

Key points

- A post-mortem is an examination of the body of someone who has recently died with the aim of determining the cause of death.
- There are two types of post-mortems: a hospital post-mortem, which requires consent from the next of kin; and the coroner's post-mortem, which does not require consent because it is a legal requirement.
- Hospital post-mortems give peace of mind to the friends and family, as well as the clinicians involved in the patient's care, and help to improve medical knowledge and practice.
- Post-mortems involve physically opening the body and analysing all the body systems, sometimes requiring temporary storage of tissue for further analysis.
- There are certain religious considerations to be aware of.
- Every doctor has a responsibility to be aware of the practicalities involved in the post-mortem process and be able to communicate this with the bereaved if so called upon.

What is a post-mortem?

- A post-mortem is an examination of the body of someone who has died.
- Its primary aim is to identify the cause of death.
- A pathologist systematically reviews the body looking for signs of disease and injury; this includes examining both externally and internally by gross and microscopic anatomical analysis.
- Using their analysis, along with the clinical history provided, they can then determine a cause of death, along with any other existing comorbidities that may or may not have contributed to the death.
- There are two types of post-mortems: the coroner's post-mortem and the hospital post-mortem.

Coroner's post-mortem

- A legal requirement that takes place generally when a death is unexpected, unnatural, or suspicious.
- It is the coroner's decision and consent from the next of kin is not required.
- A coroner is a government official who investigates these kinds of deaths.
- Their job is to identify the cause of death and decide whether a legal investigation, called an inquest, is needed.
- A coroner will have legal training and will usually be a lawyer who has undertaken specific additional medical training.

Hospital post-mortem

- In contrast, there is no legal obligation to perform a hospital post-mortem.
- It only occurs when specifically requested, either by a clinician or by someone close to the deceased.
- It is normally the clinician seeking further knowledge about the cause of death.
- Consent from the next of kin is required and the post-mortem cannot be legally performed if consent is refused.

Why are post-mortems important?

- The main purpose is to identify the cause of death, as well as any other diseases the patient may or may not have had that could have contributed to their death.
- This allows for the confirmation or disproval of the clinical diagnoses, which is important in reassuring friends, family and the medical team that the patient was treated appropriately (McPhee, 1996).
- In coronial post-mortems, this has legal implications that are potentially relevant to criminal proceedings and might influence outcomes in court.
- In cases that potentially involve a hereditary disease, family members will benefit from a conclusive diagnosis and can receive appropriate counselling on their risk of developing the same disease they may or may not have otherwise known about.
- Those close to the deceased may also benefit from the knowledge of knowing that the post-mortem will further medical knowledge and enhance future research.
- Despite improvements in diagnostic technologies and techniques, in at least 8.4% of cases, a major diagnosis remains clinically undetected antemortem and in almost half of these cases survival to discharge might have occurred with the correct diagnosis (Shojania et al., 2003).
- Post-mortem therefore serves as a way of disproving incorrect clinical diagnoses and incorrect causes of death. This can act as an audit and quality assurance tool that allows hospitals to identify knowledge gaps, and cultural and management issues, as well as providing the individual clinician with vital learning that might influence future practice and save their future patients' lives (Anderson et al., 1990).
- Establishing the correct cause of death is important in establishing valid mortality statistics and disease prevalence, which is important for public health monitoring and epidemiology and can have consequences on how funding for disease research is distributed.
- On a broader scale, historically, post-mortem has been one of the pillars of Western medicine, allowing us to correlate pathology and disease with clinical symptoms (King and Meehan, 1973). In 1968, Angrist (Angrist, 1968) identified 73 clinical entities that were elucidated by post-mortem, with examples including significant diseases such as Conn's syndrome, congenital heart disease and sarcoidosis. Reduced post-mortem rates might therefore result in reduced disease discovery going forward.
- Lastly, post-mortem is seen as a great educational tool for medical students, allowing them to correlate clinical and pathological findings. However, the use of post-mortem as an educational tool is in decline (Pakanen et al., 2022), with some medical students attending only one post-mortem at most during their university training (Benbow, 1990).

When and where are post-mortems performed?

- They usually take place within two to three working days. Sometimes they can be carried out within 24 hours in special circumstances, such as for religious reasons.
- Post-mortems usually take place locally in the hospital mortuary. The mortuary examination room is very similar to a surgical operating theatre.

Who is involved in a post-mortem?

- Pathologists are the doctors who perform post-mortems.
- They have undertaken speciality training in histopathology and are accredited by the Royal College of Pathologists.
- Coroner's post-mortems are performed by forensic pathologists who have further specialist training in the investigation of deaths with medico-legal implications; this is known as forensic pathology.
- Mortuary technicians are trained in the operation of mortuaries and often help pathologists provide dignified care to the deceased during their time in the mortuary.
- Sometimes professionals in training, such as junior doctors or student nurses, attend post-mortems. The next of kin can request that only the necessary members of staff be present.

What happens during a post-mortem?

- The pathologist makes cuts on the chest and the back of the head, and the body is opened.
- They remove the organs from the body to examine them. Sometimes small samples are taken from the organs and treated with formalin to preserve them in blocks of tissue that are cut into slides so that later they can be analysed microscopically. The organs are then returned to the body.
- An entire organ, such as the brain or heart, may need to be stored for a longer time to carry out more in-depth analysis – this requires written permission from the next of kin. Samples of bodily fluid, such as blood, are sometimes taken to carry out further tests.
- Photographs may be taken to document findings and these are treated confidentially as medical notes.
- The body is closed, cleaned, and dressed. The cuts are made in a way so that they are not visible afterwards, which is important if family and friends want to see the body.
- Friends and family should not notice a difference in the appearance of the deceased.

What happens after a post-mortem?

- Once the post-mortem and the relevant paperwork are completed the body is released back to the undertakers selected by the family as soon as possible so that normal funeral preparations can begin. The coroner must inform the family if this cannot be completed within 24 hours.
- The coroner might decide to hold an inquest if the cause of death is still unknown, the death was violent or unnatural, or the death occurred in prison or police custody. In this instance, an interim death certificate can be issued, if requested, and updated with a final death certificate once the inquest is over.
- The pathologist writes their report and gives a cause of death 'on the balance of probabilities'. This means that the pathologist makes this decision based on what they believe is the most likely cause of death with the information available to them at the time of writing the report. It is a lower burden of proof than used in criminal proceedings, where they make a decision that is 'beyond reasonable doubt'.
- The coroner will give the next of kin this information and they can discuss the findings with the hospital doctor or their GP. The information can be altered by a coroner at a later date if more information subsequently becomes available.

Religious considerations

- Christianity (27.5 million, 46.2%) – generally, there is no religious objection (Health Service Executive, 2009).
- No religion (22.2 million, 37.2%) – no religious objection but personal objections may apply (Health Service Executive, 2009).
- Islam (3.9 million, 6.5%) – only if required on legal grounds. The body should have all organs returned to the body before burial. (Health Service Executive, 2009).
- Hinduism (1.0 million, 1.7%) – unlikely to object, as long as all organs are returned to the body (Health Service Executive, 2009).
- Sikhism (524,000, 0.9%) – no religious objections (Bradford Teaching Hospitals NHS Foundation Trust, 2023).
- Buddhism (273,000, 0.5%) – only if required on legal grounds. Likely to ask that a post-mortem be delayed by a minimum of 4 hours but ideally three and a half days (Health Service Executive, 2009).
- Judaism (271,000, 0.5%) – must be avoided unless required by law. There is a preference for non-invasive post-mortem techniques if possible. (Health Service Executive, 2009).

References

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