# **CLINICAL GUIDELINES**

## Preface to the Imaging Guidelines

Version 19.0 Effective May 22<sup>nd</sup>, 2017



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 to the Imaging Guidelines**

## **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.

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#### **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
- o Texas HB 1290 Coronary Calcium CT Law

## **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:

- o Clinical presentation of the patient, not by the studies requested
- Ourrent 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.
- Certain routine surveillance imagings indications can be considered without documented contact if otherwise meet guidelines. These may include, but are not limited to:
  - Lung nodule follow-up (CH-16.1 SPN Imaging)
  - Thyroid nodule follow-up (Neck-9 Thyroid and Parathyroid)
  - Liver, pancreatic and renal lesion follow- up (AB-29.1, AB-31.2, AB-35.1)
  - Annual breast MRI for High Risk (<u>CH-25.6 Breast MRI Indications</u>)
  - BI-RADS 3 MRI or US follow-up (CH-25.5, CH-25.6)
  - Cardiac repeat testing (<u>CD-1.4 Stress Testing with Imaging Indications</u>)
  - Oncology surveillance imaging
  - Abdominal or Thoracic Aortic Aneurysm (AB-17, AB-18.1, **CH-30.2 Thoracic Aortic Aneurysm**)
  - Annual surveillance for multiple sclerosis
  - Follow up for brain tumors if consistent with applicable guideline (pituitary etc.)

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- Follow up for renal/ureteral stones (<u>AB-4.2 Observation of Known Ureteral Stone</u> and <u>AB 4.3 Follow-up of Treated Renal Stone</u>)
- Fever can be considered in excess of normal range (oral 36.5–37.5C or 97.7–99.5F)
- Childhood is often considered from birth through 18. This range is reflected in both the Medicaid program as well as many states legal ages of majority. Yet, childhood can be extended toward 21 years of age according to the American Academy of Pediatrics or less than 18 years, both depending on the individual's anatomy, physiology or disease condition.\*

#### Reference

- 1. <a href="https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AcuteInpatientPPS/Downloads/FY\_14\_Definition\_of-Medicare Code Edits V 31 Manual.pdf">https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AcuteInpatientPPS/Downloads/FY\_14\_Definition\_of-Medicare Code Edits V 31 Manual.pdf</a>
  - This evaluation may include non-advanced imaging modalities (chest x-ray, EKG, EMG, etc.), prior patient records and be through other means on meaningful contact (telephone call, electronic mail or messaging) in an established patient.
  - Reference is made to a potential indication and an abnormality of that body part for the requested imaging study(ies).
  - Patient management or treatment decisions is affected by the requested imaging study(ies)
  - Sequential approach to obtaining imaging studies, that is, awaiting the results of initial tests or radiologic studies to rule in or out an entity on the differential diagnosis prior to obtaining further tests or radiologic studies
    - 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.
    - Except, decisions for advanced imaging of patients requiring anesthesia or sedation should take into account risks of that anesthesia or sedation and therefore consider more expansive imaging needs in order to avoid a secondary imaging session(s).
    - Repeat advanced imaging study(ies) are not generally needed unless there is evidence for progression of disease, new onset of disease, and/or how repeat imaging will affect patient management or treatment decisions.

#### <u>Imaging – General Process</u>

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.

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#### **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.<sup>1</sup>

#### <u>Imaging – Metal devices or implants</u>

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 be 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):**

- o CT can be performed without contrast, with contrast or without and with contrast depending on the clinical indication and body part.
- o CT without contrast maybe appropriate if clinical criteria are met AND if a patient has elevated BUN and/or creatinine, renal insufficiency, renal failure, and allergies to iodinated CT contrast or thyroid disease.
  - CT contrast can cause contrast induced nephropathy (defined as contrast induced renal failure). Patients with impaired renal function are at increased risk.
  - Both contrast CT and MRI may be considered to have the same risk profile with renal failure (GFR < 30 mL/min).
- o 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):**

- o MR imaging may be utilized through these guidelines, when further definition is needed based on CT imaging.
- o 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.

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- 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 clients 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.
- o MRI can be performed not ferromagnetic body metals, although and some imaging facilities will consider if recent surgery regardless of the metal type
- o 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
- o Excessive radiation and costs with unnecessary testing
- o Defensive medical practice
- o CT without and with contrast (so called "double contrast studies) requesting, which are needed less often
- o MRI trading in place of CT scanning to avoid radiation without considering the primary need for imaging
- o Adult CT settings used for smaller people and children

#### **Reference**

1. Bettmann MA. Frequently Asked Questions: Iodinated Contrast Agents. *Radiographics* 2004; 24:S3–S10

## **Preface-4~Coding Issues**

## **Preface-4.1 3D Rendering**

#### **CPT**<sup>®</sup> **76376** and **CPT**<sup>®</sup> **76377**:

- ✓ Both of these codes share the following text in their definitions: "3D rendering with interpretation and reporting of computed tomography, magnetic resonance imaging, ultrasound or other tomographic modality."
- ✓ 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.

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- CPT® 76377 reports procedures that require image post-processing on an independent workstation.
- ✓ These 3D rendering codes should <u>not</u> 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 client'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.
  - o Providers are urged to obtain written instructions and requirements directly from each payor.
- ✓ CPT<sup>®</sup> 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.
  - o **NOTE:** Specifically, providers performing CAD, in conjunction with breast MRI, should report the service with Category III code 0159T, not one of the 3D codes.
- ✓ 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.
- ✓ The routine use of 3D and 4D rendering (post-processing) in conjunction with ultrasound is considered investigational.
- ✓ CPT® 76377 (3D rendering requiring image post-processing on an independent workstation) can be considered in the following clinical scenarios:
  - Evaluation of congenital skull abnormalities in babies/toddlers (usually for preoperative planning)
  - o Complex joint fractures or pelvis fractures
  - o Spine fractures (usually for preoperative planning)
  - o Complex facial fractures
  - Preoperative planning for other complex surgical cases

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#### 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 <u>routinely</u> bill a diagnostic procedure code in conjunction with a guidance procedure code. Below are examples of CPT<sup>®</sup> codes that contain imaging and for which additional imaging CPT<sup>®</sup> codes are not necessary:
  - o MRI guided breast biopsy (CPT®19085) includes the imaging component. Additional lesions should be billed using CPT®19086.
  - o CPT® 77012 is reported when CT guidance is used to place the needle for a conventional arthrogram.
  - o CPT® 77021 is reported for MR guided needle placement
- ✓ Imaging studies performed as part of a CT-, MR-, or Ultrasound-guided procedure should be reported using the CPT<sup>®</sup> codes in the following table.

#### **TABLE: IMAGING GUIDANCE PROCEDURE CODES**

<b>CPT</b> <sup>®</sup>	DESCRIPTION
19085	Biopsy, breast, with placement of breast localization device(es), 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(es), 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<sup>®</sup> 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.

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- ✓ 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.
  - o If a diagnostic scan is performed and interpreted by a radiologist, the appropriate diagnostic CT code (e.g., CPT® 70486) should be used.
  - o It is not appropriate to report both CPT®70486 and CPT® 77011 for the same CT stereotactic localization imaging session.
  - o 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.
  - o For example, CPT® 77012 is reported when CT guidance is used to place the needle for a conventional arthrogram.
  - Only codes representing <u>percutaneous</u> 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.
  - o **NOTE:** CPT® 77013 should <u>only</u> be used for <u>non-bone ablation</u> procedures.
  - o CPT® 20982 includes CT guidance for bone tumor ablations.
  - o Only codes representing <u>percutaneous</u> 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.

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#### **Preface-4.3 Unlisted Procedures/Therapy Treatment Planning**

<b>CPT</b> <sup>®</sup>	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.
  - o A Category III code that describes the procedure performed must be reported rather than an unlisted code if one is available.
- ✓ All requests for studies billed with these unlisted codes will be forwarded for Medical Director Review.
  - Requests must be accompanied by detailed notes describing the procedure and the medical necessity indications for the study.

#### **Therapy Treatment Planning**

#### **Radiation Therapy Treatment Planning:**

- ✓ In the absence of written payor guidelines, imaging performed in support of radiation therapy treatment planning should be reported with the following codes: (CPT® 76497 or CPT® 77014 for CT, CPT® 76498 for MRI, or CPT® 78999 for PET), not with diagnostic imaging codes.
- ✓ PET being performed for radiation therapy treatment planning should be coded as **CPT**<sup>®</sup> **78999** (unlisted procedure, diagnostic nuclear medicine) and **not** as diagnostic PET (CPT<sup>®</sup> 78812, CPT<sup>®</sup> 78815, or CPT<sup>®</sup> 78816).
  - o CPT® 78999 does not require prior authorization by eviCore

## Preface-4.4 Unilateral versus Bilateral Breast MRI

✓ Diagnostic MRI of both breasts should be coded as CPT<sup>®</sup> 77059 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):
  - o Limited sinus CT imaging protocol
  - o Limited or follow-up slices through a known pulmonary nodule

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- o Limited slices to asses 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*® 2015, 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 <sup>123</sup>I- or <sup>131</sup>I-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. <a href="http://interactive.snm.org/index.cfm?PageID=5630&RRID=1995">http://interactive.snm.org/index.cfm?PageID=5630&RRID=1995</a>.

## **Preface-5~WHOLE BODY IMAGING**

#### 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

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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:
  - o 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:
  - o Cancer screening:
    - WBMRI has not been shown to improve outcomes for cancer screening for any group of patients, including Li-Fraumeni Syndrome. See:

#### PACONC-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 arthridities, but no improvement in outcomes from the use of WBMRI has yet been shown.

## **Preface-5.3~PET-MRI**

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✓ 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 stu*dy*, *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.
- 3. Antoch G, Vogt FM, Freudenberg LS, et al, Whole-Body Dual-Modality PET/CT and Whole-Body MRI for Tumor Staging in Oncology, *JAMA* 2003;290:3199-3206.
- 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<sup>®</sup> is http://www.acr.org.

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