Appendix 3: Case examples

Case 1: Unattended birth below 22 weeks showing potential signs of life

A baby is delivered at home at 18 weeks gestation, and mother and baby are brought to the hospital by ambulance. The parents report that their baby moved and gasped prior to the arrival of the ambulance. No signs of life were seen by the ambulance crew, and the baby has no signs of life when examined at the hospital.

Can the doctor issue a MCCD?

A MCCD cannot be issued as a doctor has not witnessed the baby showing signs of life.
It would be important to sensitively discuss with the family what movements they saw. Fleeting reflex activity including transient gasps, brief visible pulsation of the chest wall or brief twitches or involuntary muscle movement observed only in the first minute after birth do not constitute signs of life. In this case, the family thought their baby was breathing for several minutes and they could also see the heart beating through the chest wall.

The case should be referred to HMC/PF. This should be sensitively handled with families, and clinicians should work closely with HMC/PF to ensure a smooth process that does not cause delays and minimises distress to the parents.

Discussion Points

- In the UK, a baby born alive at any gestation who dies shortly after birth must legally be registered as a live birth and a neonatal death, and the parents issued with a neonatal death certificate.
- Ensure thorough documentation of any signs of life witnessed by parents or other non-medical personnel present and how long these signs persisted for.
- If a baby is born showing signs of life, regardless of their gestational age, whenever possible, they should be assessed by a doctor (preferably an obstetric doctor with whom the family have had some contact) to confirm and document the live birth. Confirmation of death, and a death certificate can then be issued if the cause of death is known.
- Referral to HMC/PF for live-born infants who subsequently die differs between the 4 nations in UK depending on who has verified the live-birth (see Table 1).
- Information and videos for families and health professionals regarding determination of signs of life following spontaneous birth before 24+0 are available at MBRRACE-UK Signs of Life.
- SUDIC/SUDI/PRUDiC processes would not normally be indicated in live births at or below the threshold of survival unless circumstances suggest an unnatural death. In cases where the gestation is unknown, these processes may be initiated but can be stood down if it is clear the baby is pre-viable and there are no other safeguarding concerns.
- In England, all livebirths need to be referred to CDOP.

**England/Wales <28 day MCCD nomenclature is used in these examples.*

Table 1: UK requirements for verification of livebirths and deaths in babies

	England	Wales	Scotland	N. Ireland
Live birth (any gestation)	MCCD must be issued. Where this is not possible referral to HMC/PF			
Who can verify a live birth?	*Doctor	*Doctor	*Doctor or Attending Midwife	*Doctor
Who can verify death and issue an MCCD?	*Doctor			
**Live birth (any gestation), verification not done by doctor, baby subsequently dies	Refer to HMC		Doctor can issue MCCD if attending midwife confirms live-birth. If no attending midwife refer to PF	Refer to HMC
Miscarriage (less than 24 weeks gestation)	No legal certification or registration of death required			
Who can verify a miscarriage?	Doctor or Midwife			
**Miscarriage, referral HMC/PF	No referral to HMC (no jurisdiction for miscarriages)		No referral to PF unless potentially unnatural death	No referral to HMC (no jurisdiction for miscarriage)
Stillbirth (24 weeks gestation and over)	Legal requirement to register death as stillbirth			
Who can verify a stillbirth?	Doctor or Midwife			
**Stillbirth, referral HMC/PF	Refer to HMC/PF if in doubt regarding live birth or stillbirth			
	If stillbirth is established, HMC has no further jurisdiction for stillbirths		Refer to PF if unanticipated intrapartum stillbirth or potentially unnatural cause of death	Refer to HMC if capable of being born alive (potentially unnatural death)

**Live-birth/death verification can be done by an Advanced Neonatal Nurse Practitioner (ANNP) or other trained personnel within health care settings, but they cannot issue the MCCD.*
*** Please see Appendix: National Guidance for a full list of referral criteria to HMC/PF across the UK*

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Case 2: Attended Birth below 24 weeks gestation; not born alive

A baby is born in hospital at 22 weeks. There is brief visible pulsation of the chest wall for a few seconds after delivery, the baby takes 4 gasps with some twitching movements of the arms and legs which cease after 40 seconds. No spontaneous movement, heart rate, breathing or crying is seen after this.

Can the doctor issue a MCCD?

No, an MCCD cannot be issued as this baby was not born alive. Fleeting reflex activity including transient gasps, brief visible pulsation of the chest wall or brief twitches or involuntary muscle movement observed only in the first minute after birth does not warrant classification as signs of life. An unofficial "certificate of birth" or "certificate of pregnancy loss" can be issued from the hospital if this accords with parental wishes. Parents are also able to apply for a government sponsored Baby loss certificate in England and entry to the Memorial Book in Scotland. There is currently no official recognition for these losses in Wales and Northern Ireland.

Discussion Points

- For pregnancy or baby loss where the birth occurs before 24 weeks of pregnancy and there were no reported signs of life, there is no requirement or permission by law to officially certify the death or register the death as a stillbirth and an MCCD is not required.
- Referral to HMC/PF for miscarriages differs between the 4 nations in UK (see table 1)
- Information and videos for families and health professionals regarding determination of signs of life following spontaneous birth before 24+0 are available at MBRRACE-UK Signs of Life
- SUDIC/SUDI/PRUDiC processes do not apply to miscarriages. However, in cases where the gestation is unknown and the birth is unattended by the relevant health professional, these processes would be initiated as for an unattended stillbirth until gestation has been established.

Case 3: Unattended birth after 24 weeks; not born alive

A mother is alone and goes into labour at 33 weeks gestation. She calls her maternity unit, and they advise her to call an ambulance. When the ambulance arrives, the baby has recently been born, and the ambulance crew cannot detect any signs of life, with confirmation of these findings by a doctor on arrival at the hospital. Sensitive discussion with the mother following her admission to hospital indicate there were no signs of life after delivery. The circumstances surrounding the birth are not thought to be suspicious.

Can the doctor issue a MCCD?

A MCCD cannot be issued.

A JAR/PRUDIC or equivalent should take place where there is uncertainty regarding whether the baby is live-born. If the baby is determined to be stillborn a medical certificate of stillbirth can be issued, and the birth must legally be registered as a stillbirth.

Discussion Points

- It is a legal requirement that all babies born without signs of life from 24 weeks gestation onwards in the UK are registered as stillbirths
- A doctor or a midwife can issue a medical certificate of stillbirth.
- It is common that it is not possible to determine whether the baby was alive or stillborn. Where there is uncertainty regarding whether the baby was live-born or not, no MCCD should be issued, a referral to HMC/PF should take place and, in England, the case should be referred to CDOP.

**England/Wales <28 day MCCD nomenclature is used in these examples.*

- The CDOP process would not be continued if it is determined that a baby was stillborn and the case records should be deleted.
- Investigation by HMC/PF for stillbirths differs between the 4 nations in the UK (see table 1)
- A hospital postmortem should be discussed with the mother/parents if HMC/PF postmortem is not required. Further information on investigations and management following stillbirth is included in RCOG Green top Guideline no.55. Care of Late Intrauterine fetal death and stillbirth
- A JAR/ PRUDiC referral or equivalent should take place where birth occurs without medical professionals being present, for a live-born baby who subsequently dies, or a stillborn baby born without medical professionals present.

Case 4: Attended Birth, 22 weeks, born alive Extreme Prematurity

A male baby is born at 22 weeks following spontaneous vaginal delivery. There has been good antenatal care and no known maternal factors. The parents and clinical team have agreed that intensive care is not in his best interests; he is live-born and receives comfort care/cuddles from his parents. He dies at 40 minutes of age on labour ward.

Can the doctor issue a MCCD?

A *MCCD can be written. The cause of this death was clear, and there were no unnatural features. The cause of death would be:

Main disease or condition (a) Extreme prematurity – 22 weeks gestation

Discussion Points

- Include the gestational age in weeks on the death certificate
- Sensitively include relevant maternal diseases or conditions affecting the baby in discussion with the family
- When there is a livebirth following a termination of pregnancy, HMC/PF should be notified. More detailed information, including the different legal requirements across the UK in these circumstances are outlined in the RCOG position statement (RCOG Position Statement following Chief Coroner's Guidance no. 45)

Case 5: Unexplained Collapse

A male baby is born at 27 weeks gestation following spontaneous vaginal delivery. He has significant respiratory distress syndrome and is ventilated in 45% oxygen when he suddenly becomes hypoxic and bradycardic on day 5 and, despite full resuscitation, he does not survive.

Can the doctor issue a MCCD?

In this case the cause of the sudden deterioration is not clear. It would not be right to issue an MCCD and, if there was no further information, the case will need to be referred to HMC/PF. A discussion with the designated doctor (England only) regarding whether JAR/ PRUDiC or equivalent is indicated (see Sudden Unexpected Death in main framework document)

Discussion Points

- If there was evidence supporting the reason for collapse, for example pneumothorax, a MCCD could be written if no issues of care were thought to contribute to the death.
- It is not usually appropriate to write the main cause of death as (a) Extreme prematurity without justifying it with further diagnoses in babies over 24^{+0} weeks gestation.

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Case 6: Hypoxic Ischaemic Encephalopathy

A female term baby has clear evidence of hypoxic ischaemic brain injury following a cord prolapse. She dies on day 6 following an MRI scan that confirms profound hypoxic ischaemic brain injury.

Can the doctor issue a MCCD?

An MCCD can be issued in this case (except in Northern Ireland – see below):

Main disease or condition (a) Hypoxic Ischaemic Encephalopathy
Main maternity disease or condition (c) Cord Prolapse.

Discussion Points

- Hypoxic ischaemic encephalopathy (HIE) should always be justified by its reason on an MCCD.
- Sometimes there is a clear and natural sentinel event that could not have been predicted and was well managed which would allow the death to be recorded as natural, but such events are not present in many cases.
- There should be a very low threshold to refer such cases to HMC/PF as not all information is available immediately following birth and issues of care that may have contributed are not known until a fuller investigation is undertaken. It is therefore important to provide as much information as possible in the HMC/PF referral.
- In Northern Ireland, all deaths from Hypoxic Ischaemic Encephalopathy must be reported to HMC.

Case 7: Death following possible Septicaemia

A 32-week gestation baby collapses on day 10 of life with low blood pressure and peripheral perfusion, a slightly elevated WBC and no rise in CRP. The infant sadly dies within 24 hours, and blood culture results are not yet available.

Can the doctor issue a MCCD?

No. A slightly elevated white blood cell count alone is insufficient evidence of septicaemia and the case should be referred to HMC/PF. If blood cultures subsequently grow a pathogenic organism consistent with the clinical picture, HMC/PF can be updated and may permit an MCCD to be written at this stage A JAR/ PRUDiC referral or equivalent should be considered if the death is sudden with no immediate apparent medical cause.

Discussion Points

- Doctors should write the MCCD to their best knowledge and belief and so if they believe sepsis is the reason, they can write this but there needs to be more evidence than simply an unexplained collapse and minor changes in blood sepsis indicators.
- If sepsis is written on the MCCD, the source or “sepsis of unknown aetiology” should be included.
- In England, this case should be discussed with the ME; there may be an agreement to await blood culture before deciding on HMC/PF and JAR/SUDIC referrals.

Case 8: Death Following a Necessary Urgent Operation

A 26-week gestation baby develops sepsis and severe necrotising enterocolitis at 30 days of life. There have been no issues of care. The baby has a perforation identified on X ray and is taken for a laparotomy, which confirms total bowel involvement. With this information the team and family agree that this is not compatible with long-term survival and following discussion with the family, end of life care is supported.

**England/Wales <28 day MCCD nomenclature is used in these examples.*

Can the doctor issue a MCCD?
In this case the operation confirmed a devastating condition and did not contribute to death. It would be reasonable for the doctor to write an MCCD:

Main disease or condition	(a) Necrotising enterocolitis,
Other diseases or conditions in infant	(b) Preterm 26 weeks gestation.

Discussion Points

- Deaths which follow an operation necessitated by a natural illness need not be reported unless the operation itself, or postoperative care, had a more than minimal contribution to the death.

Case 9: Death following a Recognised Complication of Treatment

A 24-week gestation baby dies following a brain haemorrhage which occurred after insertion of a ventriculo-peritoneal shunt for post-haemorrhagic hydrocephalus. Before the operation there were extensive conversations with family and formal consent, describing brain haemorrhage as a potential recognised serious complication of this procedure.

Can the doctor issue a MCCD?
No. This case requires referral to HMC/PF.

Discussion Points

- If a recognised complication of treatment has a more than minimal contribution to death the case needs referral to HMC/PF as the death is unnatural. Even the very best care can have complications.
- Referrals should occur where there is an act or omission in care which may have more than minimally contributed to the death.

New Findings discovered after an MCCD has been issued

- Clusters of deaths, or increased mortality rates or unexpected findings in individual case review need investigation.
- Such signals might be raised by neonatal unit members themselves, the medical examiner, regional organisations e.g. neonatal ODN/ LMNS, the public or from national data sources.
- It is important that such investigations have clear terms of reference and families have the opportunity to contribute.
- If any such investigations lead to concerns that previously unknown factors which require notification to HMC/PF may have contributed to the death in any individual case, then HMC/PF should be informed.

**England/Wales <28 day MCCD nomenclature is used in these examples.*