

CHAPTER IV-1.**Dissection and Removal of Organs****DISSECTION AND REMOVAL OF ORGANS**

- The order of dissection, removal and examination of viscera varies with the degree of involvement of the organs in any particular morbid process.
- Removal of individual organs separately may save time, but interferes with the adequate study of groups of viscera affected by the same disease.
- The following simple procedure is an adequate means of accomplishing an autopsy by the general practitioner who may find himself, at some time in future, compelled to do an occasional autopsy.

1. Commence the incision in the mid-line at the level of the thyroid cartilage and continue down over the sternum and abdomen as far as the symphysis pubis.

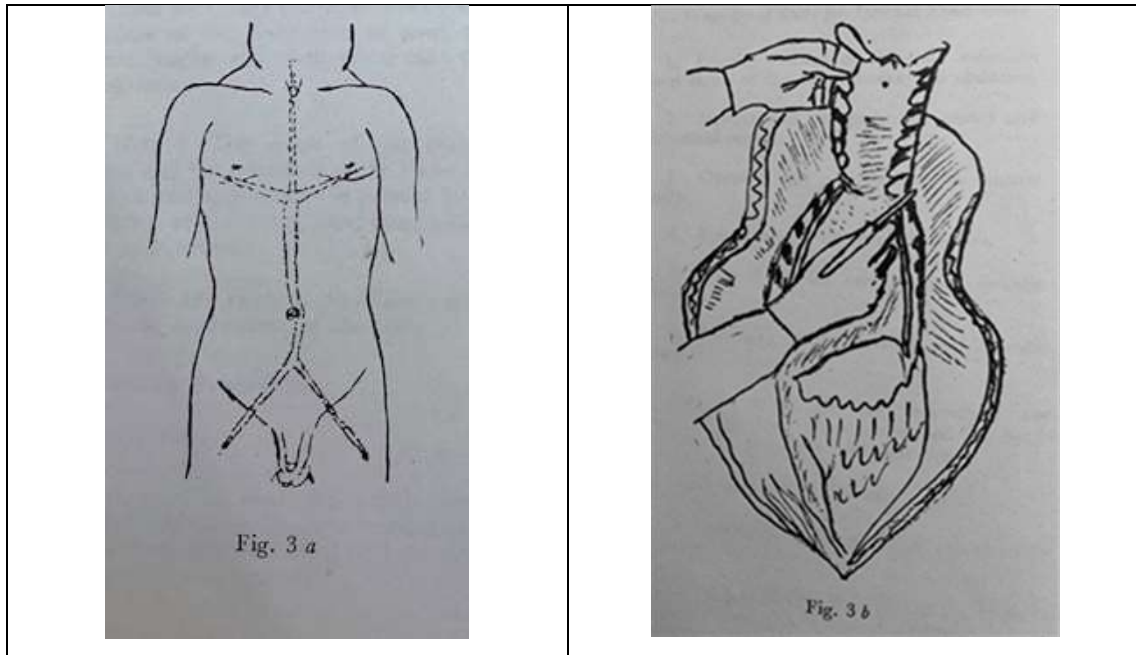
2. Incise the rectus sheath and peritoneum in the lower third of the abdominal incision.

- **Introduce two fingers of the left hand into the peritoneal cavity and extend the incision down** to the symphysis pubis and up to the xiphisternum.
- Take a firm grip of the entire thickness of the **belly-wall on the right side** between the thumb and fingers of the left hand and turn the flap forcibly outwards.
- Then, **keeping the flap tense, dissect it away from the chest wall.**
- Repeat this process on the left side and continue the dissection until the sterno-clavicular joints and the cervical musculature are exposed.

3. With a cartilage-knife or a saw, and

- Commencing at the second right costal cartilage, cut through the cartilages.
- Repeat the incision on the left side, and disarticulate the sternoclavicular joints.
- Cut through the first cartilages in a vertical plane so that the entire sternum with sternal portions of ribs can be easily dislocated.

4. Elevate the shoulders on a wooden block and allow the head to fall backwards. Under



- **Cut the skin** covering the larynx and **mobilize the larynx and esophagus laterally**.
- Continue the freeing of the larynx, etc. **as far upwards as possible**.
- Then, pass a knife **between the skin and the larynx behind the symphysis** of the lower jaw until the point of the knife appears in the floor of the mouth beneath the tongue.
- **Divide the glossal muscles** as far back as the posterior pharynx on both sides.
- Cut the **posterior pharyngeal wall** as high up as possible.
- Pass two fingers into the mouth and **pull the tongue down** into the neck.
- Sever the attachments of the soft to the hard palate, and include the tonsils.
- Hold the tongue and draw the **entire upper respiratory and digestive tracts** down into the thorax, separating them from the vertebrae posteriorly.
- **Free the lung apices and strip the entire** thoracic viscera down to the crura of the diaphragm.
- **Tie the aorta, vena cava and oesophagus** at this level and remove the thoracic viscera en-bloc.
- Dissect the thoracic duct which lies anteriorly to the bodies of the thoracic vertebrae, between the thoracic aorta and the azygous vein; the oesophagus lies anteriorly and to its right.

5. Place the viscera on the dissecting table posteriorly,

- And with scissors, slit up the pharyngeal wall and oesophagus in the posterior medial line.
- Incise each lobe of the thyroid gland in its greatest diameter.

- Slit up the main bronchi.

6. Reverse the position of the viscera so that the apex and anterior surface of the left ventricle face you.

- Pinch up the pericardium near its middle and, with scissors, cut upwards to its investment of the great vessels and downwards to the cardiac apex, and separate any adhesions.
- Incise the right ventricle midway between the cardiac apex and root of the pulmonary artery and cut through the ventricular wall and pulmonary valve into the pulmonary artery.
- Then, separate the heart from its mediastinal connections by cutting through the great vessels.
- Open the right auricle by an incision joining the inferior and superior venae caval orifices.
- Open the left ventricle by an incision which first passes from the apex of the ventricle towards the root of the aorta (Fig. 4).
- Reverse the knife and introduce it into the aorta through the primary incision.
- Then complete the latter by cutting through the pulmonary artery and lay open the aorta.
- Open the left auricle by incisions joining the openings of the pulmonary veins.
- Dissect the coronary arteries.

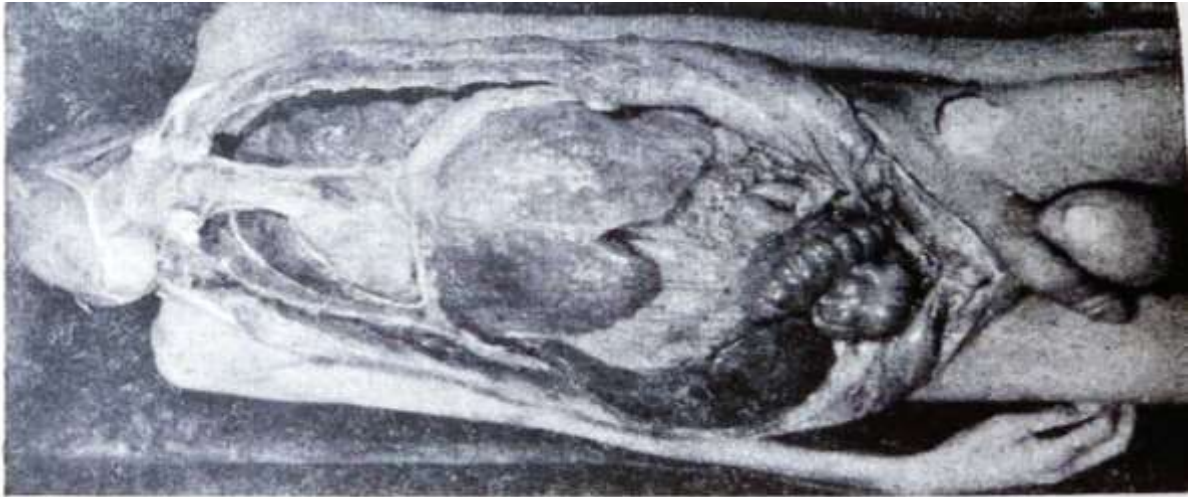
7. Hold the right lung,

- And with a long knife, sever the bronchus and vessels close to the root.
- Sever the left lung in a similar manner.
- Incise the lungs with a single clean cut, and make a long deep vertical incision bisecting each lung from apex to base (Fig. 5).
- Dissect the main bronchi and vessels for some distance.

8. Remove, en-masse, the liver, biliary tract, stomach, duodenum, spleen and pancreas.

- Dissect off the spleen and pancreas from the abdominal wall.
- By blunt dissection, free the liver from its attachments.
- The whole group of organs is then lifted from the abdomen after freeing any remaining attachments.
- Place the excised viscera on the dissecting table in their normal position in the body.
- Open the stomach mid-way between the curvatures from the pylorus, up to the oesophagus and down to the termination of the duodenum

Fig. 3c



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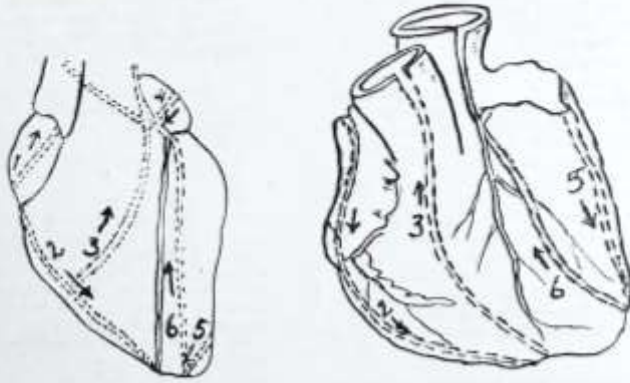


Fig. 4

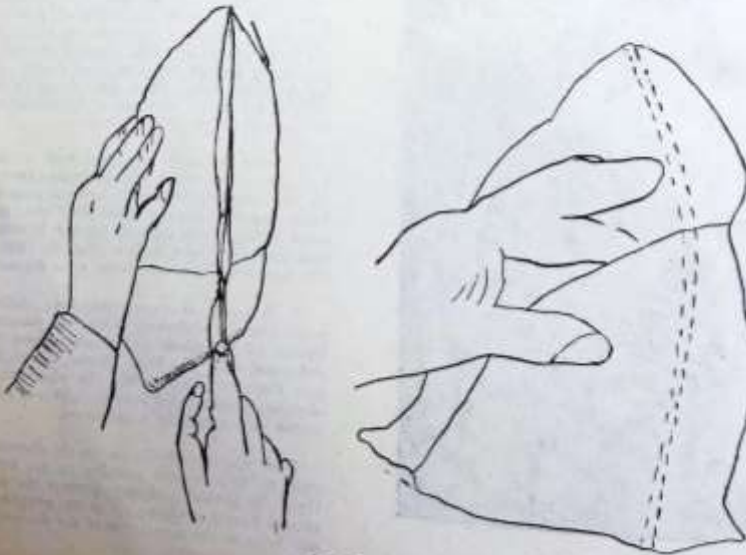
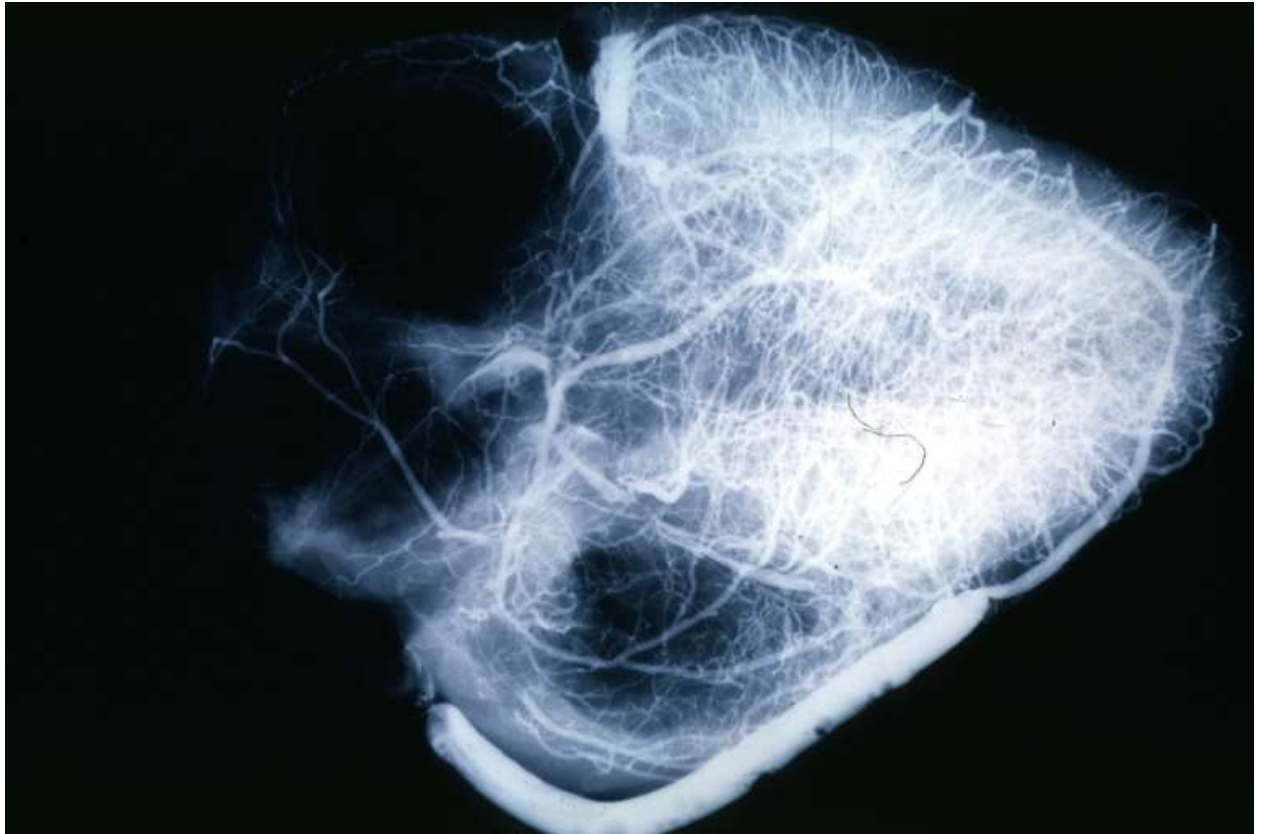


Fig. 5



- Pass a probe into **the ampulla of Vater** and slit in the common bile duct, cystic duct and hepatic ducts.
- Incise the **gallbladder**.
- Make several antero-posterior sections **in the liver**.
- **Bisect the spleen** by an incision passing from the diaphragmatic surface to the hilum.
- Make several cross sections of the **pancreas**.

9. **Dissect off the omentum.**

- Doubly ligate the **recto-colic junction** and sever the bowel between the ligatures.
- **Divide the mesocolon** and **mobilize the caecum**.
- Keeping the **mesentery** tense, **separate the bowel** by gentle stroking movement.
- **The intestinal tract** is then removed to the sink and **opened with the bowel-scissors**.
- Look for any lesions in the bones, joints, muscles and peripheral nerves; and, if any dissection is needed, do it without disfigurement of the body.
- Regions containing **lymph nodes** must be palpated.

10. **Free the left kidney** and left adrenal gland severing the renal vessels close to the aorta.

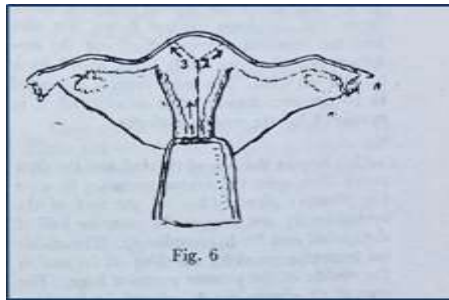
- Free completely, the **ureter** as far as the pelvic brim.
- Repeat this process on the right side.
- The kidney is then shelled out (**after cutting the renal vessels**) and with its

ureter till at the pelvis.

- The pelvic viscera are then freed separating **the bladder from the symphysis pubis**; and the urethra (or vagina) and **the rectum** from the posterior and lateral pelvic walls.
- The urethra (and vagina) and rectum are then severed.
- Undercut the suprapubic skin down to the **scrotum** on either side and **push the testis upwards** then incise the tunica vaginalis and sever the cord.
- Then remove the penis.

11. **Incise the adrenal gland in a crosswise manner.**

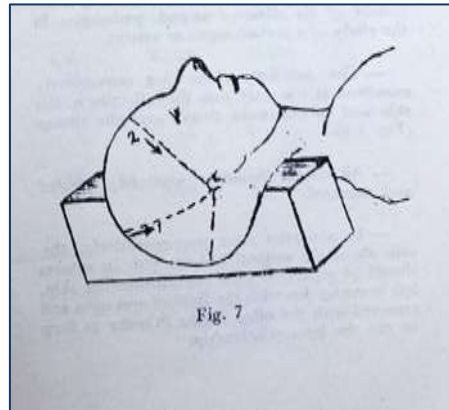
- Hold the **kidney in the left hand** in a piece of cloth and bisect the organ down to the pelvis.
- Incise the **anterior wall of the bladder** and continue the incision through the urethra.
- Dissect off the **rectum** so as to expose the **prostate and seminal vesicles**, which are then incised transversely.
- The **testes** are incised by a longitudinal cut passing through the **epididymis**.
- In females, slit up the urethra and continue the incision into the anterior wall of the fundus.
- The **vagina is incised laterally** as far as the cervix and the uterus is opened anteroposteriorly, with lateral incisions to expose the **Fallopian orifices** .



- The tubes **are** slit up and **the ovaries** are incised in their greatest diameter.
- Dissect the remaining abdominal viscera.
- **Open the aorta** and its main branches and the **inferior vena cava** and its main tributaries (and, the femoral veins) along their anterior walls.

12. **Start removal of the brain** by an incision in the scalp 2 cm.

- Behind the left **ear** (Fig. 7).
- Undercut the **anterior flap**.
- Dissect off the **temporal muscles**.
- **Saw** through the **skull**.
- By a broad-bladed chisel cut through the inner table.
- The **calvarium** can then be pulled off with the tips of the fingers.
- Open the **superior longitudinal sinus**.
- Cut through the **dura mater** and across the **falx cerebri**.
- Free the **olfactory nerves** and cut the **optic, oculomotor and trochlear nerves** and the middle cerebral arteries.
- Dislodge the left **frontal lobe** until the tentorium cerebelli is visible, and slit up the attachment



- To the left and right petrous temporal bones.
- Sever the remaining cranial nerves, the cord and the vertebral arteries.
- Shell out the cerebellum and allow the whole brain to fall back into the left hand.
- The entire brain is suspended in 10 per cent Formol saline solution till it is examined by the neuropathologist.

13. Inspect the base of the skull and the dura mater then open the venous sinuses.

- Remove the pituitary gland.
- Chip off the roof of the orbital cavity and remove the posterior half of the eyeball and fix it immediately.
- The middle ear is then exposed by chiseling off its roof in the middle of the petrous temporal bone.
- The cranial air sinuses can be viewed by breaking into them from the base of the skull.

14. The body is placed face-downwards, with a block under the chest and the head over the edge of the table.

- Then incise the skin immediately to one side of the spinous processes from the occiput to the mid lumbar region.
- Lay back the skin and muscles on either side and saw through the vertebral arches on either side.
- Strip the spinous processes up to the cervical region and cut through the laminae with bone forceps.
- Divide the nerve roots on either side of the whole length of the spinal cord.
- Sever the dura and nerve roots and gently free the cord. Sever the dura and cord as high up as possible in the cervical region.

General Considerations:

- The order in which the viscera are removed can be varied from case to case according to the interest of the clinician or-and pathologist in the study of a certain organ or system.
- ***The mammary glands*** are conveniently examined at the start after the reflection of the skin and subcutaneous tissues over the thorax (Fig. 3 a).

- All viscera should be, separately, ***weighed and measured***.
- ***In autopsies done post-operatively***, the skin about the surgical incision with its sutures should be separated from the surrounding skin, left in connection with the field of operation and removed with the other organs in order to keep in situ the interrelationship.
- ***Fibrous adhesions***, tumours and pathological cavities or abscesses should be removed with the neighboring structures or organs to study their relations.
- ***The bone marrow*** of the femur or-and the sternum should be removed to make smears and subsequent histologic study for the diagnosis of blood dyscrasias.
- ***The blocks to be selected for histological*** study must be taken according to a certain scheme and from known sites.
- Make a note of the exact site of origin of those portions of tissue which are chosen.
- ***Restoration of the body*** must follow its dissection and examination.
- ***Fluids are removed***, body cavities are packed with clothes or newspapers soaked in a disinfectant fluid, rectal and vaginal orifices are filled with cotton, and the abdominal and thoracic incisions are sutured.
- The calvarium is replaced and the scalp is sewn up with close stitches.
- Lastly the body is washed.
- ***An opinion should not be rendered*** until the autopsy is completed.
- *Sometimes even after the completion of the autopsy, the final diagnosis cannot be made except after a microscopic study.*
- However, during dissection, the pathologist can demonstrate the various lesions to the medical attendants, residents, house-officers and students.

Autopsies on Infants and New Born:

- Almost the same procedure is done as in case of adults but with the following peculiar features and deviations:
 - 1. Particular importance to:**
 - (a) Malformations and deformities.
 - (b) Birth-injuries.
 - (c) Certain infectious diseases of children.
 - 2. Certain technique in:**
 - (a) Opening the chest and the heart.
 - (b) Dissection and examination of the skull and umbilical cord.
 - (c) Infection of umbilical cord and arteries.
 - 3. Location of genitalia.**
 - 4. Maceration of skin** and presence of bullae and rashes.
 - 5. Exposure of long bones** (end of femur and tibia) **to examine the epiphyseal line for evidence of congenital syphilis.**

6. Presence of **foreign bodies** especially in the trachea and bronchi.

7. **Congenital tumours.**

8. Anomalies of circulation:

- (a) Closure, or not, of the ductus arteriosus.
- (b) The condition of the foramen ovale, between the auricles.

9. Determining whether the child has breathed or not: Noticing:

- (a) The **position of the diaphragm before the chest is opened.**
- (b) Whether the **lungs float or not when placed in a large dish filled with water.**
- (c) Whether the **lungs crepitate when squeezed.**
- (d) **Whether bubbles of air rise to the surface when squeezed below water.**

10. **Evaluation of gestation-age and period of development.** -

- Comparing the length and weight of the fetus and the size and weights of organs with the normal or what expected from the age and sex in the normal.

<i>Average Age In months</i>	<i>Average body-length In centimeters</i>	<i>Average body-weight In grams.</i>
2	03	4
3	08	10
4	13	120
5	22	280
6	30	430
7	36	1200
8	40	1500
9	43	1900
10	46	2300

- N.B.: **The age -- in months** — may be roughly determined **after the fifth month** by **dividing the length in centimeters by five**

- **Average Weight of Body and Some Organs in New-Born and Infants:**
Age and corresponding expected weight (in grams).

<i>(in grams).</i>	<i>3-days</i>	<i>3-weeks</i>	<i>3-months</i>	<i>3-years</i>
Body.....	3,300	4,400	6,500	15,200
Brain.....	330	380	515	1,140
Thymus....	13	13.4	14.2	17.5
Heart.....	17	20	24	60
Lungs (both).	40	56	65	165
Spleen	8	11	15	35
Liver	75	120	140	415
Kidneys (both)....	25	30	40	95

Chapter IV-2. Mortuary Unit

STANDARD OPERATING PROCEDURES

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Section I. Mortuary Unit Mission Statement

- To provide respectful, timely and professional body processing and autopsy support services to the Office of the Chief Medical Examiner, funeral directors and the public at large.

Section II. Statement of Purpose

- Office of the chief medical examiner's mission is to investigate and certify all deaths that occur by
 - Any means of violence (injury), and
 - Those that occur unexpectedly,
 - Without medical attention,
 - In custody, or
 - That may pose a threat to the public health.
- As a part of the death investigation, autopsies are performed to determine the **cause and manner of death**.
- The autopsy is performed by a medical examiner (ME).
- The ME is legally responsible for the autopsy, for the techniques and methods used, for the extent of the examination, and for the contents of the autopsy report.
- The autopsy assistant will assist the medical examiner in the examination by performing technical procedures as directed.

Section III.

Duties and Responsibilities of the Autopsy Assistant

- Under the direction of the Supervisory Pathologists' Assistant (SPA), the autopsy assistant assists the ME in the conduct of autopsies by
 - Performing appropriate techniques,
 - Equipment and universal precautions,
 - For the purpose of obtaining a pathological diagnosis.
- **The autopsy assistant performs basic duties such as**
 - Body identification,
 - General intake procedures,
 - Lifting and transferring the body to the autopsy table,
 - Removing and weighing organs, t
 - He brain and the spinal cord (if necessary),
 - Eviscerating,
 - Sewing up the body,
 - Transferring the body to the stretcher and returning it to the cold room,
 - Properly stores tissue specimens.
- The autopsy assistant disinfects autopsy tables and autopsy instruments and maintains a clean, neat and organized work environment.
- The autopsy assistant will also prepare and release bodies to funeral homes and will provide decedent pick up and transport services 24 hours a day, seven days a week.
- **Additional, responsibilities of the autopsy assistant include but are not limited to**
 - Assisting a medico-legal investigator (MLI) as required,
 - Bagging and discarding specimens for incineration,
 - Training in the absence of the senior worker or supervisory pathologists' assistant and
 - Providing clerical support functions for the mortuary unit.
- The autopsy assistant will perform other related duties as deemed necessary

Section IV.

Mortuary Operations

A. Universal Precautions

- According to the concept of universal precautions, all human blood and human blood components, and other potentially infectious materials (OPIM) are treated and handled as if known to be infectious for HIV, HBV and other bloodborne pathogens.
- **OPIM includes the following human body fluids:**
 - Semen,
 - Vaginal secretions,
 - Cerebrospinal fluid,
 - Synovial fluid,
 - Pleural fluid,
 - Pericardial fluid,
 - Peritoneal fluid, and
 - Amniotic fluid,
 - Saliva in dental procedures,
 - Anybody fluid that is visibly contaminated with blood and
 - All body fluids in situations where it is difficult or impossible to differentiate between body fluids.

Personal Protective Equipment

- Personal protective equipment (**PPE**) shall be used to prevent skin and mucous membrane contact with blood and OPIM.

These may include the use of

- Gloves,
- N95 masks,
- Protective eye wear,
- Face shields,
- Shoe covers,
- Plastic aprons/gowns,
- Hair bonnets,
- Tyvek suits and/or sleeves,
- Cut resistant gloves, and
- Laboratory coats, .
- Additional ppe may be required depending on the particular case circumstances.

Hand Washing

- Hands and other skin surfaces shall be washed with soap and water **immediately after contact with blood or OPIM.**
- Hands shall be washed each time gloves or other PPE are removed

C. Body Pick Up and Transport

Scene Protocol:

- Autopsy assistants are required to remove bodies in a courteous, sensitive and professional manner under often-difficult circumstances.
- Any safety or security concerns at the scene should be directed to the MLI, a police officer in charge or the supervisory pathologists' assistant.
- The autopsy assistant may have to make difficult decisions on how to proceed with body removal, but should always operate with their safety and security in mind.
- Before entering a hospital, residence, or scene for the purposes of making a removal, the autopsy assistant shall dawn PPE.
- If a decedent is too heavy to remove or if the building circumstances are unsafe, the autopsy assistant should contact the SPA to arrange for assistance with removal and, if necessary, the transfer of the remains to OCME.
- The autopsy assistant should contact the SPA on a scene-by-scene basis as deemed necessary.
- **NOTE:** The autopsy assistant is not allowed to speak to news reporting agencies and the public in general on behalf of the agency

2. Body Bags:

- a. OCME cases, except for hospital and funeral home cases, should arrive inside a locked body bag.
- b. All body bags should be zipped and the zipper should be sealed with a numbered wire lock. The lock will then be wrapped with a secure tape (i.e., electrical tape).
- c. The MLI or the Autopsy Assistant will be the person responsible for placing the lock on the body bag and dating and initialing the bag lock. A picture of the locked body bag should be taken prior to transporting remains to OCME.
- d. The ME or MLI will be the person responsible for breaking and removing the lock and for recording the number of the lock in the case file via FACTS.
- e. If the body bag does not have a lock, or if the lock is not secure and wrapped with the tape, immediate notification must be given to the SPA and a notation must be entered into the case file via FACTS.
- f. All bodies will remain in or with the body bag until completely processed by OCME and then will be released in the same body bag (if useable)

3. Street and Residential Pickups:

When the Autopsy Assistant arrives at the scene, the following steps should be taken:

- a. Introduce him/her self to scene officials
- b. Obtain clearance to make removal
- c. Locate and prepare decedent for removal
- d. Place the decedent ID bracelet and toe tag
- e. Assist the MLI or police officer in removing any personal effects that should not accompany the remains to OCME.
- f. Personal effects that arrive at OCME with decedent remains should be documented in FACTS
- g. Homicides, suicides and suspicious deaths should be wrapped in a clean white sheet prior to moving the body
- h. Place decedent in body bag
- i. Take an Intake photo (if MLI not present)
- j. Lock body bag (if MLI not present)
- k. Initial and date lock tag and photograph locked body bag (if MLI not present)
- l. Transfer and secure remains to removal stretcher
- m. Load decedent remains into mortuary vehicle.
- n. Transport remains to OCME

4. Hospital and Institutional Pickups

- Institutional pickups should be carried out in accordance with the protocols of the releasing agency (i.e. log signatures, clearance, notification of relevant personnel, etc.).
- The autopsy assistant should detail any deviation from the established protocol on the transportation notification form, for example, if there is refusal on the part of the agency to sign, if no one was available to sign or if the transport notification came from communications over the phone while already dispatched to another scene.
- Personal effects and clothing with no medico-legal significance should not be taken from the hospital or institution.
- ONLY if the decedent is a victim of a homicide or suicide and has penetrating wounds to the body should the clothes be received from the hospital or institution.
- The autopsy assistant will often be asked to acquire records or biological samples from the hospital to transport along with the body.
- The autopsy assistant should transport these items without delay or difficulty.
- Removals from hospitals and other institutions should be handled according to the guidelines and policies of the releasing facility.
- The following steps should be taken when making hospital and institutional pickups:
 - a. Locate and verify decedent identity
 - b. Place the OCME ID bracelet and toe tag
 - c. Obtain appropriate signatures on the transport notification form
 - d. The decedent should be removed in the body bag provided by the hospital/ institution.
 - e. Transfer and secure remains to removal stretcher
 - f. Load decedent remains into mortuary vehicle.

D. Intake Procedures

Decedent remains that arrive at OCME in locked body bags will be processed using the following intake procedures:

1. Transfer decedent to mortuary cart
2. Obtain decedents weight
3. The decedent's height will be taken at the time of the examination.
4. Label the body bag with all required information
(i.e. OCME case #, name, sex, race, height and weight)
5. Log decedent into FACTS as well as intake log book
6. Perform x-rays on all homicides, suicides, as well as decomposed bodies, infant/children, MVA and other bodies as directed by the ME or MLI.
NOTE: X-ray procedures can be performed through the body bag. Head and Chest x-rays should be available prior to autopsy. However, because correct body positioning can be difficult to obtain through the body bag, it may be necessary to re x-ray the body at the time of autopsy.
7. Log body in on box and cart sheet
8. Place body in body storage cooler

E. Handling Personal Property

While it is not OCME's policy to receive a decedent's personal property, sometimes such items may arrive at OCME with the remains.

Personal property that arrives with decedent remains shall be processed as follows:

1. Decedent's personal property will be entered into FACTS upon admission.
2. Clothing should be described by color and item
3. Personal effects such as jewelry as well as money should be photographed and should only be removed in the presence of a MLI or ME.
4. Personal effects such as jewelry should be described in non-valuable terms.
Example "yellow metal" or "colored stone"
5. Money should be entered into FACTS in the following manner:
6. Item - \$ 5.00 bill
7. Description – currency
8. Quantity – number of like bills
9. All personal effects will be transferred to the safe by an MLI or ME as soon as possible.

F. Autopsy Procedures

- Autopsies will follow procedures according to standardized guidelines, subject to reasonable deviations to tailor the inquiries to the specific features of the case at hand, and to allow for professional judgment.
- OCME autopsies will be complete routinely. A *complete autopsy* is defined to include a detailed external examination of the entire body, and an internal examination to include the removal and dissection of all thoraco-abdominal and neck organs, opening the head with the removal and examination of the brain.
- A complete autopsy does not require histologic examination.
- A *partial autopsy* is defined as an examination that forgoes any part of the defined complete autopsy, e.g. not opening any of the body cavities or not examining organs or examining in situ.
- An *external examination* is defined as a detailed description of the decedent's remains including scars, surgical incisions, medical devices, tattoos, etc.
- No internal cuts are made on the body and no organs are examined.
- All autopsies are performed in the autopsy suite at one of five autopsy work stations.
- While performing autopsy procedures, the autopsy assistant is under the direct supervision of the Medical Examiner.
- The autopsy assistant should remain present in the autopsy suite until the autopsy procedure is complete or until they have been excused by the Medical Examiner.

Pre Autopsy Procedures

- Prior to autopsy the autopsy assistant will set up the autopsy work station according to the case examination status including preparing tables for body dissection, preparing instruments, preparing specimen containers and collection tubes, preparing paperwork for daily caseload and taking radiographs.
- Autopsy work stations should be basically set up with the following instruments and supplies; in certain cases it will be necessary to equip the autopsy work station with specialized instruments or additional supplies.
 1. Dissecting board
 2. Cutting instruments:
 - a. scalpel handle – short
 - b. scalpel handle – long
 - c. dissecting scissors
 - d. rib cutters/bone shears
 - e. dura strippers
 - f. sharp knife – long
 - g. sharp knife – short

3. Other supplies and sundries

- a. gray ruler with OCME case #
- b. body ruler
- c. forceps with teeth
- d. forceps without teeth
- e. 2 hemostats
- f. long metal pan
- g. round metal pan
- h viscera bag
- i skull key
- j. 1-2 B bottle(s)
- k. 2 gray top tubes marked “heart blood”
- l. 2 gray top tubes marked “femoral blood”
- m. 1 red top tube marked “vitreous”
- n. 5 blue conical tubes (labeled appropriately after contents are entered (gastric, liver, brain, bile, urine)
- o. 2 head blocks
- p. sharps container
- q. blue cloth towels
- r. 2 self adhesive plastic bags properly labeled
- s. bucket of water w/ detergent and sponge

Peri-Autopsy Procedures

1. Remove bodies from body storage cooler and stage in autopsy suite
2. Wait for the body bag lock to be removed by medical examiner, MLI or Designated person.
3. Assist photographer in taking “as is” photographs
4. Undress and transfer remains to autopsy table
5. Remove medical intervention devices and wash remains
6. Assist photographer in taking “autopsy” photographs and “ID photo”
7. Perform initial Y incision
8. Remove chest plate
9. Open thoracic and abdominal cavities
10. Assist medical examiner in performing in situ examination
11. Assist medical examiner in obtaining toxicology specimens (blood, bile, urine, vitreous, gastric, liver, brain)
12. Remove organs en bloc
13. Weigh and record organ weights
14. Open the entire length of the gastro-intestinal tract
15. Elevate head
16. Incise and reflect scalp
17. Remove brain
18. Remove dura
19. Neck dissection is only done by the medical examiner or under direct supervisor of the medical examiner.
20. Obtain decedent fingerprints
21. Perform other autopsy procedures as directed (removing spinal cord, opening lower extremities to exam pulmonary thrombo-emboli, stripping parietal pleura, incising the psoas muscles, assisting with preparation of sex kits and DNA cards)

Post Autopsy Procedures

1. Put organs in a viscera bag
2. Replace body organs
3. Close the thoracic, abdominal and cranial cavities with sutures
4. Clean the body and replace in body bag
5. Indicate completion of examination by writing "DONE" on body bag
6. Return body to refrigerated storage
7. Put specimens in designated area depending on processing instructions:
 - a. toxicology samples are put in toxicology refrigerator in the yellow tray labeled "toxicology"
 - b. histology sections are put in the yellow tray on top of toxicology refrigerator labeled "histology"
 - c. microbiology specimens are put in the yellow tray on top of the toxicology refrigerator, labeled "Micro"
8. Thoroughly clean and disinfect autopsy and dissection tables, sinks, drains, instruments, dry erase boards and floor area.
9. Between examinations all instruments and surfaces should be cleaned with a 10% bleach solution.

G. Body Storage and Organization

1. Body should be stored in clean, closed body bags with no leakage of fluids on rack or tray.
2. Place body in empty compartment head toward the wall
3. Tag body storage compartment with decedent name and case number
4. Log body or body part(s) into box and cart inventory sheet
5. Maintain an accurate box and cart inventory sheet. The inventory sheet should be updated and printed daily.
6. Empty trays are to be cleaned and disinfected and kept in box #2
7. All trays should be cleaned and disinfected following a release or transfer.

H. Receiving and Releasing Remains

Receiving a Remains

1. Identify remains with OCME toe tag and ID bracelet
 2. Obtain appropriate signatures on the Transport notification form
 3. Take intake photograph using the Polaroid camera
 4. Obtain decedent height and weight
 5. Record personal property (clothing)
 6. Complete intake of body into the logbook
 7. Complete intake of body in FACTS
 8. Log body on box and cart sheet
 9. Place body in refrigerated storage
- ### Releasing Remains
1. Confirm in FACTS that the body is ready to be released and that the receipt of remains screen has been properly completed by the communications unit
 2. Print and sign a copy of the Receipt of Remains form
 3. Obtain property sheet (usually provided by communications unit via funeral director)
 4. Locate and retrieve body from refrigerated storage
 5. Assist funeral home personnel in retrieving remains and transferring them to removal equipment
 6. Verify personal property being released by having both parties sign off on the release of personal property form
 7. Sign body out of release logbook
 8. Obtain funeral home representative's signatures, funeral director ID number and initials where appropriate
 9. Have toe tag and receipt of remains form witnessed
- NOTE:** Unidentified remains cannot be released. If the remains were identified after intake, the autopsy assistant will print an OCME label with the decedent identity and have it initialed by both parties as well as a witness.
10. Clean and disinfect tray before returning

I. Technical Support Functions

1. Radiography

- a. Power up the radiography equipment including the processor
- b. Place decedent on x-ray table head towards the door, do not place head above more than 8 inches for top of table.
- c. Obtain cassette and place in the cassette holder of x-ray table
- d. Place x-ray marker on the right side indicating the orientation of the subject and the film.
- e. Position bucky and take x-ray
- f. Develop x-ray
- g. Reload cassette
- h. Prepare x-ray envelope with OCME case number using x-ray Envelope labels:
 - use a permanent black marker to record the following information on the x-ray envelope

- OCME case number
- Decedent name, sex, race, and age

	If necessary, adjust settings to obtain a viewable image Document work in log books and FACTS
Use the following standard settings to obtain correct exposures: Standards settings:	
Bucky	40
Table	36.8
KVP	80
MAs	10

Standards settings by case type:

Case Type KVP MAs

Decomp 64 15

Decomp (lateral) 66 20

Decomp (chest) 52/54 250

Bariatric 76 35

Pediatric 55 3

Image quality can be improved using the following guidelines to make adjustments: Also see positioning and technique manual.

Density:

Overall blackness of a radiograph. If the image is dark, it is overexposed. If it is light it is underexposed.

The following factors influence radiograph density.

1. Exposure factors (mAs, kV)
2. Distance of tube to film
3. Size of collimator setting
4. Tissue thickness
5. Scatter Radiation

A minimum of 30% change in mAs is necessary for a visible change in density.

Contrast:

The difference between adjacent densities on a radiograph.

The difference between black, white and gray shades.

All the factors which affect density (see above) will also affect contrast.

Overall grayness is the result of scatter radiation.

Collimating (focusing the beam) or reducing KV will reduce scatter and give better contrast (black / white).

Increase mAs to get better contrast when thick tissues lighten the image

Detail:

The sharpness of an image on a radiograph. Also can be referred to as definition of radiographic sharpness

The following factors affect detail of a radiograph:

1. Focal spot size
2. Distance from x-ray tube to film (Source Image-Receptor Distance or SID) should be 40-in. in most cases
3. Object film distance (Object Image-Receptor Distance or OID) should be kept at a minimal distance
4. Screen speed Lower kV has greater detail than higher kV.

Shape Distortion:

- A misrepresentation of the true appearance of an anatomical structure due to one of the following factors.
- Angulation of the x-ray tube to the cassette
- Angulation of the body part to the cassette
- Angulation of the cassette to the body part
- Distortion is not as likely in post mortem radiography since the majority of films are shot at right angles to the subject.

Magnification Distortion:

- Enlargement of a structure due to SID or OID.
- There should be minimal distortion if standard SID is maintained (40 in.) & the OID is kept at a minimum.
- The closer the SID the greater the magnification and greater the density.
- The further the OID the greater the magnification and greater the density.

Exposure Factors

- When searching for a good technique, always adjust only one exposure factor at a time.
- This is the best way to correctly assess what adjustments need to be made.
- Otherwise, there are too many factors to systematically produce good quality images.

Kilovoltage control (kV):

- Penetrating ability of the x-ray beam.
- Referred to as the *quality* of the beam. Higher kV is applied to thicker and/or denser structures.
- Low kV will not penetrate the body and appear clear or white.
- kV should be increased until the greatest detail appears and before the image begins to darken, as it will when kV is too high.

Milliamperage (mAs):

- A ratio of the quantity of electrical current flowing through x-ray tube and the exposure time of that quantity in seconds.
- mA is referred to as the *quantity* of the beam.
- As mAs is increased, density will increase (i.e. get darker).
- Once you are satisfied with the penetration (kV) of the image you can control for density with mA.

Cassette Types

Grid Cassettes:

- Grids contain lead strips which help to absorb scatter radiation. It takes greater mAs to get the same density as a non-grid cassette.
- KV should not need to be adjusted when going from a grid to a non-grid cassette.
- The bucky of the x-ray table has a built in grid and should be loaded only with non-grid cassettes.
- Use the bucky or a grid cassette when tissues are 12 inches or greater.
- For fetuses, infants, children, and adult hands, wrists and lower extremities use a non-grid cassette on the tabletop.

Non-Grid Cassettes:

- These can be used in the table bucky (which already has a built in grid) for general exposures or can be placed on the tabletop for fetuses, infants, children, and adult hands, wrists and lower extremities.
- Non-grid cassettes require less mAs to obtain the same degree of density.

2. Tissue Procurement for DNA Studies

a. Find a clean, disinfected and isolated area in which to work

b. Use full PPE when procuring specimens for DNA

c. Obtain DNA kit which includes the following:

1. White sheet (un-used)
2. 5 blue towels
3. 2 pair forceps (with and without teeth)
4. 1 pair of scissors
5. 1 pair dura strippers
6. 2 scalpel handles
7. Scalpel blades
8. 1 skull key
9. 1 autopsy saw
10. 1 metal brush
11. Paper towels
12. Toxicology bags
13. Sporicidin wipes
14. Sporicidin spray
15. Blue top conical tubes

- d. Using forceps, or dura stripper pull three teeth (incisor, canine, premolar)
- e. Place specimen in blue top tube
- f. Label tube with OCME label, indicate specimen on label
- g. Change gloves
- h. Using forceps and scalpel blade make incision of thigh approximately 8" long and obtain 1-2" of muscle
- i. Repeat steps 5, 6 and 7
- j. Within same incision (step 8), using autopsy saw obtain a section of femur bone approximately 3-5" in length
- k. Repeat steps 5, 6 and 7
- l. Obtain sample of hair making sure to obtain root and shaft
- m. Repeat steps 5, 6 and 7
- n. Restore body using sutures
- o. Replace body in refrigerated storage
- p. Document work in FACTS and log books
- q. Store specimens in toxicology freezer
- r. Specimen will be transferred to -20 DNA freezer by appropriate personnel
- s. Document work in log books and FACTS

3. Dental Imaging

1. Set up laptop, Dent•X and scanner (if scanning ante mortem dental x-rays)
2. Log into Dexis
3. Put decedent on x-ray table head towards the door
4. Obtain appropriate support depending on the tooth being x-rayed
5. Place sensor in support and place in decedent's oral cavity in a perpendicular fashion.
6. Select exposure time
7. Enable exposure
8. Walk away from x-ray beam
9. Press and hold x-ray emission button during exposure
10. Exposure is complete when yellow light and an acoustic signal comes on
11. Continue to next tooth exposure and repeat steps a - j
12. Document work in log books and FACTS

4. Fingerprinting

- a. Remove decedent from cold storage area
- b. Retrieve fingerprint kit and portable workstation
- c. Spray decedent fingertips with alcohol and wipe clean and dry
- d. Evenly apply fingerprinting ink on fingertips using a small roller
- e. Insert fingerprint card in spoon card holder
- f. Starting with the right thumb, roll each fingertip lateral to medial
- g. Continue with each fingertip until a full set of prints have been obtained.

h.	Clean decedent's fingertips removing all ink. Care will also be taken to remove any ink from other parts of the decedent's body Attach fingerprinting cards to the FBI form FD-249 (pink card) Complete required information on FD-249

- k. Complete Print for Identification Report form
- l. Document work in log books and FACTS

5. Specimen Storage and Retrieval

- a. All stock specimens are stored in clean and dry B bottles in 10% buffered formalin.
- b. The B-bottle should be clearly marked with the OCME decedent name label and additionally labeled with the OCME case number using black permanent marker
- c. All brains are stored in clean and dry 172 oz brain bucket in 20% buffered formalin
- d. The brain bucket should be clearly marked with the OCME decedent name label and additionally labeled with the OCME case number using black permanent marker
- e. The B-bottles and brain buckets are stored in numerical order on the appropriate shelf.
- f. Brain buckets are stored on the individual medical examiners shelf instead of numerically
- f. When it is necessary to retrieve a specimen from the specimen storage room, always maintain the order in which the specimens have been stored.

J. Mortuary Vehicles

The autopsy assistant is responsible for cleaning, stocking, fueling, documentation and security of the mortuary vehicles.

1. The mortuary vehicle should have $\frac{1}{2}$ to $\frac{3}{4}$ of a tank of gas at all times.
2. Mortuary vehicles should be locked at when the vehicle is unattended.
3. Vehicle utilization reports should be completed each time a vehicle is driven.
4. All biohazardous waste must be disposed of in red biohazard bag and transferred into biohazard boxes for disposal on a daily basis.
5. Vehicles must be cleaned and disinfected on a weekly basis by the evening or night shift or immediately if a biohazardous situation exists.
6. It is the responsibility of the technician to notify the supervisor of any maintenance issues or mechanical problems with the vehicles.

NOTE: Mortuary vehicle use is limited to official OCME business.

K. Disposal of Biohazardous Waste and Chemicals

- Biohazardous waste disposal is a routine part of the work of the mortuary unit.
- All items in this category are to be handled with the minimum standard of protective equipment consisting of gloves, mask, and some form of arm protection either by tyvek sleeve or gown.
- The highest degree of risk should be assumed with all biohazardous waste due to the variety of unknown factors involved.
- With this in mind, proper protective measures should always be taken.

Biohazardous waste is disposed of in the following manner:

- • Put biohazardous waste in a red biohazard bag
- Put the red bag in the biohazardous waste box
- Tape box closed
- Put taped box in biohazardous waste pick up location
- The autopsy assistant must read the MSDS sheet for any chemicals prior to handling.
- The autopsy assistant must wear the following when disposing of hazardous chemicals:
 - a tyvek suit
 - double gloves
 - an appropriate particulate respirator
 - eye protection

Section V. Safety

- The Autopsy Assistant is responsible for ensuring that he or she complies with the agencies policies regarding personal safety, handling of bodies and bodily fluids as well as the safe operation of mortuary equipment.
 - **Personal Protective Equipment (PPE)**
 1. Anyone who enters the autopsy suite during autopsy procedures should dawn an N-95 particulate respirator and shoe covers.
 2. All personnel participating in autopsy procedures or handling bodies or bodily fluids, in addition to the above, should dawn a gown with full sleeves or some form of full arm protection, cut resistant gloves, a hairnet and eye protection.
- Operation and Care of Equipment
- Autopsy Saws
- • Autopsy saws are intended to cut bone only.
 - When used properly, the undulating blade does not require force to cut bone.
 - Do not use a saw with a defective motor or a dull blade.
 - After use the saw should be thoroughly cleaned, disinfected & dried.
 - Do not allow water to enter the motor area of the saw.
 - Report any malfunction of autopsy saws to the Mortuary Supervisor as soon as possible.

Autopsy Instruments

- All instruments are to be cleaned and disinfected between examinations
- To deter rusting, instruments should be dried and laid out on a nonmetal surface

Autopsy Tables and Garbage Disposals

- Autopsy tables should be cleaned and disinfected between autopsies or at the end of the day
- Following the autopsy, the disposals and drains on each autopsy table should be cleaned and free of tissue, blood and other bodily fluids or contents
- Do not allow instruments, suture string, rubber gaskets or any other objects to fall into the disposal. Do not run water into the sinks in such a way that you cannot monitor the contents of the disposal.

Scalpel Blades

- Scalpel blades will be removed by the use of a container designed for safe blade removal.
- Scalpel blades will not be removed with fingers.

- **Body Lifts**

- Do not operate body lift until you have read and fully understand the operation and training manual.
- Body lifts consisting of a forklift with a roller attachment are used in the cold storage rooms at OCME to transfer bodies from carts to a compartment in the rack system.
- Bodies are transferred onto racks and stored head first into the compartment.
- There should equal portions of the tray projecting from either end of the rolling platform leaving approximately a foot of space between the roller attachment and the rack system.
- To keep the rack from rolling while in motion the tray should be kept on a flat surface closest to the body of the lift.
- At no time should an autopsy assistant place his or her body or body parts in the way of any of the body lifts moving parts.
- Body lifts should be plugged in after use in order to keep the batteries fully charged.

Radiation Safety

- A lead apron as well as radiation protective gloves must be worn at all times when taking and processing x-rays
- If the portable x-ray machine is being used in the autopsy suite all personnel must leave the room for the duration of exposures with the exception of the operator.
- All personnel will stand behind the lead shield when using the xray table.
- Autopsy assistants should wear a dosimeter when taking x-rays.

- When performing dental x-rays the autopsy assistant should in addition to the lead apron, wear radiation protective gloves
- The autopsy assistant should always wear radiation protective gloves, protective eyewear, and a mask when handling x-ray chemicals.

Lifting

Transfer and lifting of bodies is a routing task for the autopsy assistant. Back braces are provided for all mortuary staff and should be used routinely. The autopsy assistant should employ proper lifting techniques when moving or positioning decedent

remains, they include but are not limited to:

- Pre-planning your lift
- Keeping your feet apart (shoulder width)
- Bending at the knees and hips
- Tighten stomach muscles
- Lifting with your legs
- Lift smoothly
- Keeping the load close to your body
- Keeping your back upright, your nose and your toes should be facing up when lifting
- Turning with your feet

Section VI. Mortuary Security

The following items relate to Mortuary security as it pertains to the responsibility of the autopsy assistant.

- All mortuary staff must enter and leave through the front door located on the 1st floor and sign the book at the security guard desk at the beginning and the end of their tour of duty.
 - All visitors, including funeral directors, conducting OCME business must do the same.
 - The communications unit will contact the mortuary unit prior to sending funeral home representatives downstairs for releases.
 - The autopsy assistant should respond and meet the party in a timely manner.
 - If a technician is unable to respond immediately, they should inform the communications unit.
 - The communications unit should not allow the funeral home personnel to come to the mortuary unit until an autopsy assistant is available.
 - The back door and the garage door should be closed and locked when not in use.
-