Image Demographics, Annotation(s) and Radiography Markers

Purpose

To provide Lower Mainland Medical Imaging (LMMI) staff with a procedure to ensure all images have correct demographics, annotations and radiographic lead markers placed prior to imaging and releasing images to the picture archiving communication system (PACS) for radiologist reporting.

Site Applicability

This procedure applies to LMMI staff within Fraser Health (FH), Providence Health Care (PHC), Provincial HealthServices Authority (PHSA) and Vancouver Coastal Health (VCH).

Practice Level

Medical Imaging (MI) staff: Radiography, fluoroscopy and mammography medical radiation technologists (MRTs), physicians andradiologists.

Need to Know

This radiography marker standard supersedes all other departmental demographic marker decision support tools. All radiography and fluoroscopy images include correct patient demographics and correctly placed markers (lead or electronic) denoting patients' right or left side.

Standard

MRTs ensure lead markers are:

- clearly visible in each view/image and should not overlay any pertinent anatomical area of interest
- within primary beam collimated field of view (FOV) in computed radiography (CR) and digital radiography (DR)
- positioned correctly: supine for supine patients and prone for prone patients
- anteroposterior (AP) for thumbs, fingers, hands and wrists that are imaged prone
- placed on lateral aspect prior to imaging except for: thumb, finger, hand and wrist
- placed according to departments viewing protocol which maybe in the same direction as the hanging protocol or how the image was acquired

  Example: Abdomen - top of marker to head of patient
  Example: X-table hip - top of marker is 90 degrees to the direction of the limb
- **for oblique imaging,** such as spine, pelvis, mandible and skull imaging; place on the side of the patient nearest the imaging receptor.
- **for situs inversus and dextroposition imaging** (when known), use bilateral lead markers and document this condition in the appropriate area as per site specific process.

  Example: Document in the RIS comment field or on requisition prior to scanning into the PACS.

MRTs verify images are labelled correctly prior to forwarding the images to the picture archiving communicationssystem (PACS) and prior to radiologist dictation.

Radiography Procedure

1. Select patient to be imaged on the modality workstation and confirm modality demographics. Verify the patient requisition by confirming patient first and last name, birth date and procedure.
2. With the patient, follow **Patient ID and Time Out Procedure** by confirming first and last name, birth date and area/site/side to be examined. Also review history with the patient to ensure request aligns with history provided on the requisition.

   Ask for **additional history** when insufficient history is provided by the requestor.
   Example: when injury occurred or pain began, location of injury or pain, length of time pain or injury has been present, is injury or pain related to a previous injury or pain, any previous imaging performed for this same issue and any other significant details the patient can provide. Review previous imaging if available.
3. **Position** or prepare patient according to departmental exam/views positioning and/or procedure protocols.
4. **Markers**
   a) **Lead or lead equivalent Markers:** Place lead marker(s) prior to taking the exposure.
      - Place lead side markers (i.e. right, left)
      - Place lead positional markers (i.e. supine, decubitus, prone, AP sitting, semi-erect etc.) when required.
        NOTE: A **lead arrow** may replace lead positional upright, supine or decubitus markers.
      - Place Orthopedic marker for templating when required as per departmental agreement with orthopedics.

   b) **Electronic Markers**: Electronic markers are acceptable however best practice is to use a lead marker. If the lead marker placement interferes with image acquisition due to equipment type, sterile field or patient complexity, add an electronic marker pre or post to image acquisition.

      Patient type, exam types or departments where electronic markers may be used:
      - Contact precautions
      - Fluoroscopic, interventional non-sterile and sterile procedures
      - Mammography
      - Neonate lateral chest/abdomen images in incubator
      - Operating room non-sterile and sterile procedures
      - Trauma room / trauma patients
5. **Image patient** as per department exposure (technical factors) protocols.
6. **Annotations:**
   a) **Mobile chest radiography technical factors:** If not in the dicom header, Kilovoltage (KVp), millamperage (mAs), distance and exposure time are electronically annotated onto image **PRIOR** to sending images to PACS.

   b) **Pediatric (age 17 less a day) and neonate (0-28 days of age) technical factors** (i.e. kVp and mAs) must be present on the image. Electronically annotate on the image prior to sending the image to PACS when using computed radiography (CR) or a machine that is not able to capture dose reading for each exposure.

If documenting technical factors directly onto the image is not possible, the technical factors may be documented in the radiology information system (RIS), patient's exam comment field or documented on the requisition prior to scanning into PACS.

- Neonate and pediatric technical factor documentation is NOT required for DR imaging because DR captures exposure and dose for all imaging
- Technical factors documentation is NOT required for any patients above 17 years of age

c) Orthopedic Markers for Templating: Document markers true size electronically on the image and document this in the patient's electronic health record in the comment field or on the requisition prior to scanning the requisition**.**

7. **RIS: completed by the health care professional who positioned patient for imaging.**
   a) Document image number total on the requisition prior to scanning into the PACS .
   b) Document primary and secondary health care professionals involved with the exam and or procedure.
   c) Document when patient protective apparel is used. Normal practice is that patient gonadal and fetal lead shielding is not required for Medical Imaging (MI) exams.
   d) Document patient identification and time out in medical imaging performed, if required by the site.
   e) Document patient history which may include when injury occurred or pain began, location of injury or pain, length of time, is this related to a previous injury, any previous imaging etc.
8. **PACS: to be completed by the health care professional who positioned patient for imaging.**
   a) Confirmation of demographics and correct markers <u>prior to sending images to PACS</u> is performed by primary/positioning technologist.
   Example: hospital, patient name, date of birth, medical record number, accession number, date/time of exam and referring physician's name.
   b) Ensures integrity of imaging data and the images or series of images obtained during the patient exam are of diagnostic quality and are transferred and stored in the appropriate final destination.
   c) Ensures all documentation is accurate and additional patient history is, added when required.
   d) Sends images to PACS and verify images in PACS.

Demographic or Marker Correction Procedure

1. Correct any digital markers, annotations and demographics as per site-specific processes.
2. Errors should be corrected at the modality image source instead of PACS whenever possible as per site-specific processes.
3. Annotations made in PACS may not transfer with images to CD's or other PACS systems (i.e. PDIV - Provincial Diagnostic Imaging Viewer)
4. **Examples of errors requiring correction:**

   Modality Correction of Demographic and Lead Marker Error prior to releasing images to PACS

   - **Incorrect Demographics:**
     Follow health authority, site-specific demographics correction method.
   - **Obscured or omitted marker:**
     Add correct electronic marker per site-specific correction procedure.
   - **Incorrect lead markers:**
     Add correct electronic marker per site-specific correction procedure.
     Remove incorrect marker as per site-specific correction procedures

PACS Correction of Demographic and Lead Marker Error(s)

- When images are transmitted to PACS and no longer available to be corrected at modality, a correction must be made in PACS as per health organization site-specific marker correction processes.
- When required, change markers in PACS by following the health authority site demographics correction process (where required, complete a PACS correction form and forward to PACS correction folder on a shared drive) including alerting the PACS/RIS coordinators/administrators to ensure the same changes are made on the Provincial Viewer system and completing appropriate paper work.

For Incorrect Demographics, state on requisition and/or in the Radiology Information System

- The patient identification was: Last & first name
MRI.URN (PACS ID)
Accession number
- The patient name is: Last & first name
MRI.URN (PACS ID)
Accession number
- Document: Date, time and MI staff initials.

For Incorrect Markers, state on requisition and/or the Radiology Information System

The marker used was [marker name]
The correct marker should have been [marker name] and is now applied.
Date, time and technologist initials

5. In the event that a report is distributed with incorrect demographics, markers and/or annotations:
   - inform a radiologist to complete an addendum report and distribute as per site-specific processes
   - document the error by submitting a Patient Safety event form (PSLS)

Related Documents

Related Policies

- Patient, Client and Resident Identification
- Identification: Two Identifiers of Patient, Client, Resident

Guidelines/Procedures/Forms

- Patient Identification and Time Out in Medical Imaging
- Discontinuing Routine Use of Protective Equipment: Gonadal and Fetal Lead Shielding for Patients

References

American Society of Radiologic Technologists. (2019). Practice Standards and Scopes of Practices: Retrieved from:https://www.asrt.org/main/standards-and-regulations/professional-practice/practice-standards

Canadian Association of Medical Radiation Technologists. (2019). Patient Management-Markers and Annotations.Retrieved from: https://camrt-bpg.ca/quality-of-care/appropriate-care/clarification-of-requisition/

Diagnostic Accreditation Program Standards: Retrieved from: https://www.cpsbc.ca/accredited-facilities/dap/accreditation-standards-DI

British Columbia Patient safety Learning System (PSLS) https://one.vch.ca/learning-practice/tools-resources/patient-safety-learning-system-psls

DAP Standard	Description
Information Management	The facility uniquely identifies the patient and examinations performed
	The patient name, patient identifying number and facility name are clearly identified on the master file/patient medical record.
Global Modality	Images/examinations are labeled in a standardized way that allows for proper patient identification and annotation.
	Prior to interpretation, all digitally acquired images are verified for number of images, markers, orientation, etc. in PACS.
Radiology	Lead markers are placed prior to exposure (Intent: Electronic markers are not to be used in place of lead markers)
	Lead markers include the initials of the individual taking the exposure.

Definitions

"Annotation" refers to descriptive labels used on images to assist the reader.

"Demographics" refers to personal patient identifiers. Examples of patient demographics used in medical imaging includes but is not limited to patient name, date of birth, gender, personal healthcare number, hospital number (MRN), hospital name, referring physician, and date/time medical imaging exam was performed.

"Discrepancy" means a difference between two things that should be the same.

"Electronic Marker" is a marker built into the equipment software used to annotate a digital image after exposure. Examples of electronic markers are anatomical side markers (i.e. right and left), position markers (i.e. supine and prone) and technologist initials.

"kVp" means kilovoltage

"Lateral" means the lateral aspect of the patient in anatomical position.

"Lead Markers" are markers made out of lead that are used in X-ray to mark images during exposures. Examples of lead markersare anatomical side markers (i.e. right and left), position markers (i.e. supine and prone) and technologist initials.

"mAs" means milliamperes per second

"MRN" means Medical Record Number specific to the site

"PACS" means Picture Archiving Communication System

"Patient" means a client (in-patient or out-patient) undergoing diagnosis or treatment in MI department.

"Side" means which side of the patient the procedure is to be performed.

"RIS" means radiology information system

"Staff" means all employees, contactors, or approved students, including but not limited to radiologists, fellows, residents, Medical Imaging Technologists, Sonographers Registered Nurses, Respiratory Technologists and students engaged to work in anyMedical Imaging Department within FH, PHSA, PHC and VCH.

"URN" Unique Record Number is a Meditech overarching number for a patient across all of Fraser Health.

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Revision History:	**Version**	**Date**	**Description/ Key Changes**	**Revised By** (Name and Position)
	1.0	15-Jun-2020	Initial Release. This document replaces HA and sitespecific related decision support tools.	Annemarie Budau, Rad RPL
	2.0	22-Oct-2020	#8 in procedure revised to state that annotation of technical factors should preferably be done on the image.	Annemarie Budau, Rad RPL
	3.0	01-Sep-2022	Clarification of statements in #2, #5, #6, #7, #8, Clarification of statements in #2, #5, #6, #7, #8. Rewording and sentence structure Addition of Neonate to #7 that requires dose documentation.	Annemarie Budau, Rad RPL
	4.0	28-Oct-2022	Revised PACS section to mirror the performance appraisal and 3 month orientation checklist Added Orthopedic marker placements and primary technologists check images prior to sending to PACS	Annemarie Budau, Rad RPL
	5.0	21-Feb-2023	Added PACS definition to Title Definition Added RIS required entry steps for the radiographers to follow. Added that PT ID confirmation	Annemarie Budau, Rad RPL
	6.0	21-Mar-2023	Minor grammatical updates, update regarding scanning documents into PACs, corrected statement regarding scanning into RIS, include links to HA policies for Pt ID	Annemarie Budau, Rad RPL

	7.0	25-MAY-2023	Add “Review previous images if available” statement to Procedure	Annemarie Budau, Rad RPL