

MANAGEMENT OF ELECTROCARDIOGRAMS

1. SUMMARY OF CONTENT: This new directive establishes policy for Department of Veterans Affairs (VA) Health Care Providers (HCPs) in managing electrocardiograms (ECGs) across the Veterans Health Administration (VHA).

2. RELATED ISSUES: None.

3. POLICY OWNER: The National Cardiology Program in the Specialty Care Program Office (11SPEC3) is responsible for the content of this directive. Questions may be referred to VHA11SPECActions@va.gov.

4. RESCISSIONS: VHA Memorandum 2021-05-29, Process Review for Unconfirmed Electrocardiograms (ECG), dated May 13, 2021.

5. RECERTIFICATION: This VHA directive is scheduled for recertification on or before the last working day of March 2028. This VHA directive will continue to serve as national VHA policy until it is recertified or rescinded.

6. IMPLEMENTATION SCHEDULE: This directive is effective upon publication.

**BY DIRECTION OF THE OFFICE OF THE
UNDER SECRETARY FOR HEALTH:**

/s/ Erica M. Scavella, MD, FACP, FACHE
Assistant Under Secretary for Health
for Clinical Services/CMO

NOTE: All references herein to VA and VHA documents incorporate by reference subsequent VA and VHA documents on the same or similar subject matter.

DISTRIBUTION: Emailed to the VHA Publications Distribution List on March 22, 2023.

CONTENTS

MANAGEMENT OF ELECTROCARDIOGRAMS

1. POLICY 1

2. RESPONSIBILITIES 1

3. TRAINING 8

4. RECORDS MANAGEMENT 8

5. BACKGROUND 9

6. DEFINITIONS 9

7. REFERENCES 9

APPENDIX A

STAFFING METHODOLOGY ELECTROCARDIOGRAM ADMINISTRATORA-1

MANAGEMENT OF ELECTROCARDIOGRAMS

1. POLICY

It is Veterans Health Administration (VHA) policy that Veterans Integrated Services Networks (VISNs) and Department of Veterans Affairs (VA) medical facilities follow a standardized and coordinated approach to managing electrocardiograms (ECGs).

AUTHORITY: 38 U.S.C. § 7301(b).

2. RESPONSIBILITIES

a. **Under Secretary for Health.** The Under Secretary for Health is responsible for ensuring overall compliance with this directive.

b. **Assistant Under Secretary for Health for Clinical Services.** The Assistant Under Secretary for Health for Clinical Services is responsible for:

(1) Supporting the Specialty Care Program Office (SCPO) with implementation and oversight of this directive.

(2) Ensuring this directive is updated and disseminated to ensure national administrative and clinical oversight of ECG management.

c. **Assistant Under Secretary for Health for Patient Care Services.** The Assistant Under Secretary for Health for Patient Care Services is responsible for supporting program offices within Patient Care Services with implementation and oversight of this directive.

d. **Assistant Under Secretary for Health for Operations.** The Assistant Under Secretary for Health for Operations is responsible for:

(1) Communicating the contents of this directive to each of the VISNs.

(2) Assisting VISN Directors to resolve implementation and compliance challenges in all VA medical facilities within their VISN.

(3) Providing oversight of VISNs to ensure compliance with this directive and its effectiveness.

e. **Chief Officer, Specialty Care Program Office.** The Chief Officer, SCPO is responsible for:

(1) Supporting the Executive Director, National Cardiology Program in executing this directive.

(2) Ensuring sufficient resources are provided to the National Cardiology Program for the implementation and monitoring of compliance with this directive.

f. **Executive Director, National Cardiology Program.** The Executive Director, National Cardiology Program is responsible for:

(1) Providing oversight for VISN and VA medical facility compliance with this directive.

(2) Coordinating updates to clinical guidance related to ECG management with the Office of Nursing Services (ONS) and the Office of Healthcare Technology Management (HTM), and communicating updates to all stakeholder programs and, as appropriate, Cardiology Health Care Providers (HCPs).

(3) Providing subject matter expertise for clinical queries that relate to the management of ECGs.

(4) Providing consultation for the VISN Cardiology Clinical Systems Manager as noted in paragraph 2.j.

g. **Director, Office of Healthcare Technology Management.** The Director, Office of HTM is responsible for:

(1) Coordinating updates to technical guidance related to ECG management with ONS and the National Cardiology Program Office, and communicating updates to all stakeholder programs and, as appropriate, biomedical engineering staff.

(2) Providing subject matter expertise for technical queries related to the management of ECGs.

(3) Providing consultation for the VISN Biomedical Engineering professional for Cardiology in paragraph 2.k.

h. **Executive Director, Office of Nursing Services.** The Executive Director, ONS is responsible for:

(1) Coordinating updates to technical guidance related to ECG management with the HTM Office and the National Cardiology Program Office, and communicating updates to all stakeholder programs and, as appropriate, nursing staff.

(2) Providing subject matter expertise for nursing queries related to the management of ECGs.

(3) Updating the nursing guidance related to ECG management, as appropriate, and communicating any updates to nursing HCPs on the ONS SharePoint site: <https://dvagov.sharepoint.com/sites/vacpp/SitePages/Cardiovascular.aspx>. **NOTE:** This is an internal VA website that is not available to the public.

i. **Veterans Integrated Services Network Director.** The VISN Director is responsible for:

(1) Ensuring all VA medical facilities within the VISN comply with this directive and informing leadership when barriers to compliance are identified.

(2) Ensuring each VA medical facility within their VISN has the resources required to fulfill the terms of this directive. **NOTE:** See paragraph 2.I. and Appendix A for suggested staffing per this directive.

(3) Ensuring clinical, technical and biomedical engineering HCPs across the VISN are aware of the current guidance for proper storage, transmission, retrieval and overreading of ECGs.

(4) Where possible, creating, or assigning current staff as VISN Cardiology Clinical Systems Manager and VISN Biomedical Engineer for Cardiology full-time equivalent resources to oversee cardiac information systems across the VISN. **NOTE:** These positions are aligned under the VISN Chief of Informatics and the VISN Chief Biomedical Engineer and serve as a System Manager and Biomedical Engineer/Network Specialist for Cardiology, respectively.

(5) Ensuring at least two VISN-level clinical staff and two biomedical engineering staff receive original equipment manufacturer Cardiology Clinical System Manager and biomedical engineering specific training on the ECG Management System, respectively, if they have not already been trained.

j. Veterans Integrated Services Network Cardiology Clinical Systems Manager. **NOTE:** This role reports to the VISN Chief of Informatics. The VISN Cardiology Clinical Systems Manager is responsible for:

(1) Providing guidance to clinical, technical and biomedical engineering HCPs across the VISN for proper storage, transmission, retrieval and interpretation of ECGs.

(2) Supporting new cardiac imaging equipment purchases and reviewing clinical language in contracts to ensure the appropriate system is purchased and patient safety and maintenance activities are properly addressed.

(3) Monitoring ECG processes across the VISN to ensure compliance with this directive and related guidance.

(4) Providing guidance and operational assistance to VA medical facility Cardiology System Managers across the VISN to ensure compliance with this directive and related standards.

(5) Supporting the VISN's processes and VA medical facility Cardiology programs while operating in accordance with VISN clinical standards of professional service.

k. Veterans Integrated Services Network Biomedical Engineering Professional for Cardiology. **NOTE:** This role reports to the VISN Chief Biomedical Engineer. The VISN Biomedical Engineering professional for Cardiology is responsible for:

(1) Providing technical oversight of the ECG Management System, ensuring uptime and connectivity of servers, application, workstations and ECG carts.

(2) Providing technical consultation and coordination with clinical HCPs (through the VISN Cardiology Clinical Systems Manager) across the VISN to ensure proper lifecycle management of devices and clinical systems, inclusive of system and application upgrades, replacements and electronic health record (EHR) integration.

(3) Supporting new equipment purchases and reviewing technical language in contracts to ensure the appropriate system is purchased, and patient safety, cybersecurity and maintenance activities are properly addressed.

(4) Providing guidance to VISN biomedical engineering staff for technical configuration and maintenance processes to ensure compliance with HTM policy and standards. Additional information is available on the HTM Field Communications & Resources SharePoint site:

<https://dvagov.sharepoint.com/sites/VACOVHADUSHOM/HTM/CommResource/Technical%20Configurations/Forms/AllItems.aspx?csf=1&web=1&e=ScFY5Z&cid=a1331025%2D5039%2D481e%2D8563%2D17a26ffa68cb&RootFolder=%2Fsites%2FVACOVHADUSHOM%2FHTM%2FCommResource%2FTechnical%20Configurations%2FEKG%20Cardiology&FolderCTID=0x012000D70F8241C4A82B4EB6DCC48BFB72C6D5>. **NOTE:**

This is an internal VA website that is not available to the public.

(5) Supporting the VISN’s mission and VA medical facility Cardiology programs while operating in accordance with VISN standards, HTM policies and standards of professional service.

I. **VA Medical Facility Director.** The VA medical facility Director is responsible for:

(1) Ensuring overall VA medical facility compliance with this directive and appropriate corrective action is taken if non-compliance is identified.

(2) Providing adequate operational (cardiology) and technical (biomedical engineering) support resources to ensure compliance with this directive, relevant standards and applicable regulations.

(3) Where possible, creating or assigning current staff as ECG Administrators. Appendix A provides a recommended staffing matrix.

(4) Implementing an ECG Management standard operating procedure (SOP) at the VA medical facility. A national template that can be adapted locally is available at: <https://dvagov.sharepoint.com/sites/vhascco/cardiology/Shared%20Documents/Forms/AllItems.aspx>. **NOTE:** *This is an internal VA website that is not available to the public.*

(5) Ensuring at least one clinical staff member and one biomedical engineering staff member receives original equipment manufacturer specific training on the ECG Management System if they have not already been trained.

m. **VA Medical Facility Chief of Staff.** The VA medical facility Chief of Staff (CoS) is responsible for:

(1) Providing clinical oversight and resourcing for HCP who are assigned competencies and duties related to performing and reading ECGs. **NOTE:** See the *Nursing and Cardiology Technician Technical Competencies for ECG Transmission* posted on the Cardiology SharePoint: <https://dvagov.sharepoint.com/sites/vhascco/cardiology>. This is an internal VA website that is not available to the public.

(2) Ensuring all ECG studies are interpreted by an appropriately credentialed clinician. **NOTE:** While ECG interpretation is within the scope of practice of cardiologists, these privileges can also be granted by the VA medical facility Director to other physicians, advanced practice registered nurses and physician assistants in accordance with VHA Directive 1100.21, *Privileging*, dated March 2, 2023. Interpretations must be performed electronically and documented in the ECG Management System.

(3) Designating an appropriately credentialed and privileged clinician (see note in paragraph 2.m.(2)) to complete the Chief of Cardiology responsibilities in paragraph 2.o. if a Chief of Cardiology position does not exist at the VA medical facility.

(4) Collaborating with the VA medical facility Associate Director for Patient Care Services (ADPCS) to ensure that HCPs and Medical Instrument Technicians (MIT)/ECG Technicians have a local SOP for ECG Management that includes the requirements in this directive to facilitate a coordinated approach to ECG management. A national template that can be adapted locally is available at <https://dvagov.sharepoint.com/sites/vhascco/cardiology/Shared%20Documents/Forms/AllItems.aspx>. **NOTE:** This is an internal VA website that is not available to the public.

n. **VA Medical Facility Associate Director for Patient Care Services.** The VA medical facility ADPCS is responsible for:

(1) Providing clinical oversight and resourcing for HCP who are assigned competencies and duties related to performing ECGs. **NOTE:** See the *Nursing and Cardiology Technician Technical Competencies for ECG Transmission* posted on the Cardiology SharePoint: <https://dvagov.sharepoint.com/sites/vhascco/cardiology>. This is an internal VA website that is not available to the public.

(2) Ensuring VA medical facility MIT/ECG Technicians and any HCPs assigned to perform ECGs and working under the authority of the ADPCS demonstrate and have documented competency for order entry and the completion and transmission of ECGs to the ECG Management System.

(3) Collaborating with the VA medical facility CoS to ensure HCPs and MIT/ECG Technicians under the authority of the ADPCS have a local SOP for ECG Management that includes the requirements in this directive to facilitate a coordinated approach to ECG management. A national template that can be adapted locally is available at

<https://dvagov.sharepoint.com/sites/vhascco/cardiology/Shared%20Documents/Forms/AllItems.aspx>. **NOTE:** This is an internal VA website that is not available to the public.

o. **VA Medical Facility Chief of Cardiology.** The VA medical facility Chief of Cardiology is responsible for:

(1) Ensuring HCPs assigned to perform ECGs under Cardiology (e.g., VA medical facility MIT/ECG Technicians, Nursing Assistants [NA], Licensed Practical/Vocational Nurses [LPN/LVN], Registered Nurses [RN]) have documented competencies related to ECG transmission for Cardiology. Please see the Nursing and Cardiology Technician Technical Competencies for ECG Transmission; ECG Administrator Training and Competencies Requirements; and Biomedical Engineering Competencies for ECG posted on the Cardiology SharePoint:

<https://dvagov.sharepoint.com/sites/vhascco/cardiology>. **NOTE:** This is an internal VA website that is not available to the public.

(2) Ensuring at least 90% of ECG studies routed to an appropriately credentialed clinician are read within 3 business days after the ECG study is available for interpretation in the ECG Management System.

(3) Ensuring ECG studies with critical results are managed in accordance with local VA medical facility processes.

(4) Ensuring VA medical facility MIT/ECG Technicians have a local SOP for ECG Management that includes the requirements in this directive to facilitate a coordinated approach to ECG management. A national template that can be adapted locally is available at:

<https://dvagov.sharepoint.com/sites/vhascco/cardiology/Shared%20Documents/Forms/AllItems.aspx>. **NOTE:** This is an internal VA website that is not available to the public.

(5) Providing oversight of the VA medical facility ECG Administrator.

p. **VA Medical Facility Electrocardiogram Administrator.** The VA medical facility ECG Administrator is responsible for:

(1) Coordinating with VA medical facility biomedical engineering staff on the creation and maintenance of an ECG cart location table with mutually agreed-upon naming conventions.

(2) Confirming patient demographic errors on ECG tracings sent to the ECG Management System, which may be common, and correcting as needed.

(3) Routing “unconfirmed” ECGs in the ECG Management System to the “in-basket” (e.g., electronic list view) of the VA medical facility designated ECG interpreting clinician each weekday except for Federal holidays.

(4) Performing initial set up of ECG interpreting clinician user profiles in the ECG image management system.

(5) Verifying on a weekly basis the workflow configuration on the ECG Management System including management of location ranges for user profiles, configuration of provider in-baskets and oversight of filters applied to the system.

(6) Running a database query each weekday except for Federal holidays on the ECG Management System to identify unread/unconfirmed ECG tracings, mismatched ECG tracings, or other failures to properly route ECG tracings for provider interpretation and address as appropriate.

q. **VA Medical Facility Chief Biomedical Engineer.** The VA medical facility Chief Biomedical Engineer is responsible for:

(1) Consulting with VA medical facility clinical HCPs on configuration of the ECG Management System, training biomedical engineering staff as outlined in paragraph 3, management of equipment life cycle, new activations and adjustments to existing clinics.

(2) Providing VA medical facility-level support in the areas of patient safety, cyber security, maintenance and EHR integration for the ECG Management System.

(3) Working with VA medical facility clinical HCP to ensure the ECG Management System is configured as outlined by the National Cardiology Program Office. For additional information see VHA Cardiology Clinical Operations, ECG Management Directive Competencies:

https://dvagov.sharepoint.com/sites/vhascco/cardiology/ECG_Management_Directive_Competerencies/Forms/AllItems.aspx. **NOTE:** *This is an internal VA website that is not available to the public.*

(4) Ensuring the annual competency is performed and documented in the appropriate employees' file.

r. **VA Medical Facility Clinician.** The VA medical facility clinician is responsible for:

(1) Placing electronic ECG orders in the EHR.

(2) If the clinician is the ordering provider and serves as the first provider to review the ECG once performed at the point-of-care, conducting clinical interpretation and decision-making while awaiting final ECG interpretation by an appropriately credentialed clinician (see paragraph 2.o.(2)).

(3) If the clinician is the ordering provider, contacting the appropriate consulting service for any critical finding (as defined by the VA medical facility) noted on the ECG obtained at the point-of-care.

3. TRAINING

a. The following training is **required** for all clinical staff (upon hire and current) who perform ECGs: Talent Management System Course 131005182, How to Obtain and Upload an ECG in the VA.

b. All staff involved in ECG management must have updated training and proof of the following competencies which are posted and kept updated on the Cardiology, HTM and ONS SharePoint sites. These competencies must be referenced for any new staff trainings to ensure the most updated competencies are used.

c. Competencies include:

(1) ECG Administrator Training and Competencies Requirements.

(2) Nursing (e.g., RN, LPN/LVN and NA roles) and Cardiology Technician Technical Competencies for ECG Transmission.

(3) Biomedical Engineering Competencies for ECG. **NOTE:** *These competencies must be distributed to VISN and VA medical facility biomedical engineering staff by the Director, HTM (see paragraph 2.g.(1)).*

d. SharePoint sites where these competencies are posted include:

(1) VHA Cardiology Clinical Operations SharePoint:
<https://dvagov.sharepoint.com/sites/vhascco/cardiology>. **NOTE:** *This is an internal VA website that is not available to the public.*

(2) Office of Nursing Services Cardiology SharePoint:
<https://dvagov.sharepoint.com/sites/vacpp/SitePages/Cardiovascular.aspx>. **NOTE:** *This is an internal VA website that is not available to the public.*

(3) HTM Field Communications & Resources SharePoint:
<https://dvagov.sharepoint.com/sites/VACOVHADUSHOM/HTM/CommResource/Technical%20Configurations/Forms/AllItems.aspx?csf=1&web=1&e=ScFY5Z&cid=a1331025%2D5039%2D481e%2D8563%2D17a26ffa68cb&RootFolder=%2Fsites%2FVACOVHADUSHOM%2FHTM%2FCommResource%2FTechnical%20Configurations%2FECG%20Cardiology&FolderCTID=0x012000D70F8241C4A82B4EB6DCC48BFB72C6D5>. **NOTE:** *This is an internal VA website that is not available to the public.*

4. RECORDS MANAGEMENT

All records regardless of format (e.g., paper, electronic, electronic systems) created by this directive must be managed as required by the National Archives and Records Administration (NARA) approved records schedules found in VHA Records Control Schedule 10-1. Questions regarding any aspect of records management must be addressed to the appropriate Records Officer.

5. BACKGROUND

The ECG is a vital medical test which is performed in large numbers across VHA. This directive aims to ensure consistency in VA medical facility and VISN-level processes for management of ECGs. An ECG Management System is an electronic system that integrates, manages and streamlines the flow of ECGs, enabling data delivery, distribution and analysis of ECG studies for clinical decision-making. Additionally, this system allows for the long-term electronic storage and retrieval of ECGs. The predominant ECG Management System currently used across VHA is a proprietary General Electric Healthcare information management system (GE-MUSE). Other systems in use in VHA include Philips-TraceMaster and Cerner.

6. DEFINITIONS

a. **Electrocardiogram.** An ECG is a non-invasive procedure used to capture and document the electrical activity of the heart.

b. **Medical Instrument Technician.** A medical instrument technician (MIT) is an individual who performs diagnostic examinations or medical treatment procedures as part of the diagnosis and treatment of patients, which can involve operating or monitoring diagnostic and therapeutic medical instruments and equipment associated with ECG.

7. REFERENCES

a. 38 U.S.C. § 7301(b).

b. VHA Directive 1100.21, Privileging, dated March 2, 2023.

c. VHA Cardiology Clinical Operations ECG Management SOP Template.
<https://dvagov.sharepoint.com/sites/vhascco/cardiology/Shared%20Documents/Forms/AllItems.aspx>. **NOTE:** This is an internal VA website that is not available to the public.

d. VHA Cardiology Clinical Operations SharePoint.
<https://dvagov.sharepoint.com/sites/vhascco/cardiology>. **NOTE:** This is an internal VA website that is not available to the public.

e. Office of Nursing Services (ONS) Home SharePoint.
<https://dvagov.sharepoint.com/sites/vaons>. **NOTE:** This is an internal VA website that is not available to the public.

f. HTM Field Communications & Resources, MUSE ECG Systems.
<https://dvagov.sharepoint.com/sites/VACOVHADUSHOM/HTM/CommResource/Technical%20Configurations/Forms/AllItems.aspx?csf=1&web=1&e=ScFY5Z&cid=a1331025%2D5039%2D481e%2D8563%2D17a26ffa68cb&RootFolder=%2Fsites%2FVACOVHADUSHOM%2FHTM%2FCommResource%2FTechnical%20Configurations%2FECG%20Cardiology&FolderCTID=0x012000D70F8241C4A82B4EB6DCC48BFB72C6D5>. **NOTE:** This is an internal VA website that is not available to the public.

g. VHA Cardiology Clinical Operations, ECG Management Directive Competencies. https://dvagov.sharepoint.com/sites/vhascco/cardiology/ECG_Management_Directive_Competerencies/Forms/AllItems.aspx. **NOTE:** *This is an internal VA website that is not available to the public.*

**RECOMMENDED STAFFING METHODOLOGY ELECTROCARDIOGRAM
ADMINISTRATOR**

1. This appendix provides recommended guidance for all Department of Veterans Affairs (VA) medical facilities to help determine appropriate levels of VA medical facility Electrocardiogram (ECG) Administrator staffing to support the performance, management and database transmission of ECGs in a manner that ensures patient safety. The VA medical facility ECG Administrator is the VA medical facility-level subject matter expert on clinical aspects of ECG acquisition and MUSE database management.

2. Suggested VA medical facility Level Staffing Methodology for ECG Administrators:

VA Medical Facility Annual ECG Volume	Suggested Administrator Staffing
40,000 ECGs or greater	1.0 full-time equivalent (FTE)
20,000-40,000 ECGs	0.75 FTE
10,000-20,000 ECGs	0.50 FTE
10,000 ECGs or less	0.25 FTE