



AmeriHealth Caritas Louisiana

National Imaging Associates, Inc.*	
Clinical guidelines MUGA (Multiple Gated Acquisition) Scan	Original Date: September 1997
CPT Codes: 78472, 78473, 78494, +78496	Last Revised Date: March 2021
Guideline Number: NIA_CG_027	Implementation Date: January 2022

GENERAL INFORMATION

It is an expectation that all patients receive care/services from a licensed clinician. All appropriate supporting documentation, including recent pertinent office visit notes, laboratory data, and results of any special testing must be provided. All prior relevant imaging results, and the reason that alternative imaging cannot be performed must be included in the documentation submitted.

Indications for Multiple Gated Acquisition (MUGA) Scan

(Doherty, 2019)

- To evaluate left ventricular function in a patient with coronary artery disease, valvular heart disease, myocardial disease, or congenital heart disease, in any of the following scenarios:
 - When ventricular function is required for management, and transthoracic echocardiography (TTE) or other imaging has proven inadequate (Patel, 2013; Yancy, 2013)
 - When there are conflicting results between other testing (i.e. Myocardial Perfusion Imaging and TTE) in the measurement of ejection fraction (EF), and the results of the MUGA will help in the management of the patient
 - Prior TTE has demonstrated systolic dysfunction (EF < 50%) and management will change based on the results of the MUGA scan
- In the course of cardiotoxic chemotherapy when TTE images are inadequate to evaluate left ventricular systolic function (Patel, 2013; Plana, 2014; Yancy, 2013; Zamorano, 2016):
 - **Previous low LV ejection fraction was < 50% and receiving potentially cardiotoxic chemotherapy**

* National Imaging Associates, Inc. (NIA) is a subsidiary of Magellan Healthcare, Inc.

- Prior to cardiotoxic chemotherapy, and subsequently for monitoring and follow up. The frequency of testing should be left to the discretion of the ordering physician, but generally no more often than at baseline and every 6 weeks thereafter

BACKGROUND

(Friedman, 2006; Mitra, 2012; Patel, 2013; Ritchie, 1995)

Multiple-gated acquisition (MUGA) scanning uses radio-labelled red blood cells to scan right and left ventricular images in a cine loop format that is synchronized with the electrocardiogram.

A prior MUGA scan is not an indication for repeat MUGA (if another modality would be suitable, i.e., TTE).

Abbreviations

EF	Ejection Fraction
MUGA	Multiple Gated Acquisition (nuclear scan of ventricular function)
TTE	Transthoracic echocardiography

POLICY HISTORY

Date	Summary
March 2021	<ul style="list-style-type: none"> • <u>Added the following statement: Previous low LV ejection fraction was < 50% and receiving potentially cardiotoxic chemotherapy</u>
<u>March 2020</u>	<ul style="list-style-type: none"> • <u>Added general information section as Introduction which outlines requirements for documentation of pertinent office notes by a licensed clinician, and inclusion of laboratory testing and relevant imaging results for case review</u> • <u>Added statement to Background that a prior MUGA scan is not an indication for repeat MUGA (if another modality would be suitable. i.e. TTE)</u> • <u>Removed statements from Background that CMR is recommended when TTE is inadequate and/or candidacy for cardiotoxic chemotherapy based upon LVEF is questionable and that MUGA can also be considered when CMR is not available.</u>

July 23, 2019

- Removed chart on individual dosing for specific chemotherapeutic agents
- Added indication for when there are conflicting results between other testing (i.e. MPI and TTE) in the measurement of ejection fraction, and the results of the MUGA will help in the management of the patient
- Removed section on Radionuclide Angiography, Combination of Other Studies with MUGA, section on TTE and strain
- Removed CAD indication
- Added indication for cardiotoxicity as follows:
 - In the course of cardiotoxic chemotherapy when TTE images are inadequate to evaluate left ventricular systolic function (Patel 2013, Plana 2014, Yancy 2013, Zamorano 2016):
 - Prior to cardiotoxic chemotherapy, and subsequently for monitoring and follow up. The frequency of testing should be left to the discretion of the ordering physician, but generally no more often than at baseline and every 6 weeks thereafter
 - In patients with EF < 50% on TTE receiving potentially cardiotoxic chemotherapy, more frequent monitoring (every 4 weeks) may be appropriate
 - Removed section on Radionuclide Angiography, Combination of Other Studies with MUGA, section on TTE and strain

~~July 23, 2019~~

- ~~• Removed chart on individual dosing for specific chemotherapeutic agents~~
- ~~• Added indication for when there are conflicting results between other testing (i.e. MPI and TTE) in the measurement of ejection fraction, and the results of the MUGA will help in the management of the patient~~
- ~~• Removed section on Radionuclide Angiography, Combination of Other Studies with MUGA, section on TTE and strain~~
- ~~• Removed CAD indication~~
- ~~• Added indication for cardiotoxicity as follows:~~
 - ~~○ In the course of cardiotoxic chemotherapy when TTE images are inadequate to evaluate left ventricular systolic function (Patel 2013, Plana 2014, Yancy 2013, Zamorano 2016):~~
 - ~~○ Prior to cardiotoxic chemotherapy, and subsequently for monitoring and follow up. The frequency of testing should be left to the discretion of the~~

~~ordering physician, but generally no more often than at baseline and every 6 weeks thereafter~~

- ~~○ In patients with EF < 50% on TTE receiving potentially cardiotoxic chemotherapy, more frequent monitoring (every 4 weeks) may be appropriate~~
- ~~○ Removed section on Radionuclide Angiography, Combination of Other Studies with MUGA, section on TTE and strain~~

~~March 2020~~

- ~~● Added general information section as Introduction which outlines requirements for documentation of pertinent office notes by a licensed clinician, and inclusion of laboratory testing and relevant imaging results for case review~~
- ~~● Added statement to Background that a prior MUGA scan is not an indication for repeat MUGA (if another modality would be suitable. i.e. TTE)~~
- ~~● Removed statements from Background that CMR is recommended when TTE is inadequate and/or candidacy for cardiotoxic chemotherapy based upon LVEF is questionable and that MUGA can also be considered when CMR is not available.~~

March 2021:

- ~~● Added the following statement:~~
- ~~● Previous low LV ejection fraction was < 50% and receiving potentially cardiotoxic chemotherapy~~

REFERENCES

Doherty JU, Kort S, Mehran R, et al. ACC/AATS/AHA/ASE/ASNC/HRS/SCAI/SCCT/SCMR/STS 2019 Appropriate Use Criteria for multimodality imaging in the assessment of cardiac structure and function in nonvalvular heart disease: A Report of the American College of Cardiology Appropriate Use Criteria Task Force, American Association for Thoracic Surgery, American Heart Association, American Society of Echocardiography, American Society of Nuclear Cardiology, Heart Rhythm Society, Society for Cardiovascular Angiography and Interventions, Society of Cardiovascular Computed Tomography, Society for Cardiovascular Magnetic Resonance, and the Society of Thoracic Surgeons. *J Am Coll Cardiol*. 2019; 73(4):488-516.

Fihn SD, Gardin JM, Abrams J, et al. 2012 ACCF/AHA/ACP/AATS/PCNA/SCAI/STS Guideline for the diagnosis and management of patients with stable ischemic heart disease: A report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines, and the American College of Physicians, American Association for Thoracic Surgery, Preventive Cardiovascular Nurses Association, Society for Cardiovascular Angiography and Interventions, and Society of Thoracic Surgeons. *Circulation*. 2012; 126(25):e354-471.

Friedman JD, Berman DS, Borges-Neto S, et al. First-pass radionuclide angiography. *J Nucl Cardiol*. 2006; 13(6):e42-55.

Mitra D, Basu S. Equilibrium radionuclide angiocardiography: Its usefulness in current practice and potential future applications. *World J Radiol*. 2012; 4(10):421–430. Available at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3495989/>

Patel MR, White RD, Abbara S, et al. 2013 ACCF/ACR/ASE/ASNC/SCCT/SCMR Appropriate utilization of cardiovascular imaging in heart failure: A joint report of the American College of Radiology Appropriateness Criteria Committee and the American College of Cardiology Foundation Appropriate Use Criteria Task Force. *J Am Coll Cardiol*. 2013; 61(21): 2207-2231.

Plana JC, Galderisi M, Bara, A, et al. Expert consensus for multimodality imaging evaluation of adult patients during and after cancer therapy: A report from the American Society of Echocardiography and the European Association of Cardiovascular Imaging. *J Am Soc Echocardiogr*. 2014; 27:911-39.

Ritchie JL, Bateman TM, Bonow RO, et al. Guidelines for clinical use of cardiac radionuclide imaging, report of the American College of Cardiology/American Heart Association Task Force on Assessment of Diagnostic and Therapeutic Cardiovascular Procedures (Committee on Radionuclide Imaging) developed in collaboration with the American Society of Nuclear Cardiology. *J Am Coll Cardiol*. 1995; 25(2):521-547.

Yancy C, Jessup M, Bozkurt B, et al. 2013 ACCF/AHA Guideline for the management of heart

failure: A report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. *J Am Coll Cardiol.* 2013; 62(16):e147-237.

Zamorano JL, Lancellotti P, Muñoz DR, et al. 2016 ESC position paper on cancer treatments and cardiovascular toxicity developed under the auspices of the ESC Committee for Practice Guidelines: The Task Force for cancer treatments and cardiovascular toxicity of the European Society of Cardiology (ESC). *Eur Heart J.* 2016; 37:2768–2801.

Reviewed / Approved by NIA Clinical Guideline Committee

Reviewed / Approved by  Rosalind C. Watman, D.O., Medical Director, Cardiology

Disclaimer: Magellan Healthcare service authorization policies do not constitute medical advice and are not intended to govern or otherwise influence the practice of medicine. These policies are not meant to supplant your normal procedures, evaluation, diagnosis, treatment and/or care plans for your patients. Your professional judgement must be exercised and followed in all respects with regard to the treatment and care of your patients. These policies apply to all Magellan Healthcare subsidiaries including, but not limited to, National Imaging Associates (“Magellan”). The policies constitute only the reimbursement and coverage guidelines of Magellan. Coverage for services varies for individual members in accordance with the terms and conditions of applicable Certificates of Coverage, Summary Plan Descriptions, or contracts with governing regulatory agencies. Magellan reserves the right to review and update the guidelines at its sole discretion. Notice of such changes, if necessary, shall be provided in accordance with the terms and conditions of provider agreements and any applicable laws or regulations.