

What happens at a hospital post mortem on a baby — procedures and likely timings

*This document contains explicit information about practical post mortem processes. Please note that it is **not** for distribution to parents. Many bereaved parents will not want to know this level of detail and their wishes should be respected.*

When parents have agreed to a hospital post mortem (PM) of their baby, they wait anxiously for two very important events: the return of their baby's body, and the appointment to discuss the post mortem results. Any unnecessary delay to either of these can increase and prolong the parents' distress.

The outline below gives a general idea of timings for hospital (ie, consented/authorised) post mortems. Please see Section 10 for recommendations for reviewing current provision in relation to hospital post mortems and reducing delays.

1. Parents' consent/authorisation and paperwork

Deciding whether to have a post mortem examination of their baby is a huge decision for many parents. They may want time to think before the form is completed. Sometimes the decision is not taken for a couple of days.

In many places the baby's body needs to be transferred to another hospital for examination by a specialist perinatal pathologist. Occasionally the transfer occurs on the next working day. However, it is not uncommon for a body to arrive for post mortem five days after the death. Some hospitals only transport babies' bodies on one set day each week: this can cause significant delays in carrying out the post mortem, affecting the timing both of the funeral and giving the results to parents.

In a few hospitals, a specific day for the post mortem is agreed with the parents, and the baby's body is transferred for the post mortem examination and returned on the same day. Where this is possible, it enables the parents to spend more time with their baby after the post mortem.

2. Arrival of the baby's body in the mortuary

The baby's body arrives at the mortuary, and his or her details are entered in the computer system.

If the consent/authorisation form is not properly filled in and the parents' wishes are not completely clear, the consent taker, and often the baby's parents, must be contacted to clarify exactly what is to be examined. This can take two or three days and is not uncommon. Poorly completed forms can result in the parents being asked to come back to the hospital where their baby died to go through the consent form again.

The body is then prepared for imaging, photography and initial assessment.

3. Initial autopsy process (in the mortuary)

Note: Individual pathologists may do some of the items below differently. Timings may also vary, depending on resources, pressure of work, etc.

The examination of the baby's body usually starts on the day after it arrives. However, this depends on staffing and workload. In most places a perinatal autopsy is only part of the pathologist's

workload. There is also a shortage of perinatal pathologists in the UK, and this is predicted to get worse.

It is rare for a post mortem examination to start more than 72 hours after the baby's body has arrived, provided all the necessary information is available, including a valid consent/authorisation form, appropriate clinical details and, if relevant, scan reports.

Examination of the body usually takes one to two hours, but may be a good deal longer in complex cases and depending on what is required. It typically includes:

- Taking images (x-ray, photography, CT and MRI scans and ultrasound).
- Carrying out an external examination.
- Carrying out an internal examination including removal of organs.
- Taking blood and other fluid samples.
- Examining organs, weighing and dissecting them, taking tissue samples.
- Opening the skull and removing the brain. Taking samples of the brain either immediately, or after three to five days fixation.
- Examining the placenta, and taking tissue samples.

4. Repair and return of the baby's body

Once all the organs have been examined and tissue samples taken, the organs and any tissue not required for laboratory examination are returned to the body which is then repaired:

- All the organs are returned unless specific consent/authorisation has been obtained from the parents to retain one or more organs for further examination, or for education, audit or research.
- The return of the body will be unavoidably delayed if the parents decide to have the blocks and slides returned with the body, or if the pathologist needs to fix organs for longer and the parents want them returned with the body (see *Sands Guide for consent takers* p 20). Both of these circumstances are rare.

In most cases the baby's body is ready for return to the sending hospital four to six working days after the beginning of the examination. Return can sometimes be sooner if the parents need an urgent funeral and if staffing etc allow. As mentioned above, there is sometimes a delay in returning the body because of the referring hospital's transport arrangements.

A funeral can take place once the baby's body has been received at the sending hospital.

5. Laboratory studies

The procedures described below continue after the baby's body has been repaired and returned to the sending hospital. These procedures are still part of the post mortem examination process.

i. Processing tissue samples for slides: histology (in the lab)

- The tissue samples – including samples from the placenta – are fixed in formalin (minimum 24 to 48 hours, sometimes up to 72 hours if this will get more useful results).
Note: In most places the placenta is always examined if available, and samples taken. This is particularly important if the parents want only a limited or external post mortem, or do not want a post mortem at all. (Written consent/authorisation to examine the placenta is not legally required. However, best practice guidelines issued by the Human Tissue Authority state that the mother's consent should always be sought, and a note made in her medical record – see *Sands Guide for consent takers* p 13). At least seven to ten days are needed to get the results of placental histology. This means that, even if the parents have requested an external PM only, a final report cannot be issued immediately.
- The tissue samples are sent to the lab (occasionally on a different site) and processed overnight so they can be made into blocks. This enables very thin slices (sections) of tissue to be cut for

examination under a microscope. (Blocks are created by embedding the samples in paraffin wax in small plastic containers called cassettes.)

- In a few places, the sections are cut and stained for examination on slides on the following day. In other places there may be a two to three week delay, and in some places it takes many more weeks. Delays are generally due to the heavy workload, competing priorities, and staffing problems. Post mortem histology will not be prioritised over urgent tumour biopsies for treatment decisions, or coroner's/procurator fiscal's cases. There is usually a high turnover in labs, so new untrained staff, as well as annual leave arrangements, may slow the process.
- A biomedical scientist carries out quality control (QC) of the slides (and of each step in the lab).
- The pathologist analyses the slides.

Brain samples processed for slides

- If required (depending on clinical information, and also to some extent on individual practice), the brain is fixed in formalin, usually for between 24 and 96 hours. The pathologist then examines the brain and samples are taken for processing into slides. If specialist neuropathological examination is needed, the whole brain may be fixed and the fixation time is significantly longer.
- Some pathologists usually take samples without fixing.
- It may be impossible to sample for histology even if fixation is attempted on some brains, eg, those from missed miscarriages and from a macerated baby. .

ii. Diagnostic tests that may be required

The specific tests required depend very much on the clinical information and also on what is discovered during the initial post mortem examination.

Diagnostic test	Usual time until results are available Note: Some specialist tests take longer than indicated below.
Routine histology including the placenta	7 to 10 days.
Special stains including immunohistology, bone histology and specialist histopathology	8 to 12 days. (Bone samples must be decalcified for up to 5 days before they can be processed and slides cut.)
Microbiology/Bacteriology	7 to 10 days.
Virology	Up to 7 days for immunofluorescence. Tissue culture for viral identification takes 4 weeks.
Cytogenetics	5 to 6 weeks.
Specialist neuropathology	Up to 12 weeks. (Brain must be first fixed for an extra week or more before samples can be taken.)

6. Analysing the slides

Laboratories often "batch cut" post mortem slides, so trays of slides from several cases may arrive at the same time. Other commitments may also mean that the pathologist does not analyse the slides for a few days after receipt.

The pathologist takes a couple of hours to analyse the slides for each baby. Sometimes the pathologist requires more tests, or more specialist tests, once they see the initial results. In this case, new sections must be cut from the blocks and stained. Quality control by a biomedical scientist and further review by a pathologist may add two or three extra days.

7. Writing the post mortem report

The pathologist must have all the relevant information to hand before he or she can complete the report. Collating the results of tests – histology, cytogenetics, neuropathology – and, if undertaken, microbiology – and producing the report take time. Sometimes the pathologist needs to consult other specialists, eg, a clinical geneticist.

In ideal circumstances, and depending on when the test results are ready, the final report can usually be prepared two to five weeks after the initial examination. It is typed up and then checked by the pathologist before it is sent.

If additional tests are being done that may take a long time to complete, the pathologist sends an interim report that can be discussed with the parents (NHS England specification, 2013).

8. Sending the report to the referring consultant

The report has to find its correct destination at the referring hospital. There are often postal delays. Even after the report has reached the hospital post room, it can take several days for it to reach the referring consultant's office.

In a few hospitals, reports are emailed to a named person with an nhs.net email account, who then distributes them. This is ideal because it avoids unnecessary postal and internal hospital delays.

9. Making the appointment to discuss the results with the parents

All the necessary clinical documentation must be collated and checked before the consultant's appointment with the parents.

In some hospitals this appointment is made when the parents agree to the post mortem. A date is set for between eight and twelve weeks' time. If all the results are not back by this date, the parents are contacted to delay the appointment.

In other hospitals, an appointment is only made after the results have arrived. Appointments need to take into account factors such as staff rotas, fixed meetings and annual leave arrangements.

10. Recommendations for reducing avoidable delays

The following service specifications for perinatal pathology were issued by NHS England in 2013: "60% of final reports for routine post mortem examination will be issued to referrers within 42 days of examination and 90% should be issued within 56 days. This will exclude those cases in which there may be a specialist referral opinion required (e.g. neuropathology) or very complex metabolic or genetic testing required."

The timing of many of the clinical processes involved in producing the results of a post mortem examination cannot be reduced. However, often there are also practical delays built into the system that could be avoided.

- a. **Reducing transfer delays** Hospitals that transfer babies' bodies for post mortems to a specialist perinatal pathology centre should review their transfer arrangements to make sure that there are no unnecessary delays.
- b. **Ensuring correctly completed forms** All consent takers should receive training in discussing post mortem examinations with parents and in completing the consent/authorisation form clearly, in order to avoid any unnecessary delays caused by poorly completed forms. All consent/authorisation forms should be clear, sensitive and easy to complete. The Sands post mortem consent form is recommended by the Human Tissue Authority and NHS England.
- c. **Reducing laboratory delays** The high turnover rates of laboratory staff should be monitored, and measures taken to try to minimise these.

- d. **Reducing appointment delays** Departments should review their system of appointments for discussing post mortem results with parents to make sure that there are no avoidable delays.
- e. **Reducing postal delays** Post mortem results should be emailed to a named person in the relevant department at the sending hospital who has an NHS email account.
- f. **Increasing the number of perinatal pathologists** Urgent measures should be taken to attract more perinatal pathologists into the NHS. Quite apart from parents' need to find out, if possible, why their baby died, the findings of a perinatal post mortem can be very important in trying to prevent further bereavements occurring if the parents have another baby. Nationally, the findings of post mortems can provide the basis for effective measures to try and reduce perinatal mortality and neonatal death rates. A well-staffed and efficient perinatal pathology service makes sense in both economic and human terms.

References

Sands (2013) *Guide for consent takers: seeking consent/authorisation for the post mortem examination of a baby*. This is part of the Sands Post mortem consent package. Hard copies of the *Guide* can be ordered from the Sands shop <http://shop-sands.org/shop/> or downloaded from the Human Tissue Authority website

www.hta.gov.uk/licensingandinspections/sectorspecificinformation/postmortem/perinatalpostmortem/thesandsperinatalpostmortemconsentpackage.cfm

NHS England (2013) *2013/14 NHS standard contract for perinatal pathology particulars, Schedule 2 – the services, a – service specification*

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Improving Bereavement Care Team

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