ACR Appropriateness Criteria®
Procedure Information

GENERAL INFORMATION

Diagnostic imaging procedures in the ACR Appropriateness Criteria (AC) documents must adhere to the standardized procedure names as defined by the AC Committee, working in collaboration with the ACR Common Committee. All procedures names must include the modality and a body region. Other procedure name modifiers such as modality modifier (eg, perfusion, myelography, MRCP), intravenous (IV) contrast use, and radiopharmaceutical (eg radionuclide, molecule) may be included when those modifiers clarify the procedure and recommendation. The current list of standard procedures names used in the AC can be found here.

The role of the AC Committee is to minimize the number of unique procedure names used in the AC and to maximize the clarity of the recommendation. Procedure name confusion may be compounded by CPT codes, protocols, charge master accounts, localized names, and reimbursement requirements. When a new procedure name is suggested, the AC panel and specialty chair will determine if it is a new procedure, an existing procedure that has been modified, or an existing procedure that has a different name. If the AC panel decides to propose a new procedure name, it will be forwarded to the AC Committee Chair for review.

INTRAVENOUS CONTRAST MEDIA – COMPUTED TOMOGRAPHY, MAGNETIC RESONANCE, AND ULTRASOUND

Contrast media are widely referred to in the ACR Appropriateness Criteria® (ACR AC). When indicated, contrast media are specified and references supporting their use are listed. Oral or rectal contrast is generally a barium preparation, although iodinated compounds can be used in certain settings. Radionuclides, although administered intravenously, are not classified as contrast media.

IV contrast for all imaging procedures involving ionizing radiation is iodine-based. Currently, all magnetic resonance imaging (MRI) and magnetic resonance angiography (MRA) procedures that utilize contrast specifically refer to gadolinium-based compounds. Iron-based contrast media are also available for MRI, but data on their comparative effectiveness are still relatively sparse. Contrast-enhanced ultrasound (CEUS) uses intravenously-administered contrast material composed of a microbubble and a shell. The bubble is highly echogenic and provides the enhancement properties. The enhancement properties of US contrast are generally similar to general CT and MRI contrast agents. If a contrast medium is indicated, specific reasons (and references, if available) are given.

Issues concerning contrast media, including prevention, diagnosis and treatment of reactions, contrast-induced nephropathy (CIN), and nephrogenic systemic fibrosis (NSF), are addressed in detail in the ACR *Manual on Contrast Media*.

When either computed tomography (CT), magnetic resonance, or ultrasound procedure names are included in a variant table in an AC topic, the following terms are used to describe the use of IV contrast:

1. Computed tomography[1] (other than CT perfusion)
   - "without IV contrast"
   - "with IV contrast"
   - "without and with IV contrast"
   - All 3 contrast variations must be included on the variant tables

[1] For the purposes of distinguishing between CT and CTA, ACR AC topics use the definition in the Practice Parameter for the Performance and Interpretation of Body Computed Tomography Angiography:

"*CTA uses a thin-section CT acquisition that is timed to coincide with peak arterial or venous enhancement. The resultant volumetric dataset is interpreted using primary transverse reconstructions as well as multiplanar reformations and 3D renderings."*

All procedure elements are essential: (1) timing, (2) recons/reformats, and (3) 3D renderings. Standard CTs with contrast also include timing issues and recons/reformats. Only in CTA, however, is 3D rendering a **required** element. This corresponds to the definitions that CMS has applied to the CPT codes.

IMPORTANT: When rating CT scans "with IV contrast" compared to CT scans "without and with IV contrast," the rating of the "without and with IV contrast" scan should be rated entirely based on the added diagnostic benefit of the noncontrast scan. If the noncontrast scan adds no diagnostic benefit, the combined scan should be rated usually not appropriate.

2. Computed tomography angiography[1]
   - "with IV contrast"
3. Computed tomography perfusion
   - "with IV contrast"
4. Magnetic resonance imaging:
   - "without IV contrast"
   - "with IV contrast"
   - "without and with IV contrast"
   - "without and with hepatobiliary IV contrast"
   - "Without IV contrast" and "without and with IV contrast" must be included on the variant tables. "With IV contrast" is optional. "Without and with hepatobiliary IV contrast" is used in specified topics

   IMPORTANT: When rating MR scans "with IV contrast" compared to MR scans "without and with IV contrast," the rating of the "without and with IV contrast" scan should be rated entirely based on the added diagnostic benefit of the noncontrast scan. If the noncontrast scan adds no diagnostic benefit, the combined scan should be rated usually not appropriate.
5. Magnetic resonance angiography:
   - "without IV contrast"
   - "with IV contrast"
   - "without and with IV contrast"
   - At least one of the contrast variations must be included on the variant table

   IMPORTANT: When rating MR scans "with IV contrast" compared to MR scans "without and with IV contrast," the rating of the "without and with IV contrast" scan should be rated entirely based on the added diagnostic benefit of the noncontrast scan. If the noncontrast scan adds no diagnostic benefit, the combined scan should be rated usually not appropriate.
6. Ultrasound
   - "with IV contrast"
   - If "with IV contrast" is included on the variant table, the basic US exam must also be included.
   - It is not necessary to include "without IV contrast" in the procedure name for the basic US exam.
   - US not otherwise specified will mean no IV contrast and no Doppler.

ULTRASOUND

The following procedure names are used to describe ultrasound (US) procedures in the ACR AC topics.

One or more of the US procedures may be included on the variant table, depending on the clinical condition.

1. *US [organ or body area]*
   Assumption: gray scale only
2. *US color Doppler [organ or body area]*
   Definition: color Doppler — color display of Doppler velocities superimposed on a gray-scale image
   Assumption: gray scale and color Doppler
3. *US duplex Doppler [organ or body area]*
   Definition: duplex Doppler — simultaneous gray scale and/or color plus spectral Doppler
   - spectral Doppler—graphic display of flow velocities versus time
   - any use of spectral Doppler makes the procedure duplex whether or not color is used

Assumptions:

- For primary vascular studies (carotid, extremity veins/arteries): gray scale, color, and spectral Doppler. Duplex Doppler may be the only US procedure performed. Example: *US duplex Doppler carotid*
- For primary visceral studies (abdomen, pelvis, scrotal): gray scale or color. Duplex reflects addition of spectral only.

  Duplex Doppler will be performed as an additional procedure separate from the anatomic US procedure. Both procedures will be listed separately on the variant table. Example: *US duplex Doppler ovaries* and *US pelvis transvaginal*

4. Power Doppler will not be included as a separate procedure. If relevant, it may be mentioned in the comments on the variant table and/or in the text.

NUCLEAR MEDICINE PROCEDURES

The following procedure names will be used to describe nuclear medicine procedures in the ACR AC topics. Implementation of the terminology will begin in mid-2017 and will be incorporated as AC documents are updated.

1. Positron Emission Tomography (PET)

   [Radiopharmaceutical] PET/CT [body area]

   - Definition: Diagnostic quality CT without contrast is performed.
   - If a contrast enhanced CT of a specific body area may be considered for the clinical condition, it will be listed as a separate procedure on the variant table and rated by the panel.
   - Example: FDG-PET/CT skull base to mid-thigh
     NOTE: For facilities with a PET only scanner and/or are performing a CT that is not diagnostic quality, the appropriateness recommendation for the PET only procedure is not different from the recommendation for the PET/CT procedure. Only PET/CT will be included on the variant tables.

   [Radiopharmaceutical] PET/MRI [body area]

   - Definition: MRI with limited sequences is performed.
   - If a dedicated MRI of a specific body area with additional sequences may be considered for the clinical indication, it will be listed as a separate procedure on the variant table and rated by the panel.
   - Example: *FDG-PET/MRI whole body*
   - Body areas:
     - whole body
     - skull base to mid-thigh
     - brain
     - heart
     - [limited body area] (eg, "pelvis"). This is rarely used.

   [Radiopharmaceutical] PEM

   - Definition: Positron emission mammography.
   - Example: FDG-PEM

2. Single Photon Emission Computed Tomography (SPECT)

   [Radiopharmaceutical] SPECT/CT [body area]

   - Definition: Diagnostic quality CT without contrast is performed.
   - If a contrast enhanced CT of a specific body area may be considered for the clinical condition, it will be listed as a separate procedure on the variant table and rated by the panel.
   - Example: *Tc-99m SPECT/CT brain*

     NOTE: For facilities with a SPECT only scanner and/or are performing a CT that is not diagnostic quality, the appropriateness recommendation for the SPECT only procedure is not different from the recommendation for the SPECT/CT procedure. Only SPECT/CT will be included on the variant tables.

- Body areas:
  - whole body
  - brain
  - heart
  - [limited body area] (eg, “pelvis”)

3. Bone Scan

   [Radiopharmaceutical] bone scan [body area]

   - Example: *Tc-99m bone scan whole body*

   [Radiopharmaceutical] 3-phase bone scan [specific body area]

   - Example: *Tc-99m 3-phase bone scan knee*

   - Body areas:
     - whole body
     - specific body area (eg, knees)

4. Other nuclear medicine procedures

   [Radiopharmaceutical] [procedure name] [body area]

   - Examples: *Tc-99m V/Q scan lung* or *Tc-99m labeled RBC scan abdomen*

   - Body areas:
     - specific body area