# Cohere Medical Policy - 3D Rendering of Imaging Studies

***Clinical Guidelines for Medical Necessity Review***

**Version:** 1
**Effective Date:** November 21, 2024

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## Guideline Information:

**Specialty Area:** Diagnostic Imaging
**Guideline Name:** Cohere Medical Policy - 3D Rendering of Imaging Studies
**Date of last literature review:** 11/18/2024
**Document last updated:** 11/21/2024
**Type:** [**X**] Adult (18+ yo) | [**X**] Pediatric (0-17 yo)

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# Medical Necessity Criteria

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| ***Service: 3D Rendering of Imaging Studies*** |

## Recommended Clinical Approach

Three-dimensional (3D) rendering of imaging studies is a technique that is performed by organizing thin sections of 2D images to reconstruct a 3D image. The resulting 3D image can enhance hard-to-visualize structures and therefore help to better visualize a pathology and guide clinical management. This technique is also known as 3D reconstruction or 3D reformation. 3D rendering can be performed for ultrasound (US), echocardiography, CT, MRI, MRA, CTA, DSA, and other tomographic imaging modalities. 3D reconstruction is not to be utilized to report coronal, sagittal, multiplanar, or oblique reformats constructed from axial imaging. 3D reformatting should not be standard protocol for US, MRI, and CT scanning.

### Indications

- ➔ **3D Imaging** is considered medically necessary if **ALL** of the following are **TRUE**:
  - ◆ When 3D imaging is required in order to obtain complete diagnostic information that would be critical to clinical management and cannot be ascertained through traditional (2D or multiplanar reformatted) imaging; **AND**
  - ◆ **ANY** of the following is true:
    - The patient requires preoperative planning for a complex surgical case; **OR**
    - The patient has a known or suspected tumor with invasion of adjacent structure, such that 3D imaging may impact treatment[1-5]; **OR**
    - The patient has vascular system pathology with planned procedural intervention, including **ANY** of the following[6-15]:
      - Aneurysms; **OR**
      - Vascular abnormalities or malformations; **OR**
    - Preprocedural and postprocedural evaluation of organ transplantation; **OR**
    - Orthopedic imaging for **ANY** of the following[16-21]:

        - Spine surgery; **OR**
        - Acetabular osteotomy; **OR**
        - Wrist fracture; **OR**
        - Facial trauma; **OR**
        - Intra-articular fracture; **OR**
        - Other complex fractures with or without dislocation of any joint; **OR**
    - Evaluation of congenital craniofacial abnormalities; **OR**
    - Other not previously specified conditions wherein 3D image rendering would provide information that cannot otherwise be obtained by traditional 2D imaging or multiplanar reformatted images, and such information is critical to clinical management[22-24]; **OR**
    - Repeat 3D imaging (defined as repeat request following recent 3D imaging of the same anatomic region with the same modality), in the absence of established guidelines, will be considered reasonable and necessary if **ANY** of the following is **TRUE**:
        - New or worsening symptoms, such that repeat imaging would influence treatment; **OR**
        - One-time clarifying follow-up of a prior indeterminate finding; **OR**
        - In the absence of change in symptoms, there is an established need for monitoring which would influence management.

**Non-Indications**

- ➔ **3D Imaging** is not considered appropriate if **ANY** of the following is **TRUE**:
    - ◆ The patient has undergone 3D imaging of the same body part within 3 months without undergoing treatment or developing new or worsening symptoms; **OR**
    - ◆ When used with an imaging study that is considered not medically necessary; **OR**
    - ◆ For routine use by the imaging facility without specifically being ordered by the requesting physician.

**Level of Care Criteria**

Outpatient

## Procedure Codes (CPT/HCPCS)

| CPT/HCPCS Code | Code Description |
|---|---|
| 76376 | 3D rendering with interpretation and reporting of computed tomography, magnetic resonance imaging, ultrasound, or other tomographic modality with image postprocessing under concurrent supervision; not requiring image postprocessing on an independent workstation |
| 76377 | 3D rendering with interpretation and reporting of computed tomography, magnetic resonance imaging, ultrasound, or other tomographic modality with image postprocessing under concurrent supervision; requiring image postprocessing on an independent workstation |

# Medical Evidence

Three-dimensional (3D) rendering of imaging studies is an enhanced visualization technique that generates a reconstructed 3D image. This is utilized to provide a better view of specific structures and guide clinical management in certain clinical scenarios. 3D imaging is most commonly used in the preoperative setting to aid in surgical or procedural planning. It is also beneficial when visualizing congenital anomalies, including vascular malformations. Importantly, 3D reconstruction is distinct from coronal, sagittal, multiplanar, or oblique reformatting constructed from axial imaging. It is a highly specialized adjunct to traditional imaging that is limited in use due to the excellent diagnostic accuracy of 2D imaging.

3D imaging is of particular use with musculoskeletal pathologies, such as a patient with traumatic fractures. The principal intent of 3D imaging in this setting is to improve patient outcomes by limiting the need for post-operative revision. Certain fracture locations - including orbital fractures - are unable to be visualized directly and therefore benefit from 3D reconstruction. 3D imaging of eligible pathologies allows orthopedic surgeons to optimize their surgical approach, reduce operative time, and improve precision.[16-21]

A 2020 study in the *Journal of Vascular Surgery* provided clinical validation of 3D reconstruction of abdominal aortic aneurysms (AAAs), demonstrating a significantly improved reproducibility as compared to 2D imaging and mitigating the known challenges associated with 2D imaging, including operator-dependent variability which impacts accurate visualization and diagnosis of potentially unstable aneurysms.[12]

When reserved for clinical scenarios that benefit most from complete, three-dimensional visualization, 3D rendering of imaging studies can be a valuable adjunct for diagnosing and treating specific pathologies.

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# Clinical Guideline Revision History/Information

| Original Date: November 21, 2024 | | |
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| **Review History** | | |
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