imaging session.
 - ◆ 3D Rendering (CPT® 76376 or CPT® 76377) should not be reported in conjunction with CPT® 77011 (or CPT® 70486 if used). The procedure inherently generates a 3D dataset.

CPT® 77012 (CT) and CPT® 77021 (MR):

- These codes are used to report imaging guidance for needle placement during biopsy, aspiration, and other percutaneous procedures.
- They represent the radiological supervision and interpretation of the procedure and are often billed in conjunction with surgical procedure codes.
 - ◆ For example, CPT® 77012 is reported when CT guidance is used to place the needle for a conventional arthrogram.
 - ◆ Only codes representing percutaneous surgical procedures should be billed with CPT® 77012 and CPT® 77021. It is inappropriate to use with surgical codes for open, excisional, or incisional procedures.

CPT® 77013 (CT) and CPT® 77022 (MR):

- These codes include the initial guidance to direct a needle electrode to the tumor(s), monitoring for needle electrode repositioning within the lesion, and as necessary for multiple ablations to coagulate the lesion and confirmation of satisfactory coagulative necrosis of the lesion(s) and comparison to pre-ablation images.
 - ◆ **NOTE:** CPT® 77013 should only be used for non-bone ablation procedures.
 - ◆ CPT® 20982 includes CT guidance for bone tumor ablations.
 - ◆ Only codes representing percutaneous surgical procedures should be billed with CPT® 77013 and CPT® 77022. It is inappropriate to use with surgical codes for open, excisional, or incisional procedures.
- CPT® 77012 and CPT® 77021 (as well as guidance codes CPT® 76942 [US], and CPT® 77002-CPT® 77003 [fluoroscopy]) describe radiologic guidance by different modalities.
 - ◆ Only one unit of any of these codes should be reported per patient encounter (date of service). The unit of service is considered to be the patient encounter, not the number of lesions, aspirations, biopsies, injections, or localizations.

Preface-4.3: Unlisted Procedures/Therapy Treatment Planning

CPT®	Description
76497	Unlisted CT procedure (e.g., diagnostic or interventional)
76498	Unlisted MR procedure (e.g., diagnostic or interventional)
78999	Unlisted procedure, diagnostic nuclear medicine

- In the absence of written payor instructions, these unlisted codes should be reported whenever a diagnostic or interventional CT or MR study is performed in which an appropriate anatomic site-specific code is not available.
 - ◆ A Category III code that describes the procedure performed must be reported rather than an unlisted code if one is available.
- CPT® 76497 or CPT® 76498 (Unlisted CT or MRI procedure) can be considered in the following clinical scenarios:

- ◆ Studies done for navigation and planning for neurosurgical procedures (i.e. Stealth or Brain Lab Imaging)^{1,2}
- ◆ Custom knee Arthroplasty planning if covered by payor (not as Alternative Recommendation) (See **MS-25: Knee**)
- ◆ Any procedure/surgical planning if thinner cuts or different positional acquisition (than those on the completed diagnostic study) are needed. These could include sinus surgery or navigational bronchoscopy. (See **CH-33: Lung Transplantation, CH-29.1: Aortic Dissection**)^{3,4}

Therapy Treatment Planning

- Radiation Therapy Treatment Planning: See **ONC-1.5: Unlisted Procedure Codes in Oncology**

References

1. <https://neurosurgery.mgh.harvard.edu/IGSimages.htm>.
2. <https://www.brainlab.com/en/surgery-products/overview-neurosurgery-products/intraoperative-mr/>.
3. <http://dev.superdimension.com/products/superdimension-system/specifications/>.
4. <http://planning.scopis.com/>.

Preface-4.4: Unilateral versus Bilateral Breast MRI

- Diagnostic MRI of both breasts should be coded as CPT® 77049 regardless of whether both breasts are imaged simultaneously or whether unilateral breast MRI is performed in two separate imaging sessions.

Preface-4.5: CPT® 76380 Limited or Follow-up CT

- CPT® 76380 describes a limited or follow-up CT scan. The code is used to report any CT scan, for any given area of the body, in which the work of a full diagnostic code is not performed.
- Common examples include (but are not limited to):
 - ◆ Limited sinus CT imaging protocol
 - ◆ Limited or follow-up slices through a known pulmonary nodule
 - ◆ Limited slices to assess a non-healing fracture (such as the clavicle)
- It is inappropriate to report CPT® 76380, in conjunction with other diagnostic CT codes, to cover 'extra slices' in certain imaging protocols.
 - ◆ There is no specific number of sequences or slices defined in any CT CPT® code definition.
 - ◆ The AMA, in *CPT® 2018*, does not describe nor assign any minimum or maximum number of sequences or slices for any CT study.
 - A few additional slices or sequences are not uncommon.
 - CT imaging protocols are often influenced by the individual clinical situation of the patient. Sometimes the protocols require more time and sometimes less.

Preface-4.6: SPECT/CT Imaging

- SPECT/CT involves SPECT (Single Photon Emission Computed Tomography) nuclear medicine imaging and CT for optimizing location, accuracy, and attenuation correction and combines functional and anatomic information.
 - ◆ Common studies using this modality include ¹²³I- or ¹³¹I-Metaiodobenzylguanidine (MIBG) and octreotide scintigraphy for neuroendocrine tumors.
- There is currently no evidence-based data to formulate appropriateness criteria for these hybrid scans.
- A procedure code for SPECT/CT parathyroid nuclear imaging, (CPT® 78072), became effective January 1, 2013. No other unique codes have yet been established to specifically report these imaging procedures.
- It is not appropriate to separately report any CT, performed only for localization and/or attenuation correction purposes, with any diagnostic CT code, including CPT® 76380).

Reference

1. Society of Nuclear Medicine and Molecular Imaging Coding Corner, revised May 31, 2013.
<http://interactive.snm.org/index.cfm?PageID=5630&RRID=1995>.

Preface-5: Whole Body Imaging

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Preface-5.1: Whole Body CT Imaging

- Whole body CT or LifeScan (CT of Brain, Chest, Abdomen, and Pelvis) for screening of asymptomatic patients is not a covered benefit of any of the current health plans who have delegated utilization review to eviCore. The performance of whole body screening CT examinations in healthy patients does not meet any of the current validity criteria for screening studies and there is no clear documentation of benefit versus radiation risk.

Preface-5.2: Whole Body MR Imaging

- Whole body MRI (WBMRI) is, generally, not supported by eviCore at this time due to lack of standardization in imaging technique and lack of evidence that WBMRI improves patient outcome for any individual disease state.
 - ◆ While WBMRI has the benefit of whole body imaging and lack of radiation exposure, substantial variation still exists in the number of images, type of sequences (STIR vs. diffusion weighting, for example), and contrast agent(s) used.
- Coding considerations:
 - ◆ There are no established CPT® or HCPCS codes for reporting WBMRI.
 - ◆ WBMRI is at present only reportable using CPT® 76498. All other methods of reporting whole body MRI are inappropriate, including:
 - Separate diagnostic MRI codes for multiple individual body parts
 - MRI Bone Marrow Supply (CPT® 77084)
- Disease-specific considerations:
 - ◆ Cancer screening:
 - WBMRI has not been shown to improve outcomes for cancer screening for any group of patients, including Li-Fraumeni Syndrome. See **PEDONC-2.2: Li-Fraumeni Syndrome (LFS)** for additional information
 - The primary reference cited by providers to support requests for WBMRI in LFS is Villani et al, Lancet Oncol 2011. In this study, the overall screening program was feasible and successful. However, the WBMRI component only detected a single malignancy, which was concurrently detectable on clinical examination. This article does not provide sufficient scientific rationale to justify WBMRI use in Li-Fraumeni patients.
 - ◆ Cancer staging and restaging
 - While the feasibility of WBMRI has been established, data remain conflicting on whether WBMRI is of equivalent diagnostic accuracy compared with standard imaging modalities such as CT, scintigraphy, and PET imaging. Evidence has not been published establishing WBMRI as a standard evaluation for any type of cancer.
 - ◆ Autoimmune disease
 - WBMRI has been shown to increase the number of detected lesions in chronic multifocal osteomyelitis and other inflammatory arthritides, but no improvement in outcomes from the use of WBMRI has yet been shown.

Preface-5.3: PET-MRI

- PET-MRI is, generally, not supported by eviCore at this time due to lack of standardization in imaging technique and lack of evidence that PET-MRI improves patient outcome for any individual disease state.

References

1. Villani A, Tabori U, Schiffman J, et al, Biochemical and imaging surveillance in germline TP53 mutation carriers with Li-Fraumeni syndrome: a prospective observational study, *Lancet Oncol* 2011;12:559-567.
2. Siegel MJ, Acharyya S, Hoffer FA et al, Whole-Body MR Imaging for Staging of Malignant Tumors in Pediatric Patients: Results of the American College of Radiology Imaging Network 6660 Trial, *Radiology* 2013;266:599-609.
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4. Lauenstein TC and Semelka RC, Emerging Techniques: Whole-Body Screening and Staging With MRI, *J Magn Reson Imaging* 2006;24:489-498.
5. Khanna G, Sato TP, and Ferguson P, Imaging of Chronic Recurrent Multifocal Osteomyelitis, *Radiographics* 2009;29:1159-1177.
6. Ferguson PJ and Sandu M, Current Understanding of the Pathogenesis and Management of Chronic Recurrent Multifocal Osteomyelitis, *Curr Rheumatol Rep* 2012;14:130-141.

Preface-6: References

- Complete reference citations for the journal articles are embedded within the body of the guidelines and/or may be found on the Reference pages at the end of some guideline sections.
- The website addresses for certain references are included in the body of the guidelines but are not hyperlinked to the actual website.
- The website address for the American College of Radiology (ACR) Appropriateness Criteria® is <http://www.acr.org>.

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