

A7 Guidelines for autopsy investigation in post-neonatal infant deaths or sudden unexpected deaths in infancy

Most of these examinations will be authorised by HM Coroner or the Procurator Fiscal, with whom all procedures, sampling and retention of tissues must be explicitly agreed. Parental consent is required for any additional procedure or for the use of tissue, blocks and slides for research. Parents should be informed of any tissue or organ retained. They should be offered the opportunity of return, if possible, of any organs retained when the investigation is complete.

The Retained Organs Commission is preparing a consultation document regarding the status of blocks and slides. The College's view is that the return of blocks and slides prevents re-evaluation of a death should further information, of whatever nature, become available, and prevents audit of the quality of services provided to the Coroner: return of this material is not supported.

The following guidelines apply particularly to sudden unexpected deaths in the first year of life.

A7.1 Demographic data and history

- Dates of birth and death; age; date of autopsy; date of report; local code number and identifiers; address
- Name of mother
- Authorisation for post-mortem examination
- Availability of clinical notes
- Availability of event scene investigation and the Coroner's officer's report
- Attendance of clinician, police officers or others
- Method of identification
- Detailed history, to include details of pregnancy and delivery, post natal history, ante-mortem history and precise circumstances of death. Relevant details would include gestational age, birth weight, complications of delivery, feeding, any illnesses or hospital attendances, immunisations, details of siblings, reference to the child protection register, drug use, time last seen alive, time found dead and by whom, where found, co-sleeping, state of body when found (warm, cold, rigor, etc.) and any resuscitation.

A7.2 External examination

- Weight (to nearest gram if under 5 kg)
- Measurement of head circumference, crown-heel and crown-rump lengths
- General state of body: clothing, nutrition, cleanliness
- Rigor mortis
- Hypostatic staining
- Secretions or blood around nose and mouth
- Petechial haemorrhages on face, conjunctivae or oral mucosa
- Any evidence of injury (radiology mandatory if any injury present)
- Full external description to include eyes, ears, scalp, fontanelles, nose, mouth and frenulum of upper lip, digits, umbilicus, anus, genitalia and limbs
- Dysmorphism.

A7.3 Internal examination

- Inspection of cranial, thoracic and abdominal cavities
- Weight of all major organs on digital balance to 0.1 g
- Measurement of thoracic and abdominal fat thickness
- Systematic description of skull, spinal column and cord, ribs and major organs including brain, heart, upper and lower airways, lungs, thymus, spleen, liver, intestines, kidneys, bladder, adrenals, pancreas and gonads, noting whether organs normal or abnormal. Comment on state of ductus arteriosus and umbilicus.

A7.4 Histology

Paraffin sections. Minimum blocks include:

- epiglottis and larynx
- trachea (including thyroid)
- four lobes of lung (H&E plus at least one section also stained by Perls' method)
- heart (posterior left and right ventricle and interventricular septum)
- thymus
- duodenum (including head of pancreas)
- liver (left triangle, right square)
- spleen
- mesentery with lymph node
- adrenal gland
- kidney
- costochondral junction of right 6th rib
- muscle (diaphragm and pectoralis major or psoas)
- blocks of any lesion.

A7.5 Neuropathology

The neonatal brain is extremely soft and requires great care (and sometimes immersion in saline) for atraumatic removal.

4–6 blocks, including cerebral hemisphere, brain stem, cerebellum and meninges, and spinal cord, should be taken for histology.

The pathologist examining these cases must be familiar with the normal morbid anatomy and changes produced by natural disease and by trauma. Where there is neither clinical evidence nor any macroscopic autopsy finding to explain death, it is recommended that the brain be examined only after adequate fixation. Full sampling, to exclude both natural disease and injury, is essential in such cases.

A7.6 Additional investigations that may be indicated

- Photography of any abnormality
- Radiology: a full skeletal survey reported by a paediatric radiologist is mandatory unless the clinical history is well defined and there is no suggestion of injury
- Wherever there is suspicion of intracranial injury, no needle should be placed within the skull or the eye until the scalp, skull and intracranial contents have been examined and injury excluded
- Bacteriology of blood, CSF, respiratory tract and any infective lesion
- Virology (postnasal swabs or nasopharyngeal aspirate, lung, CSF or ileal contents if indicated)

- Sample of skin or pericardium for fibroblast culture (tissue and method as advised by local laboratory) for possible metabolic tests and as a source of DNA
- Biochemistry (vitreous fluid if evidence of e.g. diarrhoea, dehydration or suspicion of salt poisoning. Urine if available saved for metabolic investigations or toxicology)
- Frozen sample of liver and kidney for frozen section for fat (mandatory in all unexplained unexpected infant deaths unless another screening method for disorders of fatty acid oxidation is used).
- Consider saving samples for immunology, toxicology and genetic investigations (e.g. storage of pericardium for tissue culture and spleen for future DNA studies).

The report should include details of any samples kept and instructions for their further retention or disposal. The final report should summarise the main pathological findings and include a commentary addressing any clinical questions or other concerns. Pathologists should assist any multidisciplinary case review and record their attendance.