

Policy: The Office of the Chief Medical Examiner (OCME) is assured adequate supporting services, equipment and facilities to perform autopsy examinations pursuant to DC Code § 5-1403 and 1409.

Purpose: To ensure adequate radiology and X-ray support for autopsy examination in accordance with the mission of the Office of the Chief Medical Examiner.

Scope: The following procedures are to ensure that Mortuary Staff and the Medical Examiner physicians have the proper forensic radiology support in a safe and secure environment.

Definitions and Abbreviations:

CMS – electronic case management system

OCME- The Office of the Chief Medical Examiner

PACS- Picture Archiving and Communications System

Anterior/Posterior- View of an X-ray image obtained by positioning the C-arm at 0 degrees rotation.

Lateral- View of an X-ray image obtained by positioning the C-arm at 90 degrees rotation.

1. Post Mortem Radiology

1.1. An integral aspect of certain autopsy examinations is the performance of post mortem radiology. The decision for obtaining X-rays is the responsibility of the medical examiner performing the post mortem examination. The medical examiner should ensure, prior to the release of the decedent, that X-rays are obtained at a proper exposure level to allow for valid interpretation and are labeled with unique case number and are properly oriented to the viewer using a left or right designation on each radiograph.

1.2. Cases that require post mortem X-ray include:

1.2.1. All Penetrating/Perforating Trauma

1.2.2. Gunshot/Shotgun Wounds

1.2.3. Sharp Force Injury

1.2.4. Decomposed Remains

1.2.5. Skeletonized Remains

1.2.6. Pediatric

1.2.6.1 In children, the entire body should be X-rayed paying close attention to the extremities.

1.2.6.2 Directed X-ray for infant cases is strongly encouraged.

1.2.7. Cases in which death is caused by an explosion device

1.2.8. Charred Remains

1.2.9. Unidentified Remains

1.3. Additional X-rays may be obtained at the discretion of the attending pathologist.

2. Radiograph Procedures

2.1. All X-rays shall be obtained by the mortuary staff immediately after completing the intake of remains procedures.

2.2. Post mortem X-rays should be performed through the body bag prior to seal being broken by the attending pathologist.

2.2.1 Post mortem X-rays should be repeated if artifacts are present in the images.

2.2.2 Directed post mortem X-rays shall be obtained at the discretion of the attending pathologist after the body bag is opened.

2.3. Radiographs shall be taken using the Lodox X-ray system for all decedents ranging from 5 years of age to adults.

2.3.1. Decedents shall be placed on the Lodox X-ray table with the head at the 'A' position.

2.3.2. The Lodox X-ray table shall be docked correctly, locked, and completely lowered onto the detector prior to obtaining the image.

2.3.3. To avoid collisions, decedents, body bags, sheets, etc. shall not obstruct the mobility of the c-Arm when operating the Lodox X-ray system.

2.3.4. The Lodox X-ray system shall complete the warm up phases prior to obtaining images.

2.4. Radiographs shall be taken using the portable Carestream X-ray system for pediatric decedents ranging to 4 years of age.

2.4.1 At the discretion of the attending pathologist, radiographs may be completed using the portable Carestream X-ray system for pediatric decedents over 4 years of the age and for cases associated with a mass fatality incident.

2.4.2 The daily dark detector calibration shall be completed prior to operating the Carestream X-ray system to minimize visible artifacts on the images.

2.5. Full body anterior/posterior views shall be obtained on all decedents requiring X-rays.

- 2.5.1 Lateral views shall be obtained on decedents when foreign objects such as projectiles are present in the anterior/posterior images.
 - 2.5.1.1. Lateral view X-rays of the head shall be taken on all decedents at the time of intake processing when foreign objects are present in the anterior/posterior images.
 - 2.5.1.2. At the discretion of the pathologist at the time of examination, additional lateral views may be taken of the chest, abdomen, pelvis, and extremities when foreign objects are present in the anterior/posterior images.
- 2.5.2 Additional directed views may be completed at the discretion of the attending pathologist. Additional directed views include but are not limited to:
 - 2.5.2.1 C Spine Lateral
 - 2.5.2.2 Thoracic and Lumbar Spine Lateral
 - 2.5.2.3 Skull (Anterior/Posterior/Lateral)
 - 2.5.2.4 Spine (Anterior/Posterior/Lateral)
 - 2.5.2.5 Thorax (Anterior/Posterior/Lateral)
 - 2.5.2.6 Abdomen (Anterior/Posterior/Lateral)
 - 2.5.2.7 Pelvis (Anterior/Posterior/Lateral)
 - 2.5.2.8 Upper/Lower Extremities (Anterior/Posterior/Lateral)
- 2.6 All X-ray images obtained using the Lodox and portable Carestream X-ray systems shall include the following:
 - 2.6.1 Decedent's first and last name; and
 - 2.6.2 OCME case number (i.e. 00-00000); and
 - 2.6.3 Left or right markers to indicate orientation of decedent.
- 2.7 At the discretion of the attending pathologist or Forensic Anthropologist, dental X-rays shall be completed for identification purposes.
 - 2.7.1. The Mortuary Staff shall complete dental X-rays using the Dexis Dental X-ray system.
 - 2.7.2. Dental X-rays of decedent's full dentition or directed views shall be completed at the discretion of the attending pathologist or forensic anthropologist.
 - 2.7.3. Dental X-rays shall include the following:
 - 2.7.3.1. Decedent's first and last name; and
 - 2.7.3.2. OCME case number (i.e. 00-00000).
- 2.8 The mortuary staff shall document that X-rays were completed in CMS.

3. Radiology Archiving and Viewing

- 3.1. All X-rays completed using the Lodox or portable CareStream systems are archived to long term storage.
 - 3.1.1. Images are archived long term as dicom files on OCME PACS;

- 3.1.1.1 The mortuary staff shall export all X-ray images taken on the Lodox and portable Carestream systems to OCME PACS immediately after completion.
- 3.1.2. Images are archived long term as jpeg files on OCME server;
 - 3.1.2.1 The forensic photography staff shall export all X-ray images taken on Lodox and portable Carestream systems to the OCME server daily.
- 3.1.3. Images are archived long term as jpeg files in CMS.
 - 3.1.3.1 The forensic photography staff shall export all X-ray images taken on Lodox and portable Carestream systems to the CMS daily.
- 3.1.4. The archived X-ray images may be viewed from the following locations:
 - 3.1.4.1. OCME PACS;
 - 3.1.4.2. OCME Server;
 - 3.1.4.3. OCME CMS
- 3.2 All X-rays completed using the Dexis Dental X-ray system are archived to long term storage.
 - 3.2.1 Images are archived long term as jpeg files on OCME server;
 - 3.2.1.1. The forensic photography staff shall export all X-ray images taken on Dexis Dental X-ray system to the OCME server as completed.
 - 3.2.2 The archived dental x-Ray images may be viewed from the OCME server.

4 Radiology Quality

4.1 Quality Inspection

- 4.2.1 Approximately 10% of the decedent radiographs, randomly chosen, are verified for quality and archiving. Verification is conducted by the Forensic Anthropologist or Forensic Investigator with radiography training.
- 4.2.2 Radiograph quality is visually verified. The following items are considered:
 - 4.2.2.1 the Right or Left marker is present in the radiograph;
 - 4.2.2.2 the OCME case number is accurately documented
 - 4.2.2.3 the decedent's first and last name are accurately documented
 - 4.2.2.4 the skeletal elements are clearly observed.
- 4.2.3 Radiograph archiving is verified by accessing the radiograph through the PACS interface and the case photo file on the OCME server.

4.3 Documentation of Quality Inspection

- 4.3.1 The result of each radiograph verification is documented in the Radiograph Inspection Log. The following information is recorded:
 - 4.3.1.1 the OCME case number;
 - 4.3.1.2 verification date and time;
 - 4.3.1.3 verifier;

4.3.1.4 results: acceptable or unacceptable.

4.4 Unacceptable Radiographs

- 4.4.1 An unacceptable verification result is reported to the Mortuary Unit Supervisor via email at the time of the verification.
- 4.4.2 The Mortuary Unit Supervisor examines the radiograph to determine if it is operator error or equipment malfunction.
- 4.4.3 When the error is operator error, the Mortuary Unit Supervisor addresses the error with the appropriate staff.
- 4.4.4 When the error is equipment malfunction, the Mortuary Unit Supervisor works with internal and external technical support to correct the problem.
- 4.4.5 Following observation of unacceptable radiographs, all radiographs are verified over a five (5) day period to ensure the problem is resolved.

5 Radiology Safety

5.1. Personal Protective Equipment and Shielding

It is the responsibility of the DC OCME and staff using radiation sources to utilize proper radiation safety practices; minimizing exposure and risk of injury.

- 5.1.1 All staff utilizing X-ray equipment and assisting with obtaining X-rays shall wear the radiation dosimeter badges/rings, lead shielded aprons/thyroid collars/vests, and radiation gloves at all times.
 - 5.1.2 Each staff utilizing X-ray equipment shall be assigned a radiation dosimeter badge and ring, which must be worn at all times when operating all X-ray equipment.
 - 5.1.2.1. Dosimeter badges shall be worn by staff at the collar at all times and shall be returned to the X-ray control room (#:5136) when not in use.
 - 5.1.2.2. Dosimeter rings shall be worn under the radiation gloves at all times and shall be returned to the X-ray control room (#:5136) when not in use.
 - 5.1.3. The lead shielded aprons, thyroid collars, and vests shall be worn by staff when working within a 3 foot distance of radiation emitting equipment.
- 5.2 All X-ray equipment, including the Lodox, portable CareStream, and Dental Dexis systems, shall only be operated in X-ray room (#:5134).
- 5.2.1 Mortuary Staff shall capture images utilizing the Lodox and portable Carestream X-rays systems only from the lead shielded X-ray control room # 5136. The X-ray control room is lead shielded to minimize radiation exposure.

- 5.2.2 Dental X-rays taken using the Dexis Dental equipment shall be completed in the X-ray room # 5134 while wearing the lead shielded aprons, thyroid collars, vests and dosimeter rings.
- 5.2.3 The lock on the X-ray room door shall be engaged prior to taking any X-ray images.
- 5.2.4 The “X-ray In Use” sign shall be visible on the outside of the X-ray room door prior to taking X-ray images.
- 5.2.5 The digital “X-ray In Use” sign shall illuminate when the Lodox machine is activated to obtain images.

5.3 Radiation Exposure Detection and Reporting

Radiation exposure levels are tested and reported monthly.

- 5.3.1 Radiation dosimeter badges and rings are tested and reported by a vendor that specializes in monitoring services for radiation detection and protection.
- 5.3.2 Monthly reports of radiation exposure levels are retained with OCME administrators and shall be made available to employees upon request.
- 5.3.3 The Mortuary Staff shall report all concerns regarding radiation occupational exposure to Mortuary Unit Supervisor and OCME Health & Safety Administrator.
 - 5.3.3.1. The Mortuary Staff shall inform the Mortuary Unit Supervisor and OCME Health & Safety Administrator when there is known decedent history of radiation therapy or the presence of radioactive seeds are observed in the X-ray images prior to proceeding with the examination.
 - 5.3.3.2. For cases of known history of radiation therapy or presence of radioactive seeds, the radioactive levels will be determined and measured by OCME Health & Safety Administrator prior to examination.

5.4 Prenatal Monitoring

Prenatal monitoring may be provided by a vendor that specializes in monitoring services for radiation detection and protection.

- 5.4.1 Pregnant employees shall report of preference for prenatal monitoring to the OCME Health & Safety Administrator.

5.5 Radiology Equipment Maintenance and Registration

5.5.1. The Lodox X-ray and portable Carestream X-ray systems are maintained annually. The annual preventative maintenance includes equipment calibration services.

5.5.1.1. The service reports are provided by the specialized vendors and retained in Mortuary Unit archiving in accordance with the agency records retention schedule.

5.5.1.2. Service agreements with the specialized vendors are available to provide additional minor service and technical support as recommended.

5.5.2. The OCME Health & Safety Administrator shall maintain annual registration of all X-ray equipment with the DC Department of Health.