MATERNITY UNIT, NEONATAL UNIT & PLANET SUNSHINE GUIDELINE:

PERINATAL POST-MORTEMS AND PLACENTA/WHENUA HISTOPATHOLOGY

SCOPE:
All midwives, nurses, obstetricians and paediatricians working in the Maternity Unit, Neonatal Unit or Planet Sunshine

AUTHOR:
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PURPOSE:
To inform all necessary health professionals of the reasons for, and process of, transporting a deceased baby from 20+0 weeks gestation to 28 days postnatal, and/or a placenta/whenua for post mortem/histological examination.

DEFINITIONS:
PMMRC – Perinatal and Maternal Mortality Review Committee. Established in 2006 due to concerns that perinatal and maternal mortality was not currently audited in New Zealand and there were areas where mortality could possibly be reduced.

Perinatal death (PMMRC) – the death of any fetus or baby from 20+0 weeks gestation (or over 400grams if gestation is not known) and before 28 days of life.

Birth, Death and Marriages Registration Act 1995:
``Birth'' includes a still-birth; but does not include a miscarriage

``Dead fetus'' means a fetus that, whether or not the umbilical cord had been severed or the placenta/whenua had detached, at no time after issuing completely from its mother breathed or showed any other sign of life (such as beating of the heart, pulsation of the umbilical cord, or definite movement of the voluntary muscles):

``Delivery'' means a birth or a still-birth:

``Miscarriage'' means the issue from its mother, before 20+0 weeks of pregnancy, of a dead fetus weighing less than 400g:

``Still-born child'' means a dead fetus that:
  a/ Weighed 400g or more when it issued from its mother; or
  b/ Issued from its mother after 20+0 weeks of pregnancy
``Neonatal death'' are live born infants irrespective of gestational age, dying within 28 days of birth

GUIDELINE:
The perinatal post-mortem examination remains the ‘gold standard’ for investigating a stillborn or neonatal death that when performed by a pathologist with perinatal expertise yields the most information and thus allows more accurate diagnosis and classification of the cause of death.

The PMMRC has recommended that all DHBs seek to have those perinatal deaths where the parents have consented to post-mortem examination, examined by a pathologist with training in perinatal pathology.

The main objective of the PMMRC is to gather knowledge that can reduce preventable perinatal and maternal mortality. Gaining consent for a postmortem examination requires sensitivity, knowledge of the process involved and the potential to find out the reason for the death which may reduce the risk of recurrence.

The PMMRC (2009) recommend that Lead Maternity Caregivers (LMC's) should provide information for families and clinicians, including distribution of the PMMRC Panui for postmortem examination.

Purpose of a perinatal autopsy:
The purpose of an autopsy examination extends beyond diagnosis of the cause of death, and the clinician needs to address these purposes with the parents at the time of the discussion and approach for consent.

The main purposes are:
- Identification of an accurate cause of death;
- Exclude some causes of death;
- Identification of disorders with implications for counseling and monitoring for future pregnancies;
- To assist in the grieving process by enhancing the parents understanding of the events surrounding the death; for research purposes, e.g. recognition of new disease entities and expansion of the body of knowledge on know diseases;
- To inform clinical audit of perinatal deaths including deaths due to iatrogenic conditions and confirmation of antenatally diagnosed or suspected fetal pathology;
- Teaching of pathologists and medical students;
- Medico-legal reasons for example in a coronial investigation or providing information in cases of litigation.
PMMRC advice is that Post-Mortem is not necessary in circumstances where there is:

1. A clear diagnosis of the cause of death
2. Congenital abnormality with confirmed antenatal abnormal karyotype as counselling to the family would not change with a postmortem
3. Feto-maternal haemorrhage with +ve Kleihauer – check Kleihauer and examine baby before considering referral for a PM
4. Multiple pregnancy with fetal reduction
5. Confirmed placenta/whenua abruption with baby with normal anatomy scan – send placenta/whenua
6. Early PROM with baby with normal anatomy scan – send placenta/whenua
7. Fetal Death <20+0 weeks gestation – consider karyotyping, and/or placenta/whenua histology

Post-mortems should be carried out at the request of the Consultant Obstetrician or Consultant Paediatrician, with informed consent from the parents documented in the clinical notes (see appendix 4). Seeking of consent is best done by an experienced clinician who has a good rapport with the parents. Informed discussion should include the possibility that a cause of death may not be found, however the information obtained may benefit other babies in the future.

Parents may wish to consider alternatives to a full postmortem examination and these should be discussed with them as appropriate (see PMMRC leaflet ‘Panui for postmortem’).

While the responsibility for informed consent lies with the obstetrician, this may be delegated to a midwife if the situation warrants this and the midwife is happy to discuss the postmortem with the parents. Anyone discussing the postmortem consent should be familiar with the PMMRC leaflet ‘Panui for postmortem’ and the SANDS leaflet ‘Guidelines for transporting a deceased baby for midwives, LMC’s, hospitals and maternity units’.

Information should be discussed and given to the parents including the SANDS leaflet ‘Transporting your baby: guidelines for parents, family and whanau’.

**Cause of death if not known – Coroners cases:**
If there are any concerns regarding the cause of death then this must be discussed with the Obstetric or Paediatric Specialist and consideration given to notifying the Police/Coroner.

**Note that consent for post-mortem is not required if a post-mortem is required by the coroner.**
Cases to be discussed with the Coroners include:

- Babies dead on arrival at hospital or within 24 hours of admission;
- Unattended stillbirth;
- Death within 24 hours of an operation, anesthetic or invasive procedure;
- Deaths as a result of an accident;
- Unnatural, criminal or suspicious deaths, e.g. neglect, abuse poisoning;
- Deaths caused by drugs, prescribed or not;
- Deaths as a result of a medical mishap;
- Deaths in which the doctor is uncertain of the cause of death, and unable to confidently complete the death certificate;
- Unexpected death on the ward.

Types of postmortem:

The placenta/whenua should travel with the deceased baby to Auckland so it can be examined by the pathologist as part of the post-mortem

1. Full post-mortem examination – this allows the pathologist to look at possible external and internal anomalies, structural defects and organ growth. A surgical cut (or incision) is made from the shoulder blade to just below the naval, which allows an examination of the chest and abdominal organs. A small incision is also made at the back of the head to examine the brain. The face, hands and limbs are never cut. Like all surgical procedures all incisions are stitched up and are normally not visible once the baby is dressed. There are standards for a full post-mortem examination set by the medical college.

2. Limited post-mortem examination – this is an examination that the woman/parents place restrictions upon. For example, examination of the abdominal organs only and no incisions in the head or chest, as well as external, placenta/whenua and x-ray examinations.

3. External examination only – Consent to only an x-ray and external examination of the baby’s body and the placenta/whenua, and no incisions. This means that the pathologist would not examine any internal organs.

4. Step-wise examination – in this examination, restrictions are placed and further investigation is conducted only if initial findings suggest that there may be irregularities elsewhere. For example, a step-wise examination of the abdomen due to a condition affecting this area and the pathologist finds clear indications that the condition has also affected the chest; the chest will then be examined.

The obstetrician may consult with the pathologist regarding partial post-mortem examinations as above. It is recommended that if the baby is transported to Auckland for any type of postmortem that the placenta/whenua is also sent – consent should be obtained for this. If there is not consent for postmortem, consent may be given for placenta/whenua examination (see placenta/whenua examination only).
A sterile skin sample may be advised – there are 2 specimen tubes for skin samples kept on the top shelf of the blood out of hours fridge in the laboratory. The skin sample would usually be taken from the baby’s armpit using a sterile scalpel blade and sterile gloves. Consent must be obtained for this.

**Taking baby to the mortuary:**
There are SANDS boxes available in maternity for dressing baby for parents to view and for giving parents leaflets. There is no set time limit to this if the parents wish to spend more time with their baby. The baby can be dressed and wrapped in a sheet, but should be kept dry and cool, bags of ice may be placed under the mattress of the cot or the small SANDS box as appropriate.

**The baby or placenta/whenua are to be placed in the chiller and not at any time to be placed in the mortuary freezer - please communicate this clearly if an orderly is taking the baby to the mortuary.**

When baby is taken to the mortuary, it would be appropriate for a midwife to accompany the baby as well as the parents if they wish to. The baby may be transported in a bassinet or the parents may carry the baby in the small SANDS basket. This basket should be placed into a suitable bag, or covered appropriately, particularly if not accompanied by the parents.

The date and name of the baby should be recorded in the mortuary book prior to placing in the chillers. The trolley where the baby is laid in the mortuary chillers may be covered with a sheet or blanket with a plastic sheet underneath to prevent seepage. Soft toys may be placed alongside. The midwife may wish to prepare the room prior to placing the baby there.

**Transport process:**
If there is a coroner’s case, then the coroner will arrange transport in association with the police.
If not a coroner’s case and a postmortem is agreed to, then the baby and placenta/whenua should be sensitively transported to Auckland:
- The baby may remain with the family/whanau if they wish until the necessary arrangements have been made and the baby needs to be prepared by the funeral director for the journey to Auckland. The baby should be kept as cool as possible during this time. The placenta/whenua needs to be double bagged and double labelled and placed in the fridge in the back store room in maternity until the family/whanau are happy for the baby to go to the mortuary. The placenta/whenua must then go with the baby.
- All relevant clinical notes should be photocopied and faxed to the pathologist, and should also accompany the baby (see list of documentation required).
- Written consent to transport must be obtained – see documentation checklist.
The baby should be identified appropriately - an ID band should be attached to the baby’s ankle if possible, with the following details – name of mother, mother’s NHI number, date and time of birth, sex and weight of infant.

It is estimated that the post-mortem report should be back within two months.

The parents must be kept informed of the process at all times.

A contract has been set up with Evans Funeral Services for packaging and transportation of the baby and placenta/whenua during working hours (0730hrs to 1630hrs Monday to Friday) – 867 9150 – and also out of normal working hours. An additional charge will be made for contact out of normal working hours.

Evans will liaise with the perinatal pathologist in Auckland and Air New Zealand regarding timings of transportation. Evans will also appropriately package the baby for the journey. The baby and placenta/whenua must remain cool during transportation.

TDH staff may contact the perinatal pathologist at Dept of Forensic Pathology, Level 1 Lab Plus, Auckland Hospital. Phone 021 667 595.

6 hours needs to be allowed from time of touch down at Auckland Airport and the return flight, allowing time for pick up and the post mortem.

**Paperwork to accompany baby & placenta/whenua – this is to be done by TDH staff - please use checklist appendix 5**

- Post mortem consent form is signed.
- Parents consent for baby and placenta/whenua to travel to Auckland.
- Photocopy of certificate of death (if over 20 completed weeks).
- Photocopied charts of baby and mother including:
  - Gestational age of baby, all history pertaining to the current pregnancy, social worker’s notes, x-rays, any scan reports;
  - Historical and current delivery summary and any baby record, lab results, and if TOP (termination) the procedure used.
- Placenta/whenua release form. Signed documentation for return of placenta/whenua or disposal of placenta/whenua
- The name of the Funeral Home that is doing the transfer at Gisborne.
- Destination for post mortem report to go to e.g. Pathologist, Obstetrician.

A postnatal appointment to see the obstetrician is to be arranged by the LMC as soon as the post mortem results are available. Note that there will only be a hard/paper copy of the postmortem results, it will not be uploaded onto the I-soft system at TDH.
Placenta/whenua Histology only
If the parents do not consent to the baby having a postmortem examination of any kind, they may consent to an examination of the placenta/whenua, membranes and cord. PMMRC recommend sending the placenta/whenua, membranes and cord for histopathology following an FDIU, SB, NND.

Recommendations are also to consider placenta/whenua pathology in the following circumstances:

- Infants admitted to neonatal intensive care;
- Infants failing to respond to resuscitation;
- Spontaneous preterm labour and birth;
- Planned delivery for fetal compromise including growth restriction;
- Severe cardiorespiratory depression at birth;
- Signs consistent with congenital infection;
- Severe growth restriction;
- Hydropic infants;
- Suspected fetal anaemia;
- Suspected or known major congenital abnormalities.

Appropriate placenta/whenua histology is not necessary for:

- twins for chorionicity
- 2 vessel cord with normal live-born baby
- confirmed chromosomal abnormalities

If a placenta/whenua examination is requested by the obstetrician and the woman consents to this, then it will be transported to Auckland. T lab will prepare and transport the placenta/whenua to Auckland. We have the responsibility of ensuring the correct paperwork is with the placenta/whenua.

Sending a placenta/whenua for histology:

1. The reasons for recommending that the placenta/whenua be sent away for histological investigation will be clearly explained to the women and her whanau by the midwife or obstetrician and informed consent must be sought from the woman, and the permission form signed (see appendix 2), before the placenta/whenua is sent for investigation. The results of any such tests shall be conveyed to the woman and her whanau.

2. If the woman does not consent to the further investigation (and there is not a coroner’s investigation), the documented placenta/whenua management plan, or the woman’s expressed wishes, will be followed and documented accordingly.

3. When the placenta/whenua is sent to the laboratory for histological investigation, the clinician must state on the request form if the placenta/whenua is to be
returned to the woman when analysis is complete. Minute pieces of tissue are examined under a microscope and a report is issued to indicate what, if any, pathology is present.

4. During laboratory hours, send the placenta/whenua for investigation to the laboratory, double bagged and labelled and with the correct paperwork.

5. If cytogenic screening is requested by the O&G then a small piece of placenta/whenua 1cm in diameter needs to be removed from the main body of the placenta/whenua and placed in cytogenic medium (cytogenic specimen pot is kept in the specimen fridge in the back store room of maternity). This sample must be kept with the placenta/whenua and clearly labelled.

6. Out of normal laboratory hours (i.e. 0800 – 1600hrs Monday to Friday), the placenta/whenua will be doubled bagged and double labelled and stored in the fridge in the back store room in maternity and a notice placed in the ward diary and the whiteboard to alert staff that it needs to be taken to the laboratory during the next working hours. All completed and checked paperwork must accompany the placenta/whenua.

7. Once the investigation is complete and the placenta/whenua returned to TDH, laboratory staff will contact the woman with a letter; to inform them when their placenta/whenua is ready to be collected from the laboratory. The placenta/whenua will be sealed in plastic and put into a paper bag, the same as those used in maternity. A leaflet will accompany the placenta/whenua explaining that formalin is a toxic chemical, and it is advised that the placenta/whenua should not be removed from the plastic bag prior to burial (see appendix 7). The placenta/whenua will be complete (but likely to be in pieces) apart from the minute pieces of tissue used for the examination.

8. If the woman does not collect the placenta/whenua from the laboratory within a designated time frame, the laboratory will contact the woman and request her to collect the placenta/whenua. Please ensure that any particular circumstances relating to the woman/whanau that may impede the collection of the placenta/whenua are documented on the original forms to ensure that the whenua/placenta/whenua is not unintentionally disposed of.

ASSOCIATED DOCUMENTS:
Maternity Unit - IUD/SB guideline
Maternity Unit - Neonatal Death guideline
Maternity unit – IOL following TOP or IUD ≥ 20 weeks gestation
PMMRC (2007) Information about the Perinatal and Maternal Mortality Review Committee
SANDS (2007) Transporting your baby: guidelines for parents, family and whanau
SANDS (2007) Guidelines for transporting a deceased baby for midwives, LMCs, hospitals and maternity units.
TDH Patient information leaflet - What will happen to my tissue? Examination of tissue sent to the Anatomic Pathology Laboratory

Appendix 1 Consent for baby and placenta/whenua to travel to Auckland for post-mortem examination
Appendix 2 Consent for sending a whenua/placenta/whenua for examination
Appendix 4 TDH consent for post-mortem (please copy and place in notes)
Appendix 5 Perinatal postmortem documentation checklist
Appendix 6 Contract with Evans Funeral Services
Appendix 7 Disposal of placenta/whenua/whenua

REFERENCES:
When someone dies: a guide to the coronial services of New Zealand
(www.justice.govt.nz/coroners)
PMMRC (2009) leaflet ‘Panui for post mortem’

Click on links below to open Appendices.

Appendix 1-Consent for baby and placenta/whenua to travel to Auckland for post mortem examination
Appendix 2-Consent for sending a whenua/placenta for examination
Appendix 3-Fax form to be sent to Auckland Mortuary
Appendix 4-Consent for post mortem
Appendix 5-Perinatal postmortem documentation checklist
Appendix 6-Contract with Evans Funeral Services
Appendix 7-Disposal of placenta/whenua

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