DISTRICT OF COLUMBIA OFFICE OF THE CHIEF MEDICAL EXAMINER 1910 MASSACHUSETTS AVENUE, S.E., Bldg. 27 WASHINGTON, D.C. 20003	**OCME POLICY** **Last Updated: 2/22/10**

FORENSIC PATHOLOGY (AUTOPSY)

I. GENERAL STATUTORY MANDATES

A. Jurisdiction

Pursuant to regulations established by the Mayor – D.C. Code §5-1405 - the following types of human death occurring in the District of Columbia shall be investigated by the OCME:

(1) **BY VIOLENCE**: whether apparently homicidal, suicidal or accidental including deaths due to thermal, chemical, electrical or radiation injury and death due to criminal abortion, whether apparently self-induced or not;

(2) **SUDDENLY, UNEXPECTED OR UNEXPLAINED**: not caused by readily recognizable disease, including sudden infant deaths or apparent sudden infant death syndrome (SIDS) for infants one year of age and younger;

(3) **UNDER SUSPICIOUS CIRCUMSTANCES**: under suspicious circumstances;

(4) **WHEN A BODY IS TO BE CREMATED, DISSECTED, OR BURIED AT SEA:** bodies are to be cremated, dissected, buried at sea or otherwise disposed of so as to be thereafter unavailable for examination;

(5) **BY DISEASE, INJURY OR ILLNESS RESULTING FROM EMPLOYMENT**: related to disease resulting from employment or on-the job injury or illness;

(6) **BY DISEASE CONSTITUTING A THREAT TO PUBLIC HEALTH**: related to disease which might constitute a threat to public health;

(7) **WHEN WARD OF DISTRICT OF COLUMBIA**: persons who are wards of the District of Columbia government ("ward" means any person in the official custody of the District government, on a temporary or permanent basis, because of neglect, abuse, mental illness or mental retardation, D.C. Sec.5-1401);

(8) **BY MEDICAL OR SURGICAL INTERVENTION**: related to medical or surgical intervention, including operative, peri-operative, anesthesia, medication reactions or deaths associated with diagnostic or therapeutic procedures;

(9) **IN LEGAL CUSTODY**: while in legal custody of the District (legal custody includes imprisonment, jail or detention, D.C. Code Sec. 5-1401);

(10) **BY MATERNAL TRAUMA OF FETUS**: fetal deaths related to maternal trauma including substance abuse, and extra-mural deliveries;

(11) **WHEN REQUESTED BY LAW ENFORCEMENT OR COURT-ORDERED**: deaths for which the Metropolitan Police Department, or other law enforcement agency, or the United States Attorney's Office requests, or a court orders investigation; and

(12) **WHEN A DEAD BODY IS BROUGHT INTO THE DISTRICT OF COLUMBIA WITHOUT PROPER CERTIFICATION**.

B. Examination; Further Investigation and Autopsy (D.C. Code Sec. 1409)

(a) If, in the opinion of the Chief Medical Examiner (CME), the cause and manner of death are established with a reasonable medical certainty, the CME shall complete a report of the medical examination of the decedent.

(b) If, in the opinion of the CME, or the United States Attorney, further investigation as to the cause or manner of death is required or the public interest so requires, a medical examiner shall either perform, or the CME shall arrange for a qualified pathologist to perform, an autopsy on the body of the decedent and to retain tissues and biological specimens deemed necessary to an investigation. No consent of the next of kin shall be required for an autopsy to be performed under this section.

(c) The medical examiner performing the autopsy shall make a complete record of the findings and conclusions of any autopsy and shall prepare a report thereon.

C. Autopsy by a Pathologist other than a Medical Examiner (D.C. Code §5-1410)

(a) If an autopsy is performed by a pathologist other than a medical examiner by request of the CME, the pathologist shall furnish to the CME, a complete record of the findings and conclusions of the autopsy. The CME, or assigned medical examiner, shall thereupon prepare a report, indicating the name of the pathologist performing the autopsy, the pathologist's findings and conclusions, and the CME's, or assigned medical examiner's, own comments, if appropriate.

(b) A pathologist other than a medical examiner who performs an autopsy at the request of the CME shall be compensated in accordance with a fee rate established by the Mayor by regulation.

D. Autopsies Performed Under Court Order (D.C. Code §5-1414)

In the case of unexplained, sudden, violent, or suspicious death, when the body is buried without investigation, or there has been an inadequate investigation, the United States Attorney, on his or her own motion, or on request of a medical examiner, or the Metropolitan Police Department, or other law enforcement agency, may petition the

appropriate court for an order to conduct an inquiry. The court may order the body exhumed and an autopsy performed. In such cases, records and reports shall be filed as if the autopsy were performed prior to burial; except that, a copy of the report shall be furnished directly to the court.

II. AUTOPSY POLICY

A. Full Autopsy

Full autopsies will be conducted in the following cases:

- Violent deaths (always in homicides or suspected homicides);
- Unexplained deaths of children;
- All deaths in police custody;
- Deaths related to workplace injury;
- Drowning;
- Unexplained deaths of wards of the city or otherwise incarcerated;
- deaths possibly caused by substance of abuse or poisoning;
- recent accidental deaths or any accidental death in which the injuries are not appropriately documented / are controversial;
- recent thermal injuries, especially charred bodies, electrocutions; skeletal remains;
- fetal deaths related to maternal trauma , substance of abuse, unexplained and extramural deliveries;
- cases in which the US Attorney's Office or the Office of the Attorney General or the OCME General Counsel requests an autopsy be performed;
- in special cases as necessary for identification of the body; and
- Whenever deemed necessary to determine cause and manner of death.

B. Partial Autopsy

Partial autopsies can be performed where there is valid concerns of safety for autopsy personnel, e. g danger of infection, as permitted without compromising the fulfillment of the OCME mission. Partial autopsies (Head Only) can also be performed where otherwise an External Examination would be done except that it is necessary to eliminate a possibility of trauma (e.g. history of drinking in a person over 65 years of age or in the circumstances of an unconfirmed fall or Coumadin therapy). Where no head injury exists, the procedure will be sufficient, if any injury is discovered, then a full autopsy shall be performed.

C. External Examinations

External Examinations are performed in cases involving individuals over 65 years of age with benign circumstances, non-homicidal trauma cases with prolonged hospital course and well documented circumstances.

D. Autopsy Attendance

Attendance at autopsy should be limited to medical examiners, autopsy staff (mortuary staff), OCME investigators, and members of the MPD or of other local or regional police departments , US or State Attorneys investigating the case, appropriate trainees with the approval of the CME. All attendees should wear appropriate protective garments. The CME or his/her designee should approve any deviation to this policy.

E. Deaths on Military Facilities within the District

Deaths on military facilities are handled per the OCME statutory mandate for jurisdiction, with the exception of Walter Reed Army Medical Center (WRAMC). The OCME has a separate Memorandum of Understanding with WRAMC regarding deaths on that facility, as discussed below.

The Armed Forces Medical Examiner (AFME) of the Armed Forces Institute of Pathology (AFIP) has authority to conduct forensic pathology investigations for all deaths, military or civilian, that occur within the exclusive jurisdiction of Walter Reed Army Medical Center (WRAMC) Main Post (i.e., Navy Yard, Marine Barracks) and where the decedent appears to have been killed or died of unnatural causes, the cause or manner of death is unknown, there is reasonable suspicion that the death was caused by unlawful means, the death appears to have been caused by infectious disease or hazardous materials that could have an adverse effect on WRAMC or the surrounding community, or the identity of the deceased is unkown.

If the AFME or designee determines that a forensic pathology investigation is not required and the WRAMC Main Post installation commander declines to independently order a forensic pathology investigation, this will constitute a waiver of the jurisdiction and the CME will be notified that the AFME has declined to exercise jurisdiction and that the CME may take possession of the body for the purpose of investigation and certifying the death. See Appendix A: Memorandum of Understanding Between the Armed Forces Institute of Pathology and the OCME.

F. Objections to Autopsies and Autopsy Report (Including Religious Objection)

If, in the opinion of the Chief Medical Examiner, or the United States Attorney, further investigation as to the cause or manner of death is required, or the public interest so requires, the medical examiner will either perform, or the Chief Medical Examiner will arrange for a qualified pathologist to perform, an autopsy on the body of the decedent and to retain tissues and biological specimens deemed necessary to an

investigation. No consent of the next of kin is required for an autopsy to be performed under these circumstances, nor will preference or religious affiliation affect the medical examiner's decision to perform an autopsy.

In the performance of its duty, the OCME will record family preference. When an objection to an autopsy is expressed, an OBJECTION TO AUTOPSY REPORT produced by FACTS, must be included as part of the case files.

1. If an objection to autopsy is expressed by the family/next of kin, either by phone, correspondence (written, facsimile, electronic mail), or in person, the name, address, relationship to the decedent, contact phone number and the method of contact must be documented in FACTS.

2. Any written correspondence, facsimile and a printed copy of electronic mail expressing objection to an autopsy must be attached to the OBJECTION TO AUTPOSY REPORT for placement in the case files.

3. The reason for expressing objection (i.e., religious beliefs, religious affiliation or other) to the autopsy must be documented in FACTS.

4. Copies of the OBJECTION TO AUTOPSY REPORT produced for all deaths occurring over the previous 24 hours must be available as part of the case file for review by investigative and/or medical staff, in the Communications Unit by 8:00 am each day.

5. All objections to autopsy must referred to the Chief Medical Examiner, Deputy Chief Medical Examiner, Medical Examiner, Director of Forensic Investigations, medical investigator on duty and/or assigned to the case, for notification/review of the case file.

6. Final decisions/dispositions concerning whether or not an autopsy will be performed is to be made by the Medical Examiner assigned to the case unless the Chief Medical Examiner or Deputy Chief ME decides otherwise.

G. Organ Harvest/Tissue Retrieval

The OCME's mandate is to perform death investigations. As such it has no authority to remove and/or preserve tissues outside of what is allowed for determination of cause and manner of deaths. Al efforts will be made to comply with a request from the organ procurement agencies in all cases where the procedure will not interfere with the OCME's statutory mandate to determine Cause and Manner of Death. To facilitate relations between the OCME and the Organ Procurement Agencies (WRTC) a Memorandum of Understanding has been developed, signed by both agencies, and should be reviewed before making a final decision.

Whenever possible organ harvest will occur in the hospital prior to OCME taking custody of the body. The body shall be accompanied by samples for toxicological examination and the documentation of the procedure performed when picked up by OCME.

As a general rule tissue recovery is not performed at the OCME, rather the body is transported to the appropriate facility for recovery. After receiving permission from the family, the organ procurement agency will arrange for transportation and return of the body. In all occasions the remains are always released to a licensed funeral director. A copy of the family authorization should be kept as part of the file of the decedent.

Rarely the organ procurement agency will be allowed to perform tissue harvest at the OCME. These procedures will take place at the end of the day, after all autopsies have been performed and under the supervision of a medicolegal forensic investigator. The organ procurement agency is required to clean the room after completion of the harvest. A copy of the family authorization shall be made and kept as part of the records of the decedent

In all cases only the tissue authorized by next of kin will be harvested.

H. Request for Non-Human Examination

Occasionally a request may be made that evidence such as bullet be removed from an animal (i.e., a dog). Standard precautions should be strictly observed and the examination limited to the injury and retrieval of the evidence.

III GENERAL PROCEDURES:

A. Case Review {Morning Meeting)

The case review of morning meeting is attended by all Medical Examiners and Investigators, a member of the Toxicology Department , the Mortuary Supervisor or his/her designee, members of MPD present at OCME or those investigating cases being reviewed, the Laboratory Specialist, a member of the Grief Counseling Unit, rotating residents and medical students. A list of cases to be examined for the day is generated by FACTS and upon review of investigative results, a decision is made as to the type of examination to be performed. Cases declined through the night are reviewed as well as Cremations. Death certificates from preceding days and cremations are also reviewed and signed at the end of the morning meeeting.

1. Medical Examiners:

Case assignments to Medical Examiners are given during the case review meeting.

2. Investigators:

OCME Investigators continue to collect medical or investigative information; contact the appropriate Police Personnel as necessary.

3. Toxicologists:

Toxicologists report to the Unit any need for quick screen or other specific need for a given case, and work closely with the Medical Examiner to allow rapid evaluation of case.

4. Mortuary Staff

The Mortuary staff performs the following duties:

Prepare autopsy forms, diagrams, labels, instruments, stock jars, jars and cassettes for microscopic sections, tubes for specimen collection, swabs or culture media, sex kit and other specific items as indicated. Equipment should be placed near the autopsy table, or at designated location.

Retrieve bodies, and have rulers ready for body measurement. Retrieve digital X-rays. Radiological examinations will be performed on all victims of penetrating or perforating trauma, decomposed, skeletonized remains, burned bodies, unidentified bodies, children, infants and fetuses.

During the autopsy the autopsy assistant/technician is under the supervision of the Medical Examiner performing the task. Permission to leave the autopsy room is granted either by the Medical Examiner, the Mortuary Supervisor or designee after consultation with the ME.

6. Photographers:

Photographers should have rulers ready with case numbers. Clean gloves should be worn at all times when using cameras.

IV AUTOPSY PROCEDURE

A. General:

Policies specific to the OCME should be followed. The ME should be familiar with authoritative texts on Forensic Pathology, Death Investigations and Autopsy Procedures and refer to them as necessary.

Upon entering the autopsy suite, all participants should be in appropriate clothing and utilize personal protection equipment. All employees should follow Universal Precautions. The Mortuary Supervisor and the Medical Examiners should ensure that staff working in the autopsy suite are appropriately clothed and exclude from the room those who are not.

B. Adult Autopsy Procedure

External Examination:

Be as detailed as possible.

Body bags should be opened by or in the presence of the medical examiner, or in non-homicide cases, in the presence of a forensic investigator or the mortuary supervisor. If present, the number of the seal closing the body bag should be recorded. Initial photographs are taken of the body as received.

Ensure correct identification of the body by checking OCME and Hospital ID tags and bands and comparing name/ case number to the case list.

Collection of trace evidence from clothing or body

1. The medical examiner and members of the homicide unit of the appropriate Police department determine evidence collection..
2. The medical examiner collects the evidence, after photographic and written documentation, following appropriate forensic guidelines (labeled containers, chain of custody)
3. The medical examiner generates an evidence receipt with FACTS and has the Mobile Crime officer sign it upon receipt.
4. If the Mobile Crime officer is not available, evidence is received in the designated safe in the autopsy room to be retrieved by the ME and surrendered to the appropriate officer upon their presentations.

Clothing and Jewelry

1. Document photographically and in writing.
2. Remove carefully, without unnecessary cut or tear, avoiding to cut through perforations or tears. Open all pockets and document photographically and in writing any found object. Weapons and substance of abuse are submitted as evidence to the appropriate police unit. Therapeutic drugs are transferred to the Toxicological Unit of OCME following chain of custody.

3. Describe in details any perforation. If present, document photographically after removal.
4. Inventory.
5. Enter into FACTS.
6. All non-clothing properties are placed in the designated property safe in the autopsy suite. The ME or designee placing the evidence in the safe should sign the designated log. Retrieval of such property from the scene requires that the investigator retrieve in the presence of a witness with both the investigator and witness signing in the designated log.

If property is of evidentiary value, it must be released to the Evidence Officer present at autopsy and the evidence release form filled out. Otherwise it must be secured until released.

Body

1. After removal of the clothing, the body surfaces are surveyed for the presence of any additional evidence. The evidence is collected as outlined above. The body is then cleaned and photographed. An identification picture is taken, labeled and transferred to the Communication/Case Processing Unit.

2. Reassess body length and weight. Assess state of nutrition, hydration, and development. Measure panniculus adipose if desirable. Measure the waist circumference when appropriate.

3. Evaluate the state of preservation of the body (degree of decomposition, embalmment), extent of rigor mortis, distribution and state of livor mortis, stigmata of insect or animal activity.

4. Record age, (compare appearance to given age), sex, race/ethnicity.

5. Note the presence and location of any medical devices or sequelae of therapeutic measures.

    a. Medical devices are removed only upon permission of the medical examiner.
    b. Ascertain the correct location of any device.
    c. Sharp objects, needles, blades are sometimes left on the surface within body cavities, remove carefully.
    d. Implantable Cardioverter Defibrillator (ICD) and some cerebral electrical implants present risk of electrical shock. Call 1-800-CARDIAC for deactivation of such devices before proceeding with the autopsy. Alternatively, deactivate the device according to the Guidant ACID deactivation procedure (a description of the procedure is posted in the autopsy room). Secure the device and return to the manufacturer.
    e. Caution should be taken whenever there is a history of therapy with radioisotopes. Ascertain that the level of remaining radioactivity is safe

before proceeding with the autopsy. The same precaution should be taken regarding prostatic implants.

6. Evaluate the need for any additional radiological examination.

7. Record any tattoo, or scar

8. Describe:
   a. Hair: describe color, texture, style, length, distribution.
   b. Eyes: state of eyelids, presence or absence of petechial or ecchimotic hemorrhages over scleral or palpebral conjunctivae, presence of any dryness, discoloration.
   c. Nose and nasal passages.
   d. Mouth: lips, frenula, teeth, gums, tongue, oral cavity
   e. Neck: any mark, injury, furrow, mass
   f. Torso, anterior and posterior, breasts
   g. External Genitalia: pubic hair, perineum, anal region
   h. Extremities: deformities, fractures

Internal examination

Use safety precautions during all procedures. It is advisable to have one individual cutting at a time to avoid accidental injury. Efforts should be made to minimize exposure to airborne droplets. Do not recap needles.

1. Open body using standard thoraco-abdominal (Y-shaped incision) and intermastoid incisions.

2. When necessary, use minimal additional incisions that allow wide exposure, are hidden form view and facilitate subsequent reconstruction and suturing.

3. Deepen the incision over the thorax down to the level of the rib cage and in the abdomen through the peritoneum into the peritoneal cavity.

4. Open the chest cavity using the scalpel or shears along a line just medial to the costo-chondral junction up to and through the sterno clavicular junctions. -Lift the breastplate. Note any rush of air.

5. Inspect the body cavities. Examine, collect and measure any fluid, describe adhesions.-Evaluate the position of the organs and their relationships. Note any malposition, twist, defect, and herniation..

6. Obtain specimens for microbiological, chemical and toxicological examination as appropriate

7. Proceed with evisceration; use one of the classical techniques. Dissection of Neck organs always follows removal of the brain.

a. Technique of Virchow: The organs are removed one by one.
   Technique of Rokitanski: In-situ dissection in part combined with removal of organ blocks.
b. Technique of Ghon: The cervical, thoracic, abdominal organs and the urogenital system are removed en block.
c. Technique of Letulle: Cervical, thoracic, abdominal and pelvic organs are removed in one block ("en masse" removal)

8. Weigh and dissect all organs

9. Examine the skeleton after evisceration. Strip the parietal pleura for better rib examination; incise the psoas for sacroiliac joints evaluation; examine pubic rami and articulation.

10. Inspect sub-scalp tissues. Expose calvarium after reflecting the temporalis muscle bilaterally. Reflect scalp anteriorly up to about 3 cm above level of eyebrows. Reflect posterior scalp below occipital protuberance. Measure the volume of any blood present, and its consistency; then evaluate its adherence to the Dura. Strip Dura from calvarial and basilar surfaces to expose any fracture.

11. Remove brain reaching as far down the spinal canal as possible. The brain can be examined fresh or after fixation.

12. Examine the sella turcica and the pituitary gland.

13. Dissect the anterior neck in a layer-by-layer fashion, in situ. Remove neck organs including the tongue and continue the dissection.

14. Examine the cervical spine for hyper mobility/fracture

C. Wounds

- All body surfaces should be examined for the presence of injuries. It is also at time necessary to document their absence.

- Associated evidence is collected as per established procedure.

- Detailed description is done. Attempts at correlating perforations of clothing and wounds should take into account fashion trends

    - Remains are initially X-Rayed in the body bags. Repeat the X-Rays after undressing the body and removing hospital paraphernalia if necessary.

- Injuries are described according to fixed landmarks on the body. Note anatomic location, size, color, shape using pertinent diagrams as needed. Probing of wounds is done with caution and mainly for the purpose of documentation. All wound tracks should be dissected and all evidence retrieved with mention of location. Presence and type of hemorrhage or absence of hemorrhage along the path should be noted.

Wounds Caused By Firearms

Identify “entrance” and “exit” wound.

- Identify their location by anatomic location and by measurements from fixed anatomic landmarks, for example the top of the head, the top of the shoulders, the sole at the heels, and the sagittal midline

- Describe the shape, the size, and the dimensions of the wound

- Describe any marginal abrasion, noting their color and their shape; and recognizable muzzle imprint

- Record the presence of soot and stippling and the pattern of distribution or these residues

- Describe the path of the wound, the organs and tissues injured, evidence retrieved along and at the end of the path, associated hemorrhage or absence thereof. Indicate the track of the wound according to anatomic position.

- Projectiles should be recovered with non-metallic instruments to avoid any damage. They should be described using broad terminology, cleaned, photographed, labeled, packaged and surrendered to the appropriate evidence personnel who should sign the Evidence Release Form generated from FACTS

Wounds Caused By Sharp Instruments

1 Document the anatomic location as above

2 Describe and identify the type of wound: stab wound, cut/incision, chop wound.

3 Describe the shape and the direction of the wound on the surface of the body. For stab wounds indicate whether single or double-edged, serrated or cross-shaped etc.., presence of any marginal abrasion.

4 Describe the path, the direction of the wound, any evidence retrieved, associated hemorrhage as above. Give an estimate of the depth of the wound

Wounds Caused By Blunt Impact

Describe the distribution, the type, the shape/ pattern of the wounds, their color, and the presence of any foreign object. External injuries should be correlated to internal findings. Pertinent photographs with scale are taken.

D. Pediatric Autopsy Protocol

General guidelines

1. Prior to autopsy full body X-ray including anteroposterior and lateral views should be taken.

2. Photographs are taken of the full body and close pictures of any anomaly present. In cases of suspected child abuse pictures should include the scleral and palpebral conjunctivae, the upper and lower frenula, the external genitalia, the perineal and anal region.

3. Always verify the weight of the body.

External Examination

1- Minimal measurements to be obtained:

- Height, (crown-rump, crown-heel measurements),
- Head circumference (occipito- frontal circumference)
- Chest circumference(at the level of the nipples)
- Abdominal circumference (at the level of the umbilicus)

2. Evaluate the fontanelles, (depressed, bulging.,) the intercanthal distances, the position and shape of the ears, the frenula, gums, palate, teeth eruption..

3. Inspect the hands and feet for any abnormality of the palmar creases, and digits. Examine the feet and record shape and digit abnormalities.

4. Efforts should be made to establish the age of the infant/fetus. The foot length measurement is useful in fetuses, even when severely macerated to determine the gestational age. Note the color of the skin, presence of vernix caseosa or maceration. Focal maceration can be seen as early as 6 hrs after death and involves 75% of the body after 72hrs, overlapping of cranial sutures occurs after 4 to 5 days.

5. The placenta, including the umbilical cord, should be examined whenever feasible.

Internal Examination

1. Specimens for bacterial, viral cultures (blood, lung.) are routinely collected as indicated.

2. Specimens for toxicological examination are obtained in all cases.

3. Blood and bile samples are also collected for metabolic studies in every case.

4. Remove the heart and the lungs as a block especially if cardiac congenital anomalies are suspected.

5. Examine the middle ears as indicated

6. Remove the eyes using a posterior approach as indicated

E. Special Autopsy Procedures

Depending on the type and nature of the cases special autopsy techniques/ dissections can be performed. Care should be taken that these procedures do not cause disturbance of the body in such manner to interfere with viewing at Funerals.

These special procedures include but are not limited to:

1. Posterior Neck Dissection
2. Examination of the Face
3. Examination of the eyes
4. Examination of the middle ears
5. Dissection of the calves
6. Demonstration of pneumothoraces, air embolism

F. Neuropathology Consultation

Retention of brain for neuropathology consultation should be considered in:

- All babies
- Department of Disabilities Service or any Mental Retardation case
- Degenerative disease of the CNS

(e.g. Alzheimer's Disease, Parkinson's Disease, Amyotrophic Lateral Sclerosis..etc)

- Old spinal cord trauma
- Combined old/new trauma (e.g. old subdural with recent hemorrhage)
- Tumors
- Dementia or CNS symptoms in AIDS cases-not ALL AIDS cases
- "Respirator brain" cases, hypoxic-ischemic encephalopathy.
- Homicidal brain injury
- Basal subarachnoid hemorrhage of undetermined etiology
- History of Seizure Disorder (not terminal seizure)

Cases that probably don't require formalin fixation include:

- Known basal ganglia hemorrhage (with or without cocaine)
- Recent trauma, excluding homicide by blunt force
- Visible aneurysm-if one saves for location-please wash the blood off

G. Bite Mark Protocol

1. Describe the bite as per anatomic location, shape, presence of associated contusion, abrasion, laceration

2. Photograph the bite mark from different angles including perpendicular viewpoint using the appropriate scale (American Board of Odontology Ruler).

3. Consult with the Forensic Odontologist

4. Swab the bite for DNA analysis: use sterile gauze pad moistened with saline solution, follow with cotton swab, air-dry both and place in proper labeled sterile tubes.

5. If the forensic odontologist is not immediately available, depending on the location of the bite on the body, it can be excised and preserved.

V RADIOLOGY

1. All homicides caused by firearms or sharp instruments, all children below the age of 6 years of age, (independent of the apparent cause of death), all suicides by firearms or sharp instruments, cases were death is caused by an explosion device, decomposed bodies, charred bodies, Skeletonized remains, all unidentified bodies are routinely X-Rayed.

2. X-rays are also taken at the discretion of the medical examiner to detect air embolism , pneumothorax, etc..

3. The areas of the body to be X-rayed in homicides and suicides are guided by the distribution of injuries on the body.

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

5. Skeletonized remains should be X-rayed as received and after examination by the medical examiner/forensic anthropologist as necessary.

6. For decomposed bodies and unidentified remains, x-rays of the head, the torso, AP and lateral, and of any other area depending on previous medical history and antemortem radiological examination, and dental X-rays should be obtained. The X-rays of the head and torso should be obtained prior to any autopsy.

VI ANCILLARY TESTS OR PROCEDURES

A. CLINICAL CHEMISTRY AND MICROBIOLOGY

Appropriately collected specimens are sent to the Public Health Laboratory or other relevant laboratories. Vitreous fluid chemistry is performed on-site. Laboratories used are accredited by the College of American Pathologists (CAP).

B. CRIMINALISTICS AND FORENSIC SCIENCE EVALUATION

The investigating police agency in charge of the case is responsible for performance of testing including but not limited to: ballistics, fingerprints, DNA testing, hair and fiber testing, and trace evidence examination results are shared with the medical examiner as necessary to determine cause and manner of death.

C. GENETIC (Including DNA)

See OCME Policies & Procedures Manual, Section II -- Investigations regarding DNA analysis.

Note: The OCME does not conduct DNA paternity testing, unless for identification purposes.. However, the OCME does indefinitely maintain blood cards (samples) for every decedent within its jurisdiction such that, when such issues arise, a blood sample can be provided for testing.

D. HISTOLOGY

1. Representatives sections of organs and/or tissues examined are kept in formalin for a period of 3 years.

2. Submission of sections for histological examination is at the discretion of the medical examiner. Generally, histological examinations are performed in all infant deaths Tissue sections placed in labeled cassettes and in an appropriately labeled jar filled with formalin are sent to the Quest laboratory for processing. Slides and blocks are returned to the OCME. The slides are then distributed to the requesting pathologist. Slides and blocks are retained according to OCME retention policy.

   The ME should be familiar with authoritative texts on Forensic Pathology, Death Investigations, Autopsy Procedures and refer to them as necessary. A list of useful textbooks/references is provided at the end of this section. Many of these books can be found in the OCME library where they can be consulted.

OUTSIDE REQUESTS:

- DNA Protocol (only for paternity testing; see Toxicology Laboratory SOPs)
- Autopsy, autopsy photos and slides requests (See Recordkeeping & Retention Policy & Procedure)
- Original slides are kept according to OCME retention policy and are viewed in-house by consulting pathologists as necessary. Before duplicate requested slides are sent out they should be reviewed by the pathologist in charge of the case or another staff member if the primary pathologist is not available.

E. TOXICOLOGY

Toxicology testing is performed in all OCME cases that are autopsied.

F. MICROBIOLOGIC

Microbiologic testing is performed or consultation sought in all OCME infant cases and at the discretion of the medical examiner in cases of potential infectious disease.

G. BIOCHEMICAL

Biochemical testing is performed or consultation sought in all OCME child cases and in the discretion of the medical examiner in cases where there are complications from diabetes, dehydration or kidney failure.

H. ANTHROPOLOGICAL

Anthropological examination/evaluation is performed or consultation sought in all OCME cases of skeletal remains.

I. ODONTOLOGIC

Odontology examination is performed or consultation sought in all OCME cases of skeletal remains and when necessary for identification.

VII. PHOTOGRAPHY

A picture of the face as is, is taken at the scene in the bag before sealing. At the OCME, close-up ID pictures are taken for identification with the approval and when necessary guidance of the ME. Decedents are photographed front and back first as received, and after unclothing, examination by the ME, and cleaning. Tattoos, scars, are documented. All injuries are photographed as directed by the ME. Clothing, items of evidence, jewelry, are photographed before being disposed of according to protocols established for each case.

An appropriately labeled scale is included in each photograph. For bite marks, a forensic odontology scale is included (See Bite Mark protocol).

The Mobile Crime Unit of MPD routinely photographs all suspected homicides, suicides, deaths of children, skeletonized remains, ... In all cases, efforts should be made to allow the officers to photograph the body before proceeding with the autopsy. Ensure that a call is placed through the appropriate police investigative unit, through the SOCC or through the Commanding Officer. The call should then be documented.

VIII. EVIDENCE COLLECTION

A. General Procedure

The medical examiner or members of the homicide unit determine evidence collection.. A photograph should be taken of the deceased as is before collection of specimens. The medical examiner collects the evidence, after photographic documentation. Every effort should be made to comply with the collection of specific items requested by law enforcement personnel investigating the case. The responsible police investigating unit should be called and advised of the timing of the autopsy. The call should be documented.

To document chain of custody, all evidence collected by the Medical Examiner is packaged and labeled with a case number, is released, and a form bearing signatures of the Medical Examiner and receiving police officer is generated specifying the date and time of release. This form is called an evidence receipt and is generated in FACTS.

B. Evidence

Trace Evidence: Trace evidence is collected at the discretion of the medical examiner responsible for the case or at the request of law enforcement. Cases for which trace evidence collection (e.g., hair, fingernails, orifices and other swabs) is performed include all cases of suspected sexual assault or other close contact with an assailant. Such evidence may also be collected in pedestrian deaths in which a substance (e.g., paint) may have been transferred from a vehicle or in substance abuse deaths involving inhalation ("huffing") or body-packing.

Fiber, hair or other debris on hands or elsewhere on the body surface is photographed in situ prior to removal of the body from the body bag to the autopsy table. Alternate lighting sources may be used to facilitate identification of debris and/or other substances (i.e., semen). Debris recovered is packaged and labeled with reference to the site of its recovery. It is advisable to look within the body bag for ballistic and other evidence that may remain in the bag after removal of the body to the autopsy table.

Bags on the hands are removed by the medical examiner or under his/her supervision prior to undressing or washing the body. The hands are photographed and any injury to nails documented prior to collection of fingernail clippings. To prevent cross-contamination, the fingernail clippings are obtained with metal clippers that have been sterilized and dried. The clippers are retained with the clippings of that case.

Hair samples (e.g., head-combed and pulled hairs, public combings and pulled hairs) and swabs (e.g., orifices, perineum, skin bearing suspected biological stains or overlying suspected bite marks) are obtained by the medical examiner prior to washing the body. Blood and in some cases saliva samples are obtained from the decedent as controls. Swabs are dried prior to packaging.

Weapons: Weapons are recovered by the investigating police officer or the MPD detectives assigned to the OCME. They are photographed prior to removal.

Ballistics: Ballistic evidence recovered at autopsy is photographed prior to packaging and labeled with the case number and site of recovery. Plastic instruments are used to retrieve projectiles to avoid any damage.

Drugs: Drugs of abuse or paraphernalia found are submitted to MPD's Mobile Crime Unit officer present or are forwarded to the Toxicology laboratory of OCME in the absence of MPD..

Medications: Medications are submitted to the Toxicology laboratory after documentation.

Clothing: Depending on the nature of the case, the clothing may be an item of evidence that is to be immediately surrendered to the Mobile Crime Officer. Chain of custody is followed, evidence receipt or submission form filled. After unclothing the body is surveyed for any item of evidence (e.g., fiber, paint). Clothing requested by the police should be first photographed on a clean sheet, and placed in appropriately labeled bags. It is advised that clothing evidence be dried prior to packaging and release. The Mobile Crime Unit of MPD usually brings such collection bags to the autopsy suite.

Blood Samples: Blood samples are obtained from all cases .

Sex Kits: Sex Kits are collected by the MPD or appropriate Police officials for forensic analysis.

IX. TISSUE AND BODY FLUID COLLECTION

All containers should be appropriately labeled.

Specimens collected for toxicology are placed in the appropriate plastic or glass tubes, placed in sealed plastic containers with signed requisition form and secured in the refrigerator for pick-up by the toxicology department. Specimens received with the body from hospital should be labeled in such a way to preserve the identification label of the hospital.

Tissue, swabs for culture are placed in the appropriate sterile containers, labeled, with the appropriate signed form.

Specimen for other examination are also collected according to the test desired and placed in the appropriate designated area for collection. A requisition form should accompany the specimen.

At the Medical Examiner's discretion, serum tubes may be obtained by collecting blood into serum separator tubes (speckled top tubes) and centrifuging for thirty minutes. The centrifuge is located on the counter in the autopsy room.

For metabolic screening of infants, blood and bile should be placed on the appropriate spot as indicated in the requisition form. The form should be filled with the required information as available, signed, placed in the envelope for shipping to the laboratory.

X. COLLECTION OF TOXICOLOGY SPECIMENS

Medical examiners should submit biological fluids and tissues to the Toxicology Unit to assist them in determining the cause and manner of death. For routine autopsies, the following specimens should be collected at a minimum wherever possible:

2 x femoral blood (or other peripheral blood)
2 x Heart blood (or other central blood)

1 x Urine
1 x Bile
1 x Vitreous Humor
1 x Liver
1 x Brain
1 x Gastric Contents (total gastric volume should be noted)

Other specimens can be collected at the discretion of the medical examiner. Specimens are to be collected in the following containers:

Specimen	Location	Container*	Volume (Max)
Whole Blood	Femoral	VG	10 mL
	Iliac	VG	10 mL
	Subclavian	VG	10 mL
	Heart	VG	10 mL
	Aorta	VG	10 mL
	Central	VG	10 mL
	Peripheral	VG	10 mL
Blood (other)	e.g. chest cavity	VG	10 mL
Blood (other)	e.g. hematoma	VG or BP	10, 50 mL
Serum (spun down)	e.g. femoral	Tiger Top	10 mL
Urine		BP	50 mL
Bile		BP	50 mL
Vitreous Humor		VR	7 mL
Liver		BP	50 mL
Brain		BP	50 mL
Gastric Contents		BP	50 mL
Lung (and/or airway)		BP	50 mL
Cerebrospinal Fluid		VR	7 mL
Spleen		BP	50 mL
Kidney		BP	50 mL
Other (hair, muscle)		BP	50 mL
Other (bone)		Plastic bag	-

*VG – Vacutainer Gray top; VR – Vacutainer Red top; BP – Blue Plasti top

Specimens must be individually collected, labeled with the correct decedent information (OCME case number, name of decedent, specimen type, the medical examiner initials, date collected, and the initials of the person collecting the specimen) and the site designation listed for any blood specimens. Specimens should be placed in a labeled biological specimen bag, sealed, and placed in the small floor refrigerator labeled “Tox Refrigerator”. All specimens must be accompanied by a “Medical Examiner’s Evidence Submission Form”.

In cases of delayed deaths in hospitalized individuals, OCME should attempt to obtain the earliest available hospital specimen when appropriate. Other evidence (medications, unknown substances, and drug paraphernalia) should only be submitted if it will assist in determining the cause and manner of death.

XI. DEATHS SUSPECTED TO BE DUE TO COMMUNICABLE DISEASE

All autopsies are presumed to be infectious and Universal Precautions should be used with every case. The Medical Examiner and Mortuary Supervisor should ensure that all participants are appropriately clad.

All cases of suspected or confirmed communicable disease are to be reported to the Public Health Laboratory, Department Of Health.

Mycobacterium Tuberculosis
In cases of Mycobacterium Tuberculosis autopsies must be performed in one of the isolation rooms in the autopsy suite, minimizing staff participation, reducing the production of aerosols, and observing all safety rules. Universal Precautions should be followed and the case should be reported to the Public Health Laboratory, DOH.
Observe Universal Precautions.
Report the case to the Public Health Division of DOH

Meningitis
Observe Universal Precautions.
Collect CSF for culture. Obtain smear of CSF and blood for quick evaluation. Alert the Public Health Laboratory.

HIV and Hepatitis
Observe Universal Precautions.
Use blunt instruments as much as possible to prevent accidental wounding.

Highly infectious/ resistant organisms
Decisions to perform an autopsy will depend upon the circumstances of the death. Limited or complete autopsies will be performed in specific isolation rooms and with minimal staff. Airborne and contact precautions are strictly used. Appropriate garments including HEPA-filtered PAPRS, face shield, impervious body suit with full sleeve coverage, shoe covers, triple gloving including cut resistant gloves shall be used. Disposable instruments with blunt edges are preferably used . Equipment used will be kept at a minimum and shall be placed in clear view at all times. Instruments should not be passed by hand but rather placed on a surface in plain view and picked by the user. Minimize the production of aerosols by using a soft stream of water, avoiding the use of powered saws, placing a clear plastic bag over the head while opening the skull or use a tented saw, waiting about 10mn for aerosols and dust to settle, avoiding splashing, opening the bowel under water.

- When the death is reported by the hospital, ensure that specimens obtained at the hospital prior to initiation of treatment are secured.
- Request that any previously started culture be completed ,as well as any test that can help identify the organism.
- Collect appropriate specimens (blood, serum ,CSF, samples of tissues frozen at 70degreesC…) for culture serologic diagnosis as needed and contact the Public Health Laboratory.
- Obtain specimen for histology

- Immediately and thoroughly wash any body surface contaminated by blood or other body fluids
- Remove all garments and place in appropriate containers and wash hands before leaving autopsy room

XII. DEATHS DUE TO CHEMICAL AGENTS

Bodies should be decontaminated by the HAZMAT team before taken to the office or designated examination site. The bodies should be transported in vinyl-free body bags. Level C PPE including splash-type chemical suit with cartridge-type air purifying respirator should be worn by autopsy personnel. The bodies should be washed a second time before autopsy

XIII. DEATH CERTIFICATION

1. After completion of the autopsy, the case is removed from the case list in FACTS, an etiologically specific Cause of Death is determined and a Death Certificate Form is generated from FACTS and signed.

2. The form is to be submitted to the Communications Unit for preparation of the official Death Certificate. This document is to be signed within 24 hours of the body being identified

3. All death certificates produced the day before are reviewed at the Morning Meeting the following day.

XIV. AUTOPSY REPORT

The document is to be used by professionals as well as nonprofessional individuals and should be written in a precise, clear, well-organized fashion, using the simplest terminology whenever possible. The report should contain the following items

The “Front Page” should include the following information:

- Autopsy number,
- Identification of Decedent,
- Date of Death,
- Date of Autopsy,
- Cause and Manner of Death,
- List of Final Diagnoses
- Name of ME who performed the examination

Page 2 and following, should contain the results of the examination itself, and include the following headings:

- External Examination
- Scars and tattoos
- Clothing
- Medical Treatment
- Description of Injuries

- Internal Examination by organ
- Systems
- Ancillary Examinations

Medical Examiners should develop autopsy report templates that are saved on the P Drive in FACTS. A tough book is allocated to each ME to help in the recording of autopsy findings. The information is sent to the ME's desktop. He/she then produces a draft autopsy report that is submitted to the transcriptionist within 5 days of performing the autopsy. Complex cases (e.g. multiple woundings, Blunt Impact Trauma, Strangulation etc.) can be dictated.

Final reports are to be completed according to the accreditation provisions of the National Association of Medical Examiners (NAME). According to NAME, a Phase I deficiency occurs if the agency does not have 90% of all postmortem examinations completed within 60 calendar days from the time of autopsy. A Phase II deficiency occurs ifhte agency does not have 90% of all postmortem examinations completed within 90 calendar days frmo teh time of autopsy.

Cases that cannot be completed during the above-stated timeframes should be brought to the attention of the CME/Deputy CME at least 15 days prior to the due date. In order to expedite completion, those cases will become part of the LATE AUTOPSY CASELIST that will be reviewed each week at the Pending Cases Conference.

XV. REQUESTS FOR RETRIEVAL OF TISSUES

The OCME's mandate is to perform death investigations. As such it has no authority to remove and/or preserve tissues outside of what is allowed for determination of cuase and manner of deaths.

1. Organs may be retained forthe purpose of determining cuase and manner of death. The examined organs are considered "medical waste" and are disposed of as such according to OCME policy.
2. Representative sections of organs and tissues are generally retained in formalin, so that histological preparations or other tests may be performed, when necessary, for determination of cause and manner of death. They can also be used as quality control for the Histology Laboratory. Tissues are biological waste and are disposed of according to OCME Policy and Procedure.
3. Written permission of next of kin is required and should be documented before any tissue, body fluid and organ or portion thereof, are donated to any educational or research institution.

XVII. COURT-RELATED ACTIVITIES

Medical Examiners will conduct pretrial conferences and offer court testimony as requested by government or court-appointed attorneys. Requests from private attorneys or those involved in civil cases must be submitted for billing according to the agency's fee schedule as set forth in the agency Recordkeeping & Retention Policiesand Procedures. Transportation shall be provided by the courts. A copy of the autopsy report can be taken from the agency premises to court. However, the Medical Examiner casefile (as described in the agency's Recordkeeping& Retention Policies and Procedures) shall not be removed from the premises of the agency. Each Medical Examiner must document case number, date and time spent on court-related activity in the FACTS.

Reference List

1. Allan T. Bennet, MD, et al (2003). Handbook of Forensic Pathology 2nd Ed. In R C. Froede, MD (Ed.), In Caryn L. Tursky (CAP Ed.). Northfield, IL: College of American Pathologists.
2. Spitz and Fisher (2006). Medico legal Death Investigations, 4th ed. Springfield, IL: Charles C. Thomas
3. Vincent & Dominick DiMaio (2001). Forensic Pathology, 2nd Ed.
4. V. DiMaio (1999). Gunshot Wounds 2nd Ed.
5. Jurgen Ludwig (2002). Handbook of Autopsy Practice 3rd Ed. New Jersey: Humana Press
6. J. Burton and G. Rutty (2001). The Hospital Autopsy 2nd ed. New York, NY: Arnold.
7. Finkbeiner, Ursell and Davis (2004). Autopsy Pathology. Philadelphia, PA: Churchill Livingstone
8. E. Gilbert-Barness, D.E. Debich-Spicer (2005). Handbook of Pediatric Autopsy Pathology. Totowa, NJ: Humana Press