ACR Appropriateness Criteria® Lower Extremity Arterial Revascularization—Post-Therapy Imaging

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Abstract

Peripheral arterial disease (PAD) affects millions across the world and in the United States between 9% to 23% of all patients older than 55 years. The refinement of surgical techniques and evolution of endovascular approaches have improved the success rates of revascularization in patients afflicted by lower extremity PAD. However, restenosis or occlusion of previously treated vessels remains a pervasive issue in the postoperative setting. A variety of different imaging options are available to evaluate patients and are reviewed within the context of asymptomatic and symptomatic patients with PAD who have previously undergone endovascular or surgical revascularization.

The American College of Radiology Appropriateness Criteria are evidence-based guidelines for specific clinical conditions that are reviewed annually by a multidisciplinary expert panel. The guideline development and revision include an extensive analysis of current medical literature from peer reviewed journals and the application of well-established methodologies (RAND/UCLA Appropriateness Method and Grading of Recommendations Assessment, Development, and Evaluation or GRADE) to rate the appropriateness of imaging and treatment procedures for specific clinical scenarios. In those instances where evidence is lacking or equivocal, expert opinion may supplement the available evidence to recommend imaging or treatment.

Key Words: Angioplasty, Appropriateness Criteria, Appropriate Use Criteria, AUC, Bypass, Lower extremity revascularization, Peripheral arterial disease, Postoperative surveillance, Stenting

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The American College of Radiology seeks and encourages collaboration with other organizations on the development of the ACR Appropriateness Criteria through society representation on expert panels. Participation by representatives from collaborating societies on the expert panel does not necessarily imply individual or society endorsement of the final document. Reprint requests to: publications@acr.org.

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ACR Appropriateness Criteria® Lower Extremity Arterial Revascularization—Post-Therapy Imaging. Variants 1 to 3 and Tables 1 and 2.

Variant 1. Previous infrainguinal endovascular therapy or bypass. Asymptomatic. Surveillance.

Procedure	Appropriateness Category	Relative Radiation Level
US duplex Doppler lower extremity	Usually Appropriate	0
CTA lower extremity with IV contrast	Usually Not Appropriate	☢☢☢
MRA lower extremity without and with IV contrast	Usually Not Appropriate	0
MRA lower extremity without IV contrast	Usually Not Appropriate	0
Arteriography lower extremity	Usually Not Appropriate	☢☢

CTA = CT angiography; IV = intravenous; MRA = MR angiography; US = ultrasound.

Variant 2. Previous infrainguinal endovascular therapy or bypass. Claudication or CLI. Initial imaging.

Procedure	Appropriateness Category	Relative Radiation Level
US duplex Doppler lower extremity	Usually Appropriate	0
CTA lower extremity with IV contrast	Usually Appropriate	☢☢☢
MRA lower extremity without and with IV contrast	Usually Appropriate	0
Arteriography lower extremity	May Be Appropriate	☢☢
MRA lower extremity without IV contrast	May Be Appropriate	0

CTA = CT angiography; IV = intravenous; MRA = MR angiography; US = ultrasound.

Variant 3. Previous infrainguinal endovascular therapy or bypass, presenting with cold, painful extremity and diminished pulses (acute limb ischemia). Initial imaging.

Procedure	Appropriateness Category	Relative Radiation Level
Arteriography lower extremity	Usually Appropriate	☢☢
CTA lower extremity with IV contrast	Usually Appropriate	☢☢☢
US duplex Doppler lower extremity	Usually Appropriate	0
MRA lower extremity without and with IV contrast	May Be Appropriate (Disagreement)	0
MRA lower extremity without IV contrast	May Be Appropriate	0

CTA = CT angiography; IV = intravenous; MRA = MR angiography; US = ultrasound.

Table 1. Appropriateness category names and definitions

Appropriateness Category Name	Appropriateness Rating	Appropriateness Category Definition
Usually Appropriate	7, 8, or 9	The imaging procedure or treatment is indicated in the specified clinical scenarios at a favorable risk-benefit ratio for patients.
May Be Appropriate	4, 5, or 6	The imaging procedure or treatment may be indicated in the specified clinical scenarios as an alternative to imaging procedures or treatments with a more favorable risk-benefit ratio, or the risk-benefit ratio for patients is equivocal.
May Be Appropriate (Disagreement)	5	The individual ratings are too dispersed from the panel median. The different label provides transparency regarding the panel's recommendation. "May be appropriate" is the rating category and a rating of 5 is assigned.
Usually Not Appropriate	1, 2, or 3	The imaging procedure or treatment is unlikely to be indicated in the specified clinical scenarios, or the risk-benefit ratio for patients is likely to be unfavorable.