

February 8, 2011

RADIOLOGY PICTURE ARCHIVING AND COMMUNICATION SYSTEMS (PACS)

1. PURPOSE: This Veterans Health Administration (VHA) Directive defines the policy for establishing a Veterans Integrated Service Network (VISN) Picture Archiving and Communication Systems (PACS) to support the storage, display, and interpretation of radiologic images.

2. BACKGROUND

a. PACS have been acquired and implemented in various configurations within VHA. It is beneficial to establish VISN-wide PACS with a common interface standard in order to facilitate the care of patients referred amongst facilities within a VISN, to efficiently utilize radiologists by means of cross-facility interpretation agreements, to reduce the cost of equipment and maintenance contracts, to ensure interface compatibility with the Veterans Health Information and Technology Architecture (VistA), to share technical equipment expertise within a VISN, and to ensure continuity of service in the event of a disaster.

b. The adoption of PACS in VHA is now nearly universal. PACS speed health care decisions by making images available anywhere in the medical facility as soon as the image is acquired. PACS, coupled with voice recognition and dictation systems, are responsible for a remarkable improvement in report turn-around times within VHA.

c. PACS were initially acquired as independent systems at each Department of Veterans Affairs (VA) medical center. The process of transferring a study from one independent VA medical center PACS to another is laborious. It requires an order for the study to be placed at the second medical center, which results in duplicate medical record entry. More recently PACS have been acquired as a single system for the entire VISN. In this configuration, images are automatically shared across the VISN eliminating the need for an order to be placed in multiple VistA systems. This configuration, in conjunction with an integrated VISN-wide dictation system and proper routing methodology, can allow a radiologist to easily read for multiple facilities in a VISN and have the report automatically returned to the facility performing the procedure.

d. In order to ensure this multi-facility interoperability, an enhanced HL7 interface has been developed. This interface improves on the older interface by ensuring truly unique case numbers and study instances are generated by VistA. Unique identification is necessary to ensure compliance with the Digital Imaging and Communication in Medicine (DICOM) standard and is necessary if VA decides to transmit all studies to a national archive.

e. **Definitions.** These definitions are provided for implementation of this Directive and may not necessarily agree with other common use of these terms.

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(1) **Picture Archiving and Communication Systems (PACS).** PACS are computer-based medical systems dedicated to the storage, retrieval, distribution, and presentation of images. The medical images are stored in an independent format. The most common format for image storage is DICOM.

(2) **Health Level 7 (HL7).** HL7 is the standard based electronic message format supporting administrative, logistical, financial, and clinical processes. Within the Radiology framework, messaging occurs at the radiology package interface and consists of both outbound orders and inbound results messages.

(3) **Digital Imaging and Communication in Medicine (DICOM).** DICOM is a standard for handling, storing, printing, and transmitting information in medical imaging. It includes a file format definition and a network communications protocol. DICOM enables the integration of diagnostic imaging equipment, scanners, servers, workstations, printers, and network hardware from multiple manufacturers into a PACS.

(4) **Voice Recognition and Dictation System.** The voice recognition and dictation system refers to speech-to-text conversion systems, which provide the capability for the radiologist to dictate, edit, and sign a report at the time of interpretation. Typically, systems are client-server based and can be integrated with PACS to provide a unified interface.

(5) **Veterans Health Information and Systems Technology Architecture (VistA).** VistA is VA's core system for the electronic medical record. VistA Radiology is a component package to VistA.

(6) **Imaging Modality.** Imaging Modality refers to the radiology acquisition or capture device used for the purpose of diagnostic reporting. Modalities include Computerized Tomography (CT), Magnetic Resonance Imaging (MRI), Radiographic Imaging, ultrasound, nuclear medicine cameras, etc.

(7) **Modality Work List.** The modality work list refers to the DICOM service that provides patient registration messages to imaging modalities enabling the operator to select the patient and examination from a pre-populated pick list.

(8) **Caching Server.** The Caching Server refers to local storage of PACS images allowing for local area network (LAN) retrieval to improve system performance. Caching servers need to be coupled to a contingency PACS server that allows for continuity of operations during wide area network (WAN) or central server failures.

3. POLICY: It is VHA policy that standards for the acquisition, configuration, and performance specifications for PACS systems are to be implemented at each VHA facility no later than March 31, 2012.

4. ACTION

a. **The Principal Deputy Under Secretary for Health.** The Principal Deputy Under Secretary for Health is responsible for:

(1) Appointing a committee of subject matter experts to assist VISN Directors with acquisition, implementation, and operation of VISN-wide commercial PACS. This Committee is responsible for the following activities:

(a) Developing specifications that describe the configuration, clinical functionality, and interface requirements of a compliant PACS.

(b) Assisting contracting personnel with development of procurement strategies, contractual vehicles, and technical specifications for PACS acquisitions.

(c) Developing implementation guidance to assist VISNs with installation planning, installation, training, transition to filmless operations or from legacy PACS, and conformance with national standards.

(d) Developing recurring operations and support guidance to assist VISNs with staffing considerations, roles and responsibilities, optimal operations, technical support structures, change management processes, and life cycle planning for the VISN PACS.

(e) Assisting the Office of Information and Technology (OI&T) in planning for information technology infrastructure to support PACS (primarily LAN/WAN, VistA interfaces, and information protection) and establishing service level agreements with OI&T.

(f) Identifying and recommending best practices to be shared with the field.

(2) Deciding what action needs to be taken if the committee finds a PACS to be significantly noncompliant.

b. **Office of Health Information.** The Office of Health Information (OHI) is responsible for:

(1) In its role as liaison to the Indian Health Service (IHS), working in Fiscal Year 2011 with the VistA Imaging Integrated Project Team (IPT) and the IHS to develop a plan to mitigate IHS dependencies on the VistA Rad application.

(2) In its role as clinical information system functional requirements manager, working in Fiscal Year 2011 with the VistA Imaging IPT to develop a plan to mitigate dependencies of internal Veterans Health Administration (VHA) imaging stakeholders in clinical specialties other than radiology on capabilities for advanced image viewing currently based on VistA Rad.

c. **VISN Director.** The VISN Director is responsible for acquiring, implementing, and operating compliant VISN-wide PACS system while:

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(1) Ensuring funding for the PACS from the VISN capital or operating budget.

(2) Chartering a PACS Evaluation Team to review, select, and coordinate implementation of the PACS for the VISN. This team, at a minimum, must consist of a:

(a) Radiologist;

(b) Chief Radiology Technologist;

(c) PACS Administrator;

(d) Biomedical Engineer;

(e) Radiology Automated Data Processing Application Coordinator (ADPAC); and

(f) OI&T representative.

***NOTE:** It is recommended that the team include representation from all VHA facilities in the VISN.*

(3) Ensuring that conversion to a VISN-wide system is completed before March 31, 2012. VISNs that recently purchased independent PACS at each facility that cannot be reconfigured as a VISN PACS may wait until their system is 5 years old before completing conversion.

(4) Ensuring the PACS has a consolidated archive, such that any study in the VISN may be viewed at any facility in the VISN without importing the images from one facility PACS database to another and without entering a separate order in each VistA. This ability applies to both the radiologist and the clinician viewing client. The archive must be located within a controlled space (see VA Directive 6500), such as a data processing center.

(5) Ensuring a VISN-wide dictation system that allows any study to be dictated from any facility, with automated upload of the report to the originating facility. ***NOTE:** This technical capability does not negate the requirement for clinical privileges at the originating medical facility.*

(6) Ensuring image retrieval is available to the greatest extent possible. When migrating from an older PACS system or VistA Imaging to a new PACS, it is not necessary to migrate all studies so long as they can be queried and retrieved from the prior archive, as needed.

(7) Ensuring the DICOM modality work list service is provided by either the PACS or VistA Imaging.

(8) Ensuring a caching or contingency server is installed at each medical center. ***NOTE:** This server assumes limited functions of an independent PACS if the wide area network is temporarily disrupted.*

(9) Ensuring the PACS has an automated back-up or disaster recovery system placed in a controlled space (see VA Directive 6500).

(10) Ensuring each instance of VistA in the VISN has a separate HL7 interface. If the VISN has a consolidated VistA system then each division must have a separate HL7 interface.

(11) Ensuring PACS meets the qualification process for HL7 interface, as jointly agreed to by OI&T and Office of Patient Care Services (PCS). PACS vendors being evaluated by the VISN need to have completed, or be in active qualification testing for, the HL7 interface. Testing must be successfully completed by March 31, 2012. After that date, only PACS that have met the HL7 interface requirement can be purchased.

(12) Ensuring studies are retained on the VISN PACS archive for at least 5 years. Studies acquired at one VA medical center and interpreted at a second VA medical center do not need to be stored at both locations.

(13) Ensuring all studies are transferred to VistA Imaging before being deleted from PACS.

NOTE: VistA Imaging is not affected by this Directive. The VistA RAD radiology product will be discontinued when all VISNs have converted to VISN-wide PACS.

d. **Facility Director.** The facility Director is responsible for:

(1) Ensuring all diagnostic radiology images for their facility are stored in both PACS and VistA Imaging systems.

(2) Providing adequate operational (typically Radiology) and technical support (typically Biomedical Engineering) staffing to sustain PACS operations.

(3) Auditing the storage process periodically to ensure studies are being permanently stored in VistA Imaging prior to deletion from PACS. If studies are interpreted on a dedicated modality specific workstation, as is often the case for mammography or nuclear medicine, periodic audits of the process by which those studies are transferred to PACS or VistA Imaging before being deleted from the workstation must be performed.

(4) Ensuring that all imaging studies performed at the VHA medical facility, performed at an outside facility on contract, or performed on Fee Basis, and stored on PACS or VistA Imaging are accompanied by an imaging procedure order in the Computerized Patient Record System (CPRS). This creates a unique index to store the radiology report in VistA and stores the images in PACS and VistA Imaging. *NOTE: Entry of the order ensures workload capture and transmission of activity to national databases.*

5. REFERENCE: Veterans Health Administration Decision Memo: Standardization of VISN-Wide PACS, 2-2-09.

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6. FOLLOW-UP RESPONSIBILITIES: Office of Patient Care Services (11) is responsible for the contents of this Directive. Questions may be directed to the Chief Consultant for Diagnostic Services (115) at 919-383-7874 ext. 260.

7. RESCISSION: None. This VHA Directive expires February 28, 2016.

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