

**HARMONISATION OF MEDICO-LEGAL AUTOPSY RULES IN EU -
RECOMMENDATION No. R (99) 3
Part 3**

Principle V - Autopsy procedures

I. External examination

1. The examination of the clothing is an essential part of the external examination and all findings therein are to be clearly described. This is especially important in those cases where the clothing has been damaged or soiled: each area of recent damage must be described fully and relevant findings are to be related to the site of injuries on the corpse. Discrepancies in such findings are also to be described.

2. The description of the body following an external examination must include:

- a. age, sex, build, height, ethnic group and weight, nutritional state, skin colour and special characteristics (such as scars, tattoos or amputations);
- b. post-mortem changes, including details relating to rigor and post mortem hypostasis - distribution, intensity, colour and reversibility - and putrefaction and environmentally induced changes;
- c. findings on a primary external inspection and description which, if required, include sampling of stains and other trace evidence on the body surface and a reinspection after removal and cleaning of the body;
- d inspection of the skin of the posterior surfaces of the corpse;
- e. description and careful investigation of the head and the facial orifices includes: colour, length, density and distribution of hair (and beard); nasal skeleton; oral mucosa, dentition and tongue; ears, retro-auricular areas and external meati; eyes: colour of irises and sclerae, regularity and appearance of pupils, sclerae, conjunctivae; skin (presence and absence of petechiae to be described); if fluids have been evacuated from facial orifices, their colour and odour;
- f. neck: checking for excessive mobility, presence and absence of abrasions, other marks and bruising (including petechiae) over the entire circumference of the neck;
- g. thorax: shape and stability; breasts; aspect, nipples and pigmentation;
- h. abdomen: external bulging, pigmentation, scars, abnormalities and bruising;
- i. anus and genitals;
- j. extremities: shape and abnormal mobility, abnormalities; injection marks and scars; palmar surfaces, finger and toe nails;
- k. material findings under fingernails.

3. All injuries, including abrasions, bruises, lacerations and other marks have to be described by shape, exact measurement, direction, edges, angles and location relative to anatomical landmarks. Photographs should be taken. Bite marks shall be swabbed, and casts made where necessary.

4. Signs of vital reaction around wounds, foreign particles inside wounds and in their surroundings and secondary reactions, such as discolouration, healing and infections must also be described.

5. The investigation of cutaneous and sub-cutaneous bruising may require skin incision.

6. Where appropriate, specimens from wounds must be removed for further investigations, such as histology and histo-chemistry.

7. All signs of recent or old medical and surgical intervention and resuscitation must be

described. Medical devices must not be removed from the body before the intervention of the medico-legal expert.

8. A decision has to be taken at this stage as to the strategies of investigation and the necessity of documentation by X-rays and other imaging procedures.

II. Internal examination

A. General

1. All relevant artifacts produced by the dissection and from sampling procedures, must be documented.

2. All three body cavities - head, thorax and abdomen - must be opened layer by layer. Where appropriate, the vertebral canal and joint cavities should be examined.

3. Examination and description of body cavities include: an examination for the presence of gas (pneumothorax), measurement of volume of fluids and blood, appearance of internal surfaces, intactness of anatomical boundaries, external appearance of organs and their location; adhesion and cavity obliterations, injuries and haemorrhage.

4. The demonstration and dissection of the soft tissues and musculature of the neck have to be components of all medico-legal autopsies (see the paragraph concerning special procedures).

5. All organs must be examined and sliced following established guidelines of pathological anatomy. This includes opening of all relevant vessels, for example, intracranial arteries, sinuses, carotid arteries, coronary arteries, pulmonary arteries and veins, aorta and vessels of the abdominal organs, femoral arteries and lower limb veins. Relevant ducts have to be dissected, for example, central and peripheral airways, biliary ducts and ureters. All hollow organs have to be opened and their content described by colour, viscosity, volume (samples should be retained, where appropriate). All organs have to be sliced and the appearance of the cut surface described. If injuries are present, the dissection procedure may have to vary from the normal one: this should be appropriately described and documented.

6. All internal lesions and injuries must be precisely described by size and location. Injury tracks must be described in order to include their direction as regards the organ anatomy.

7. The weight of all major organs must be recorded.

B. Detailed

1. Head

a. Before opening the skull, the periosteum must be scraped off in order to display or exclude any fractures.

b. The head examination procedure must allow the inspection and description of the scalp, external and internal surfaces of the skull and of the temporal muscles.

c. The thickness and appearances of the skull and sutures, the appearances of the meninges, the cerebrospinal fluid (CSF), the wall structure and contents of cerebral arteries and sinuses must be described. The description of the bones must also include an examination of their intactness, including the connection between the skull and the first two vertebrae.

- d. In obvious or suspected head injury (for example, if a detailed examination is required or if autolysis or putrefaction is present) fixation of the whole brain is recommended before its dissection.
- e. Middle ears must be always opened and nasal sinuses where indicated.
- f. The soft tissue and skeleton of the face is dissected only in relevant cases, using a cosmetically acceptable technique.

2. Thorax and neck

The opening of the thorax must be performed using a technique which allows the demonstration of the presence of pneumothorax and the inspection of the thorax walls, including the postero-lateral regions. In situ dissection of the neck must display the details of its anatomy.

3. Abdomen

The opening procedure of the abdomen must allow an accurate examination of all layers of the walls, including the postero-lateral regions. In situ dissection is necessary in certain cases, particularly for the demonstration of injury tracks and evacuation of fluids. Dissection of organs should observe anatomical continuity of systems, where possible. The whole intestine must be dissected and its contents described.

4. Skeleton

- a. The examination of the thoracic cage, the spine and the pelvis must be part of the autopsy procedure.
- b. Where appropriate traumatic deaths need a precise dissection of the extremities, possibly complemented by X-ray examination.

5. Special procedures

- a. If there is any suspicion of neck trauma, the brain and thoracic organs are to be removed prior to the dissection of the neck, to enable detailed dissection to take place in a bloodless field.
- b. If there is a suspicion of air embolism, pre-autopsy radiology of the thorax must be performed. The first stage of the autopsy in such a case must be a careful partial opening of the thorax and dislocation of the lower three-quarters of the sternum with the subsequent opening of the heart under water, allowing the measurement and sampling of escaping air or gas.
- c. For the demonstration of particular injury patterns, deviation from the normal procedure of dissection has to be accepted, provided that such procedures are specifically described in the autopsy report.
- d. The dissection in traumatic deaths must include a full exposure of the soft tissues and musculature on the back of the body. The same procedure must be applied to the extremities (so called "peel-off" procedure).
- e. In suspected or overt sexual assaults, the sexual organs are to be removed en bloc together with the external genitalia, rectum and anus, before they are dissected. Relevant swabs of orifices and cavities must be taken prior to this procedure.

6. Sampling

The scope of the sampling procedure is to be case-dependent. However, the following minimum rules should be applied:

- a. in all autopsies, the basic sampling scheme includes specimens from the main organs for histology and peripheral blood sampling (such as for alcohol and drug analyses and genetic identification), urine and gastric contents. All blood samples must be peripheral blood and not heart or thoracic;
- b. if the cause of death cannot be established with the necessary degree of certainty, sampling includes additional specimens and fluids for metabolic studies and thorough toxicology. This includes blood, vitreous humour, CSF, bile, hair samples and further relevant tissues;
- c. if death is related to physical violence, sampling includes the injuries, for example to determine wound age and any foreign materials in the wounds;
- d. if reconstructions are desirable, the removal of bones and osseous compartments may

become necessary;

e. if identification is the predominant aim, the removal of jaws and other bones may be necessary;

f. if strangulation or the application of physical force to the neck is suspected or diagnosed, the entire neck structures, musculature and neurovascular bundles must be preserved for histology. The hyoid bone and the laryngeal cartilages must be dissected very carefully:

g. biological samples must be collected in tightly closed jars, properly preserved and placed under seal and transported to the laboratory in perfect safety;

h. certain specimens and fluids need to be sampled in a special way and analysed without delay.

7. Release of the body

After a medico-legal autopsy has been carried out, medico-legal experts should ensure that the body is returned in a dignified condition.