

EXTENSION OF REVIEW DATE

RELEVANT TO	<i>Stillbirth care</i> clinical guideline
DATE OF EXTENSION	14 February 2023
NEW REVIEW DATE	February 2024
CONTENT AFFECTED	Date of review only. No other amendments
RATIONALE	<ul style="list-style-type: none"> • Original review date (March 2023) exceeded • Content remains current • Review in progress
AUTHORISED BY	Queensland Clinical Guidelines Steering Committee

Queensland Clinical Guidelines

Translating evidence into best clinical practice

Maternity and Neonatal **Clinical Guideline**

Stillbirth care

Document title:	Stillbirth care
Publication date:	March 2018
Document number:	MN18.24-V8-R23
Document supplement:	The document supplement is integral to and should be read in conjunction with this guideline.
Amendments:	Full version history is supplied in the document supplement.
Amendment date:	October 2019
Replaces document:	MN19.24-V7-R23
Author:	Queensland Clinical Guidelines
Audience:	Health professionals in Queensland public and private maternity and neonatal services
Review date:	March 2023
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Cultural acknowledgement

We acknowledge the Traditional Custodians of the land on which we work and pay our respect to the Aboriginal and Torres Strait Islander elders past, present and emerging.

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- Advising consumers of their choices in an environment that is culturally appropriate and which enables comfortable and confidential discussion. This includes the use of interpreter services where necessary
- Ensuring informed consent is obtained prior to delivering care
- Meeting all legislative requirements and professional standards
- Applying standard precautions, and additional precautions as necessary, when delivering care
- Documenting all care in accordance with mandatory and local requirements

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Flow Chart: Stillbirth care

Communication

- Ensure privacy
- Involve both parents where appropriate
- Use empathetic but unambiguous language
- Respect religious/cultural beliefs
- Provide written information
- Allow time for questions
- Allow time for decision making
- Use active listening
- Check parent's understanding
- Repeat information
- Promote continuity of care and carer
- Involve experienced staff
- Inform relevant care providers (e.g. GP, PPM)
- Coordinate referrals
- Complete documentation

Antenatal

Diagnosis of fetal death

- Diagnose with USS

Investigations of fetal death

- Refer to Flowchart: Investigations
- Discuss with parents

Labour and birth

Consider birthing options

- Discuss timing and options for birth with parents—provide written information
- Vaginal birth is generally preferable
- Consider method of induction relevant to gestation and clinical circumstances (especially obstetric surgical history)
- Ensure adequate analgesia
- Consider active third stage management

Post birth

Investigations following birth

- History focused
- Refer to Flowchart: Investigations

Autopsy considerations

- Involve experienced staff
- Discuss reasons/location for autopsy
- Offer to all parents
- Obtain consent
- If autopsy declined: limited autopsy may be an option

Postnatal care

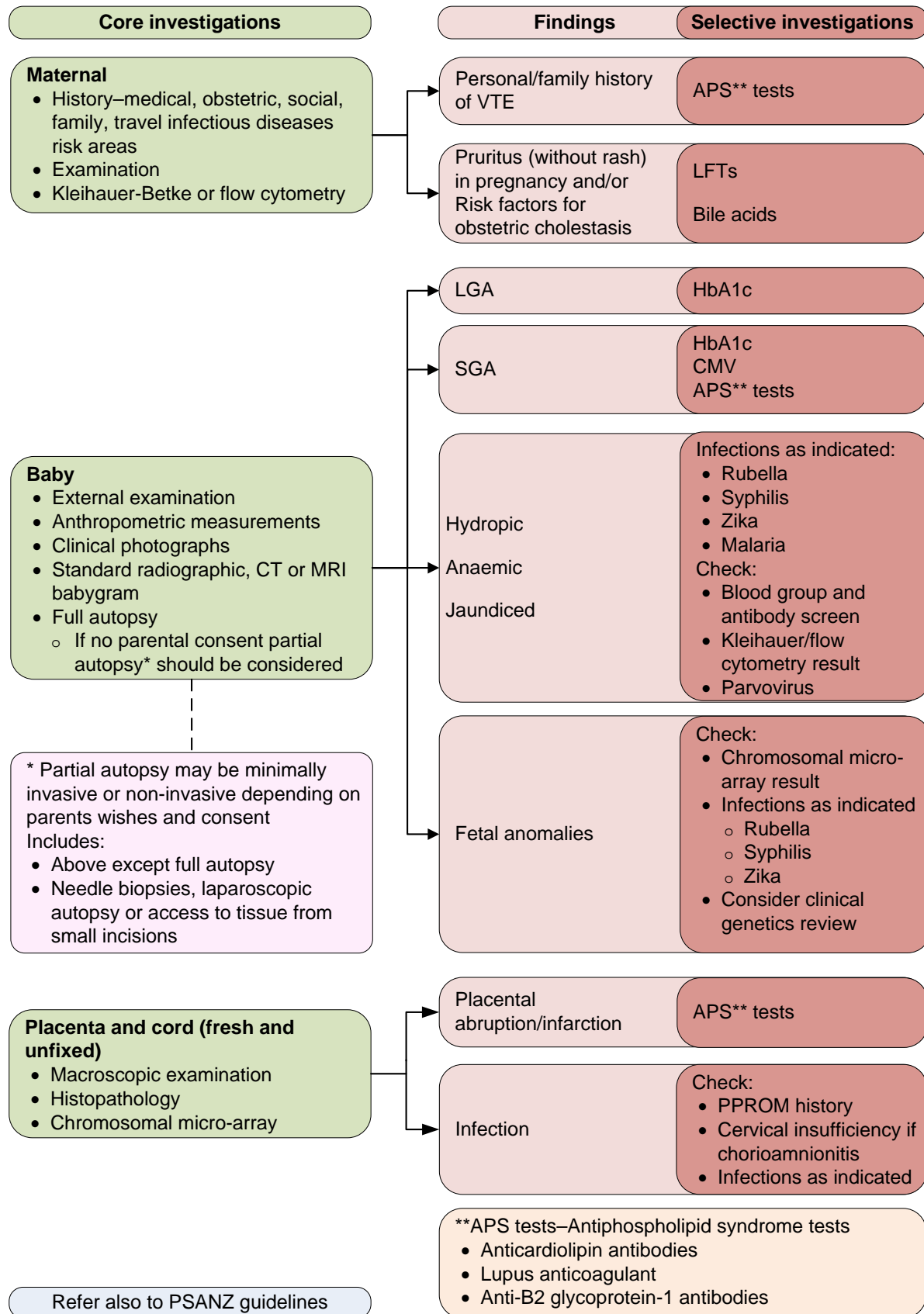
- Consider the setting for care
- Facilitate the creation of memories
- Provide advice on lactation suppression/milk donation
- Discuss contraception
- Provide information on funeral planning
- Arrange follow-up and referral

Subsequent pregnancy care

- Consider preconception advice/genetic counselling
- Offer continuity of care and carer
- Detailed history (obstetric, medical, previous stillbirth, family tree)
- Lifestyle advice (e.g. smoking, alcohol, drugs, weight loss)
- USS—dating and anomaly screening
- Individualise management based on investigations and findings
- Consider facility level for anomaly screening
- Consider serial growth monitoring (USS) from 28 weeks or earlier if evidence of FGR
- Antepartum fetal surveillance from 32 weeks including CTG
- Discuss awareness of fetal movement
- Consider timing of birth

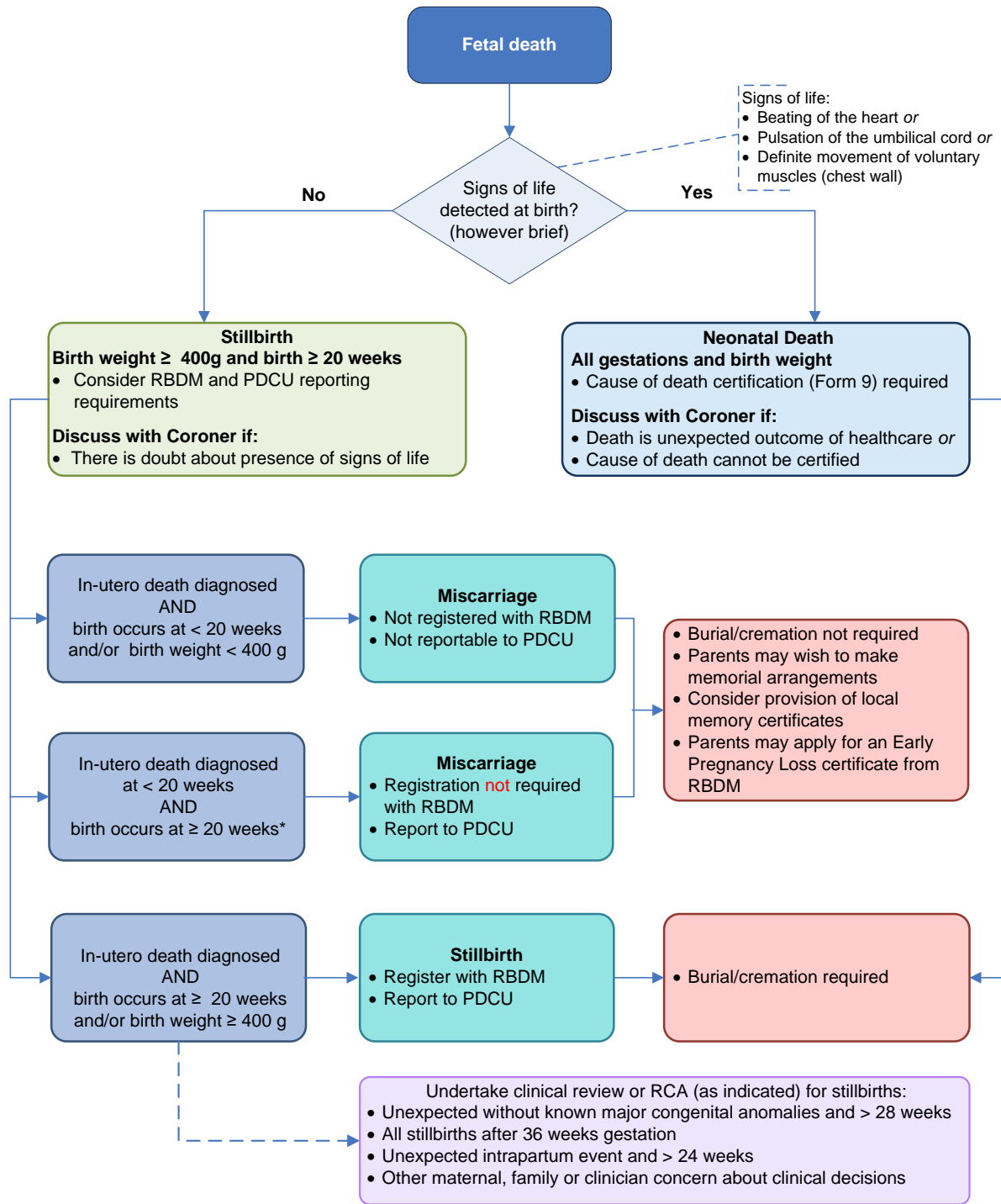
Abbreviations: CTG: Cardiotocograph; FGR: fetal growth restriction; GP: General Practitioner; PPM: Private Practice Midwife; PSANZ: Perinatal Society of Australia and New Zealand; USS: Ultrasound scan

Flow Chart: Stillbirth investigations



Abbreviations: APS: Antiphospholipid syndrome; CMV: Cytomegalovirus; CT: Computed tomography; HbA1c: Glycated haemoglobin; LFTs: Liver function tests; LGA: large for gestational age, MRI: Medical resonance imaging; PPRM: Preterm prolonged rupture of membranes; PSANZ: Perinatal Society of Australia and New Zealand; SGA: small for gestational age; VTE: venous thromboembolism

Flow Chart: Perinatal death reporting in Queensland



*Apply clinical judgment when it is not known whether intrauterine fetal death occurred before or after 20 weeks gestation. Delivery of acardiac twin or of a fetus papyraceous when the timing of intra-uterine demise is uncertain or extraction of a dead fetus at maternal autopsy are situations undefined in the legislation. In the absence of a clear legal path it is optional to notify RBDM but it is a requirement to report to PDCU.

RBDM: The funeral director will submit the Death Registration Application (Form 8) electronically after a Cause of Death Certificate (Form 9) and Perinatal Supplement (Form 9a) have been issued or a coronial autopsy has been performed. Parents experiencing a miscarriage may apply for an Early Pregnancy Loss Recognition Certificate.
PDCU: Notification is by maternity staff electronically or using Perinatal Data Collection Form (MR63D)

Abbreviations: ≥: greater than or equal to; RBDM: Registrar of Births Deaths and Marriages; RCA: Root cause analysis; PDCU: Perinatal Data Collection Unit

Abbreviations

APMCAT	Australian Perinatal Mortality Clinical Audit Tool
BMI	Body mass index
DIC	Disseminated intravascular coagulation
IOL	Induction of labour
MTHFR	Methylenetetrahydrofolate
OC	Obstetric cholestasis
PCA	Patient controlled analgesia
PDC(U)	Perinatal data collection (unit)
PIGF	Placental growth factor
PSANZ	Perinatal Society of Australia and New Zealand
QMPQC	Queensland Maternal and Perinatal Quality Council

Definitions

Anthropometric measurements	Systematic measurement of the physical characteristics, primarily dimensional descriptors, of body size, proportion and shape.
Chromosomal microarray	Molecular analysis of chromosomes, with higher yield for abnormality compared to standard karyotyping techniques. Microarray testing can be performed on the placenta following stillbirth.
Expectant management	Close monitoring of condition without treating unless signs and symptoms appear or change.
Fetal death	Diagnosis made at antenatal ultrasound assessment given no cardiac activity and no signs of fetal movements or blood flow in the unborn baby or fetus.
Fetus papyraceus	The dead co-twin in a continuing multiple pregnancy that is delivered as part of the placenta and membranes, having died some time before birth and undergone postmortem changes. The fetus papyraceus is not easily recognisable and appears flat and paper-like with a birthweight less than 400 grams. ^{1,2}
Live birth	Describes a baby where there are signs of life after delivery of the baby is completed ³ regardless of gestation or birthweight.
Neonatal death	Death of a newborn baby of any gestation or birth weight within 28 days of livebirth, when heart beat or respiration or other signs of life were observed after the birth is completed. ³
Miscarriage	Describes pregnancy loss with no cardiac activity documented at less than 20 weeks gestation.
Perinatal death	Describes the death of a newborn around the time of birth, including both stillbirth and neonatal death.
Signs of life	Beating of the heart or pulsation of the umbilical cord or definite movement of voluntary muscle, e.g. chest wall.
Stillbirth	Describes a baby born with no heart beat or respiration, or other signs of life with a birthweight greater than or equal to 400 g or gestation at birth greater than or equal to 20+0 weeks gestation. ³ The stillbirth occurs when the baby is born. ⁴

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1 Introduction

In Queensland from 2012 to 2013 there were 6.9 stillbirths per 1000 births. This rate did not change significantly over the years 2004 to 2013 and was consistent with the Australian rate. However, for Aboriginal and Torres Strait Islander women the rate of adverse perinatal outcomes continues to be higher than for the nonindigenous population.⁵ Indigenous women have almost four times the risk of stillbirth due to maternal conditions and perinatal infection.⁶ In 2012–2013 this rate was 9.0 per 1000 births.⁵

1.1 Queensland Clinical Guidelines

There are a number of Queensland Clinical Guidelines that help inform care of women at risk of stillbirth. These include:

- Hypertensive disorders of pregnancy⁷
- Gestational diabetes in pregnancy⁸
- Obesity if pregnancy⁹
- Vaginal birth after caesarean¹⁰
- Early onset Group B Streptococcal disease¹¹
- Venous thromboembolism¹²
- Perinatal substance use: maternal¹³
- Induction of labour (IOL)¹⁴
- Intrapartum fetal surveillance¹⁵
- Preterm labour and birth¹⁶
- Trauma in pregnancy¹⁷

1.2 Causes and risk factors

Table 1. Causes

Aspect	Consideration
Context	<ul style="list-style-type: none"> • In Queensland (2004–2013)⁵ stillbirths most frequently: <ul style="list-style-type: none"> ◦ Unexplained (32.6%) ◦ Congenital abnormality (27.2%) ◦ Spontaneous preterm (12.1%) • Perinatal deaths may be grouped into placental, fetal, maternal and unknown cause
Placental	<ul style="list-style-type: none"> • Abnormal placentation or placental dysfunction <ul style="list-style-type: none"> ◦ Diagnosis based on: <ul style="list-style-type: none"> ▪ Placental histopathology of infarction ▪ Haemorrhage or placental villous dysmaturity (Stallmach changes)¹⁸ ▪ Transfusional phenomena including twin-to-twin transfusion
Maternal	<ul style="list-style-type: none"> • Hypoxic conditions (e.g. peripartum hypoxia) • There may be no obstetric antecedent⁵
Placental effects from mother ^{18,19}	<ul style="list-style-type: none"> • Hypertension • Renal disease • Antiphospholipid syndromes; thrombophilia • Diabetes
Other	<ul style="list-style-type: none"> • Materno-fetal transfusion • Spontaneous preterm labour • Cord accidents • Specific perinatal conditions including multiple pregnancies • Maternal trauma²⁰ • Anaesthetic related complications
Fetal ¹⁸	<ul style="list-style-type: none"> • Chromosomal and genetic disease • Structural abnormality • Infection • Anaemias of fetal origin (e.g. alpha-thalassaemia)
Potentially preventable causes	<ul style="list-style-type: none"> • Pre-pregnancy weight²¹—Body Mass Index (BMI) greater than 25 kg/m² • Domestic violence especially experienced by young women²² • Infections including rubella²³syphilis²⁴ • Smoking^{21,25} alcohol and substanceuse¹⁹ (e.g. cocaine, methamphetamines²⁶)

1.2.1 Maternal risk factors

Table 2. Maternal risk factors

Aspect	Considerations
Obstetric factors	<ul style="list-style-type: none"> • Past obstetric history of perinatal death²⁷ • Primiparity¹⁹ • Lack of antenatal care • Maternal AB blood group¹⁹ • Fetal anomalies • Multiple pregnancy (e.g. twin-to-twin transfusion, cord entanglement) • Features of abnormal placentation: <ul style="list-style-type: none"> ○ Pre-eclampsia ○ Fetal growth restriction ○ Placental abruption ○ Abnormal pregnancy markers <ul style="list-style-type: none"> ▪ Low level pregnancy-associated plasma protein A (PAPP-A) (less than 0.4 MoM) at time of first trimester screen, low levels of placental growth factor (PIGF) (less than fifth centile or 100 pico-moles); notched uterine arteries ▪ Suspected prenatally with small for gestational age biometry and increased pulsatility index (PI) (greater than 90th percentile)²⁸ at Doppler ultrasonography from second trimester²⁹ • Diabetes in Aboriginal and Torres Strait Islander women⁶ and pre-existing maternal diabetes^{19,27}Isoimmunisation • Reduced fetal movement history • Post-term pregnancy (greater than or equal to 42 weeks gestation)²⁵ • Intrapartum obstructed labour and fetal injury
Lifestyle/pre-existing factors	<ul style="list-style-type: none"> • Smoking¹⁹ • Maternal weight^{19,25,30,31}: <ul style="list-style-type: none"> ○ Overweight—BMI greater than 25–30 kg/m² ○ Obese—BMI greater than 30 kg/m² ○ BMI increase between first and second pregnancies of greater than or equal to 3 kg/m² • Maternal age^{19,25}—increased risk for: <ul style="list-style-type: none"> ○ Women over 35 years ○ Very young women (less than 15 years)^{27,32,33} • Substance use¹⁹ • Obstructive sleep apnoea³⁴ • Maternal sleep position³⁵ • Domestic or intimate partner violence²² • Socio-economic disadvantage²⁷ • Remote or very remote geographical location²⁷ • Maternal exposure to malaria³⁶ • Maternal (or paternal) exposure to infections (e.g. Zika virus^{37,38}) although risk for fetal death unclear³⁹ • Ethnicity(e.g. South Asian, South African, African and Middle Eastern⁴⁰)
Direct maternal	<ul style="list-style-type: none"> • Obstetric cholestasis³⁰ • Metabolic disturbance (e.g. diabetic ketoacidosis¹⁸, malabsorption syndromes including Crohn's disease) • Reduced oxygen states (e.g. cystic fibrosis, obstructive sleep apnoea¹⁸) • Uterine abnormalities (e.g. Ashermann's syndrome¹⁸) • Hypertension
Unknown	<ul style="list-style-type: none"> • No positive investigation finding of fetal death <ul style="list-style-type: none"> ○ Interpret as hypoxic event of unknown aetiology

1.3 Clinical standards

Stillbirth has a profound effect on the emotional, mental and social health of women and their family.⁴¹ Care from health professionals needs to be sensitive, empathetic and attuned to each individual woman and her family.⁴² Listen to and investigate any concerns expressed by the parents at any time, including seeking the advice of a more experienced clinician. Provide the parents with copies of the result(s) of any investigations performed and explain their interpretation.

Table 3. Clinical standards

Aspect	Good practice points
Prenatal advice to women	<ul style="list-style-type: none"> • Reduce risk factors (e.g. smoking and obesity^{19,31}) • Consider side sleep position³⁵ • Understand normal fetal movements at different stages of pregnancy <ul style="list-style-type: none"> ○ Provide woman with information brochure about fetal movements • Seek early advice regarding any change in fetal movements (e.g. extremely greater intensity and frequency⁴³ or reduced⁴⁴) • Seek advice early regarding a 'gut instinct' something may be wrong with baby⁴³
Organisational responsibilities	<ul style="list-style-type: none"> • Facilitate continuity of care and carer • Nominate a point of contact for families experiencing a perinatal death (e.g. bereavement midwife/nurse or other experienced clinician) • Facilitate appropriate investigation into all perinatal deaths • Facilitate appropriate debriefing and follow-up of all affected families • Provide education to staff about stillbirth procedures and investigations including autopsy (e.g. Perinatal Society of Australia and New Zealand (PSANZ) Improving Perinatal Mortality Review and Outcomes Via Education (IMPROVE) program)²⁷ • Provide training in bereavement counselling to staff involved in perinatal deaths⁴⁵ including open communication and information sharing with women⁴⁶ • Develop senior staff skills in open disclosure • Provide staff with access to debriefing support services • Ensure support services that are culturally appropriate (including religious considerations) are available for women and their families • Implement local procedures for the respectful and sensitive movement of a stillborn baby between and within maternity services and the mortuary • Develop local procedures to support parents to take their stillborn baby home if they desire including: <ul style="list-style-type: none"> ○ The use of a cold cot (cot with cooling system)(if available) ○ Documentation applicable to the local government (council) regulations • A point of phone contact for the woman and partner, including out of hours • Implement local procedures to facilitate specimen collection and postmortem examination of stillborn baby²
Perinatal mortality review	<ul style="list-style-type: none"> • Review all perinatal deaths through a formal process (e.g. Perinatal Morbidity and Mortality Committee) involving the multidisciplinary team • Refer to: <ul style="list-style-type: none"> ○ Table 1. Causes and ○ Table 6. Legal definitions • Provide feedback to clinicians on clinical care, perinatal mortality investigations, documentation and communication • Arrange debriefing and follow-up of all families following the review and consider open disclosure (if appropriate) to the woman and her partner
Criteria for stillbirth analysis	<ul style="list-style-type: none"> • Suggested criteria for stillbirth analysis (clinical incident analysis or root cause analysis (RCA))⁴⁷ <ul style="list-style-type: none"> ○ All stillbirths after 36 weeks gestation as standard practice ○ All stillbirths after 28 weeks of gestation <ul style="list-style-type: none"> ▪ Exclude known major congenital abnormalities where stillbirth is not unexpected ○ All stillbirths after 24 weeks of gestation where unexpected intrapartum fetal death occurs ○ Stillbirths where there are clinician, maternal or family concerns

1.4 Prevention

Interventions with proven and potential effect on stillbirth prevention and care are included in Table 4. Prevention.

Table 4. Prevention

Aspect	Good practice points
Context	<ul style="list-style-type: none"> • At risk groups include: <ul style="list-style-type: none"> ○ Ethnicity (e.g. South Asian, South African, African and Middle Eastern⁴⁰) ○ Maternal age: <ul style="list-style-type: none"> ▪ Older women (greater than 35 years of age) ▪ Very young women (less than 15 years of age) ○ Multiple pregnancy (e.g. monochorionic twins are at increased risk in the third trimester compared with dichorionic twins⁴⁸) ○ Past history of stillbirth ○ Prolonged pregnancy
Antenatal care⁴⁹	<ul style="list-style-type: none"> • Encourage and support: <ul style="list-style-type: none"> ○ Regular antenatal appointments ○ Routine screening (e.g. fetal growth restriction) ○ Identification and management of pregnancy risks ○ Ultrasound scan early in pregnancy
Diet	<ul style="list-style-type: none"> • Identify and offer advice about over- and under nutrition²⁷ • Offer advice about preconception folic acid supplementation⁶ iron, calcium and vitamin fortification or supplementation • Advise about food borne illness (e.g. listeriosis)
Travel advice³⁸	<ul style="list-style-type: none"> • Risks associated with travel to countries where exposure to infection is increased (e.g. malaria, Zika virus)
Manage pre-existing disease^{25,27}	<ul style="list-style-type: none"> • Hypertension—identify, monitor and manage • Diabetes type 1 and type 2 (pre-existing) <ul style="list-style-type: none"> ○ Advise regarding: <ul style="list-style-type: none"> ▪ Diet and physical activity ▪ Insulin and oral hypoglycaemic medications ▪ Monitoring and controlling blood glucose levels
Infectious diseases	<ul style="list-style-type: none"> • Prevent, screen, identify and manage sexually transmitted diseases (e.g. syphilis⁶)
Substance use	<ul style="list-style-type: none"> • Offer smoking cessation program and support⁴⁹ • Offer referral and support for substance use (alcohol and drugs)
Complications of pregnancy	<ul style="list-style-type: none"> • Manage complications of pregnancy including fetal growth restriction, pre-eclampsia, antepartum haemorrhage and reduced fetal movements¹⁹ • Advise low dose aspirin to women at high risk of abnormal placentation including pre-eclampsia^{19,50,51} • Provide obstetric ultrasound assessment of fetal growth and umbilical artery Doppler studies to women with high risk pregnancies to identify the at risk fetus¹⁹
Birth planning (IOL or Caesarean)	<ul style="list-style-type: none"> • Birth of the baby¹⁹—balance against risk of neonatal and infant mortality⁵² and severe morbidity including severe lifelong disability <ul style="list-style-type: none"> ○ Birth mortality risk compared with expectant management at: <ul style="list-style-type: none"> ▪ 37 weeks increased ▪ 38 weeks equivalent ▪ 39 weeks and beyond is advantageous⁵² • Offer labour induction depending on the specific circumstances of the women • IOL for post-term pregnancy [refer to Queensland Clinical Guideline: <i>Induction of labour</i>¹⁴]
Fetal movements	<ul style="list-style-type: none"> • Discuss fetal movements during antenatal care • Advise women to seek advice immediately if any change to fetal movements at any time • Refer to PSANZ clinical practice guideline for the management of women who report decreased fetal movements⁵³

1.5 Communication

Poor communication by a health professional when a woman has had a fetal death and subsequent stillbirth can be detrimental to her mental health and may interrupt the grieving process. Deliver all care to the woman, her partner and family and the baby with sensitivity, compassion and empathy. Consider the woman's psychosocial, cultural and spiritual beliefs. Seek advice when necessary, (e.g. Indigenous health worker). Refer to Table 5. Communication with parents for helpful guidance about communication strategies.⁵⁴

Table 5. Communication with parents

Aspect	Good practice points
Communication ⁵⁵	<ul style="list-style-type: none"> • Provide honest and transparent information using clear and understandable language • Offer verbal, written and electronic information and repeat details and answer parent's questions • Allow time for questions and discussions⁴⁵
What to say	<ul style="list-style-type: none"> • I'm sorry • I wish things had ended differently • I don't know what to say • I feel sad <i>or</i>, I'm sad for you • Do you have any questions? • We can talk again later
What not to say	<ul style="list-style-type: none"> • It's best this way • It could have been worse • Time will heal • You can have more children or at least you have other children • It's good your baby died before you got to know him/her well
What to do	<ul style="list-style-type: none"> • Use respectful language when referring to the baby including the baby's name and gender if known • Answer questions honestly • Use straightforward and simple language • Be comfortable showing emotions • Listen to the parents and talk about their baby
What not to do	<ul style="list-style-type: none"> • Refer to baby as 'it' or as 'the fetus' or as 'products of conception' • Use medical terminology or language, jargon and ambiguous descriptions including 'incompatible with life' • Argue with parents • Avoid questions

2 Reporting requirements

2.1 Legal definitions

Table 6. Legal definitions

Aspect	Considerations
Births, Deaths and Marriages Act 2005	<ul style="list-style-type: none"> • In Queensland: Part 6, Section 33 Births, Deaths and Marriages Act 2005 a stillborn child is taken to have died: <ul style="list-style-type: none"> ○ When the child left the mother's body; and ○ At the place where the mother was when the child left the mother's body⁴
Public Health Act 2003	<ul style="list-style-type: none"> • In Queensland: Part 1 Perinatal Statistics Division 1 Definitions 214 Public Health Act 2003 defines a baby not born alive as a baby: <ul style="list-style-type: none"> ○ Who has shown no sign of respiration or heartbeat, or other sign of life after completely leaving the child's mother; and ○ Who has been gestated for 20 weeks or more or weighs 400 grams or more³ • It is a clinical decision as to whether or not there are signs of life [refer to Definitions • Refer to Appendix A: Scenario based reporting aid
Coroner's Act 2003	<ul style="list-style-type: none"> • Stillbirths are not reportable under the Queensland Coroner's Act 2003⁵⁶ <ul style="list-style-type: none"> ○ Exceptions⁵⁷ (to determine if the baby was born alive): <ul style="list-style-type: none"> ▪ The body is an abandoned newborn whose birth was unwitnessed by clinicians ▪ There is clinical disagreement or doubt about whether the child was born alive • Discuss with coroner when: <ul style="list-style-type: none"> ○ The cause of death is likely to be asphyxia or hypoxic ischaemic encephalopathy after active resuscitation is required at birth. This includes cases considered to be a 'resuscitated stillbirth' when the newborn requires significant immediate resuscitation after an apparently uncomplicated term birth or after an emergency birth for an acute maternal condition in pregnancy⁵⁷
Hospital and Health Boards Regulation 2012	<ul style="list-style-type: none"> • In 2016, section 29(1) of the Hospital and Health Boards Regulation 2012 was amended to include stillbirths as a reportable event for clinical incident management and allow root cause analysis in a legally privileged environment^{57,58} <ul style="list-style-type: none"> ○ No legislation or binding policy describes which form of analysis to be undertaken • Refer to Table 3. Clinical standards for management of perinatal mortality review and suggested criteria for stillbirth analysis

2.2 Reporting and documentation

Table 7. Reporting and documentation

Aspect	Consideration
Perinatal data collection	<ul style="list-style-type: none"> • Assists: <ul style="list-style-type: none"> ○ Monitoring and analysis of obstetric and perinatal patterns and outcomes ○ Monitoring perinatal mortality rates ○ Researching perinatal care ○ Monitoring congenital abnormalities ○ Planning of obstetric and perinatal health services³
Documentation	<ul style="list-style-type: none"> • Document clearly and accurately all relevant clinical details in woman's medical record • In Queensland complete the following: <ul style="list-style-type: none"> ○ Cause of Death Certificate—Form 9 <ul style="list-style-type: none"> ▪ If required following Perinatal Mortality Committee review², complete another Form 9 and write 'amended' at the top of the form (Amended Cause of Death Certificate) ○ Perinatal Supplement (to Cause of Death Certificate)—Form 9A ○ Birth registration application—Form 1⁴ ○ Queensland Perinatal Data Collection (PDC)³ <ul style="list-style-type: none"> ▪ Electronic file format or ▪ Paper form MR63D ○ Centrelink claim form for Bereavement Payment and provide this to the parents <ul style="list-style-type: none"> ▪ Include the full name of mother of baby, baby's sex, date of birth, place of birth, weight and gestation • Complete the discharge summary for woman's primary care and community based health care providers (e.g. general practitioner, private practice midwife)
Classification	<ul style="list-style-type: none"> • Use the Perinatal Society of Australia and New Zealand—Perinatal Death Classification (PSANZ–PDC) to classify the stillbirth² • Review each stillbirth once results of core investigations are available to correctly classify or reclassify if necessary • Knowledge of the classification system is required to correctly classify the cause of the stillbirth • The Queensland Maternal and Perinatal Quality Council (QMPQC) provides advice and makes recommendations on matters relating to statewide and facility specific morbidity and mortality⁵ • Collect and record data following the PSANZ Clinical Guideline² and using Australian Perinatal Mortality Clinical Audit Tool (APMCAT)⁵⁹- <ul style="list-style-type: none"> ○ Provide copies to QMPQC of: <ul style="list-style-type: none"> ▪ PDC (electronic or paper version) ▪ Forms 9 and 9A ▪ APMCAT summary ▪ Discharge summary ▪ Pathology reports—autopsy, placental pathology and cytogenetic reports^{5,60}

3 Model of care of woman and family

Genuine engagement and individualised personal care as well as sensitivity, emotion and empathy expressed by health care providers, is appreciated by parents.^{45,61} An individualised plan of care and approach focuses on and validates the woman's experiences.⁴⁶

3.1 Care at time of diagnosis of fetal death

Table 8. Time of diagnosis care

Aspect	Good practice points
Context	<ul style="list-style-type: none"> • Hold discussions with parents in a quiet and private area⁶² • Parents: <ul style="list-style-type: none"> ○ Are at risk of detrimental psychosocial effects such as grief, depression and self-blame⁶¹ ○ May experience culture related issues including how they relate to their family and their system of kinship • Health care providers can mitigate negative feelings if they are adequately trained and prepared⁶¹ • Referral to support groups can be helpful • Consideration of other family members such as siblings and grandparents is important as they may require emotional support and attention⁶⁰ <ul style="list-style-type: none"> ○ Offer age appropriate support to siblings in terms of explanation and their level of involvement based on discussions with the parents ○ Provide advice regarding local support groups and school programs for children
Informing parents about stillbirth diagnosis and management	<ul style="list-style-type: none"> • Experienced practitioners are best placed to inform parents and discuss their options • Use cues from parents regarding their emotional state when considering the most appropriate time to inform them about the stillbirth diagnosis⁴⁵ • Do not delay in informing parents about their baby's death • Acknowledge the woman and partner as parents • Use empathetic and unambiguous language (e.g. 'your baby has died') • Be sensitive and non-judgemental regarding the emotions and actions expressed by the parents • Acknowledge and validate the emotional experience and reactions of the parents⁶² • Offer services such as a social worker, bereavement midwife, Indigenous liaison officer or pastoral care worker for support and counselling • After informing parents of stillbirth do not leave them alone unless they explicitly ask for privacy⁶³ • Discuss a plan for the investigation into the cause of the stillbirth <ul style="list-style-type: none"> ○ Avoid speculation about the cause of death until investigations are completed ○ Explain that some stillbirths remain unexplained even after detailed investigation and review • Reassure parents that every attempt will be made to identify the cause of death⁴⁵ <ul style="list-style-type: none"> ○ Consider timing of discussion about perinatal investigations including autopsy • Advise the woman with a late fetal death that she may still experience passive fetal movements⁴¹
Model of care	<ul style="list-style-type: none"> • Individualise care so that it is responsive to the parent's needs • Consult with parents and establish their preferences⁶⁴ for the most appropriate time and place for the woman's birth and postnatal care • Allow parents as much time as they need to consider their options and make decisions • Provide care by known health care provider to ensure continuity of care and carer • Give parents the option of remaining in hospital for induction of labour or going home first to prepare for the birth⁶³

3.2 Labour and birth

Discuss the options for labour and birth in detail and provide written information to the woman. Take into consideration the woman's preferences, her previous medical obstetric history and her safety. Advise the woman who is considering expectant management that the postmortem may be affected and that the appearance of the baby may deteriorate. Generally birthing vaginally is recommended, although some women will require or request a caesarean.⁴¹ Most women will labour spontaneously within three weeks of a fetal death.⁴¹ However maternal anxiety during this time may be significant.⁶²

Table 9. Labour and birth

Aspect	Good practice points
Preparation for birth	<ul style="list-style-type: none"> • Prepare parents by providing clear step by step information about induction of labour and the birthing process including potential length of labour • Provide information about methods of analgesia: <ul style="list-style-type: none"> ○ Pharmacological including epidural, patient controlled analgesia (PCA) and nitrous oxide ○ Non-pharmacological including water immersion, sterile water injections and heat packs ○ Refer to Queensland Clinical Guidelines: <i>Normal birth</i> guideline⁶⁵ and shortGuides: <i>Epidural in labour</i>⁶⁶, <i>Opioids in labour</i>⁶⁷, <i>Remifentanyl via PCA in labour</i>⁶⁸, <i>Nitrous oxide and oxygen in labour</i>⁶⁹ • Reassure parents that their baby will be treated with care and respect at all times • Avoid over medicalisation of the event⁶² <ul style="list-style-type: none"> ○ Ask parents if they have a birth plan • Advise them about bringing a camera, clothes, blanket and soft toys for the baby if they wish⁶¹ • Be aware of comments given to grieving parents of multiple pregnancy where one or more baby has died⁷⁰ <ul style="list-style-type: none"> ○ Avoid negative comments such as “You still have one baby to take home” ○ Parents may appreciate a photograph of the babies together⁷⁰ • Inform parents about baby's physical appearance with regard to gestational age and development, physical abnormalities and potential injuries such as peeling skin • Avoid confronting descriptions that may impact their decisions about seeing their baby⁶¹
Labour	<ul style="list-style-type: none"> • Timing between diagnosis and birth: <ul style="list-style-type: none"> ○ Collaborate with parents regarding the timing of the induction of labour ○ Include both parents in information provision and discussion⁶² ○ Consider woman's medical condition and previous intrapartum history⁴¹ • Ensure the birthing suite is set up and equipped to support parents during a stillbirth • Ideally provide a designated area away from crying babies but with access to staff able to support the parents⁶² <ul style="list-style-type: none"> ○ Maternity staff may be able to provide clinical care in non-maternity ward ○ Advise parents before birth if they will have to be cared for in Maternity Unit

3.3 Post birth care of woman and family

Parents consider stillbirth no less tragic than a neonatal or child death.⁷¹ The impact of a stillbirth can last for many years for parents and families. Ongoing support and sensitive care from healthcare professionals may reduce the detrimental psychosocial effects of stillbirth.⁶⁴ Encourage and support parents to be involved in the care of their baby.

Table 10. Post birth care

Aspect	Good practice points
Culturally appropriate care	<ul style="list-style-type: none"> • Acknowledge the parent's cultural, spiritual and religious beliefs • Be aware of the specific cultural and religious practices when providing care • Assist parents to contact their preferred spiritual, religious and cultural support and services • Aboriginal and Torres Strait Islander people may wish support from elders, family and community members⁶², or Indigenous liaison officer or health worker • Be aware of cultural beliefs that apportion blame to the woman and who risk scorn, rejection and isolation⁷²
Post birth care	<ul style="list-style-type: none"> • After discussion with the women transfer her to a single room in an appropriate area of the hospital <ul style="list-style-type: none"> ○ Some women are distressed by crying babies; others may be comfortable in an area that is familiar to them ○ Keep room door or curtain closed according to the woman's wishes • Identify the woman's room and medical record with universal symbols (e.g. a flower or butterfly so that all clinical and non-clinical staff are aware) • Provide referral to psychologist or social worker as required and bereavement midwife (if available) • Provide parents with impartial, accessible and objective information <ul style="list-style-type: none"> ○ Written, verbal and electronic information to assist decision-making by parents regarding investigations and postmortem examination⁶⁴ <ul style="list-style-type: none"> ▪ Provide an empathetic and sensitive approach to discussions with parents about autopsy⁷³ ▪ Inform them how the baby is transported for the autopsy and the funeral home ○ Support and provide advice (written, verbal and electronic) regarding how to register the baby's birth and organise their funeral • Repeat all information as often as necessary • Offer debriefing [refer to Table 17. Labour, birth and post birth care] • Discharge woman when her clinical and psychological condition allows and following discussion regarding her preferences
Support	<ul style="list-style-type: none"> • Provide information about grieving process, postnatal depression, post-traumatic stress disorder and perinatal psychoses • Offer information sensitively about physical (physical changes, lactation, sex and contraception), emotional, psychological, social and relationship issues experienced following a stillbirth • Provide support to parents about how to support their other children and family members • Provide advice about physical activity to help self-manage grief⁶⁴ • Provide information (written, verbal and electronic) about local support groups for parents and family who have experienced perinatal loss such as Stillbirth and Neonatal Death Support (SANDS)

3.4 Care of baby

Table 11. Care after birth

Aspect	Good practice points
After birth	<ul style="list-style-type: none"> • Offer parents the opportunity to see and hold their baby with support from experienced clinicians • Respect and support parents if their decision is to not see or hold their baby⁴¹ <ul style="list-style-type: none"> ○ Explain they may change their minds at any time ○ Discuss any fears they may have about seeing or holding their baby • Support and guide parents when seeing their baby to assist with affirming the baby's existence and their parental identity and to create valuable memories • Support parents to spend as much time as they would like with their baby <ul style="list-style-type: none"> ○ Use cold cot if available ○ Offer opportunity for skin-to-skin contact • Offer options to take their baby home (if possible) or see and spend time with their baby on more than one occasion • Advise parents about physical changes that may occur with their baby over time (e.g. nose bleeds, blue lips, cold to touch) • Be aware that parting with their baby may be extremely distressing for parents⁶¹ <ul style="list-style-type: none"> ▪ Discuss with parents how they wish to say goodbye to their baby and leave the hospital (e.g. they may feel comfortable handing their baby to a midwife as they leave) • Discuss option of seeing their baby again at the funeral home
Post birth care of baby	<ul style="list-style-type: none"> • Speak about and handle baby with care and compassion • Dressing the baby may help parents if the baby is macerated • Assist parents with bathing baby if they choose • Support parents with the many difficult decisions they need to make including seeing and holding their baby⁹ <ul style="list-style-type: none"> ○ Normalise their fear of seeing their baby by providing examples from other parents' experiences ○ Gently remind them this time (prior to the funeral) will be the only opportunity they will have to see their baby and this helps create memories to share later • Parents appreciate health care providers speaking to and about their baby as they would for any baby that is with tenderness and respect⁴⁵ • Encourage and support parents to cuddle, bathe and dress their baby to normalise and validate their feelings⁴⁵ <ul style="list-style-type: none"> ○ Involve siblings when appropriate • Inform and assist parents with creation of memories including: <ul style="list-style-type: none"> ○ A memory box for photographs, sketches or drawings, ultrasound images, locks of hair, nail clippings, blankets, items of clothing and hand and foot prints ○ If parents initially decline these items, offer to collect and store items (as per local hospital protocols) or give to another family member (if possible and with their consent)⁶¹

4 Clinical management

4.1 Diagnosis of intrauterine death

Diagnosis requires appropriate, urgent assessment by real-time ultrasound assessment. Do not make diagnosis of fetal death based on fetal heart not heard on auscultation by hand-held Doppler.

The diagnosis of stillbirth requires:

- Formal confirmation by an ultrasound examination to demonstrate lack of fetal heart activity
 - Performed by experienced clinician—obstetrician, maternal fetal medicine specialist, radiologist or sonographer
- A clear and unambiguous communication with the pregnant woman and family describing the reason for the urgent ultrasound assessment
- Escort and support from a midwife/bereavement midwife (if available) while attending ultrasound examination
- Support from a social worker, bereavement midwife, Indigenous health worker, pastoral care worker or other suitable person
- Continuity of carer

4.2 Management of labour

Expectant management may increase maternal anxiety and for others it may assist the grieving process.

IOL is supported and often required following a fetal death. Refer to Queensland Clinical Guideline: *Induction of labour*.¹⁴

Table 12. Management of labour

Aspect	Good practice points
Timing	<ul style="list-style-type: none"> • Many women will go into spontaneous labour within two to three weeks of an intrauterine fetal death⁴¹ • If the woman has ruptured membranes, infection, pre-eclampsia or placental abruption offer immediate induction of labour⁷⁴ • If the woman is physically well the risk from expectant management is low when the membranes are intact and there is no evidence of infection, pre-eclampsia or bleeding including laboratory evidence of disseminated vascular dissemination (DIC) <ul style="list-style-type: none"> ◦ Immediate induction is not required and timing of birth is based on the woman's preference ◦ Provide the woman with the option of IOL, or support to delay induction for a few days if she does not want expectant management⁴¹ • If labour delayed for more than 48 hours advise woman to have twice weekly testing for DIC⁴¹
Risks	<ul style="list-style-type: none"> • Management of stillbirth in women with a favourable cervix is often uncomplicated • Failed induction and uterine rupture—increase when cervix is unfavourable⁷⁴ • Obstetric complications—shoulder dystocia and postpartum haemorrhage • DIC—risk increases in women retaining a dead fetus more than 4 weeks⁷⁴ <ul style="list-style-type: none"> ◦ May also develop in less than 4 weeks⁴¹
Methods	<ul style="list-style-type: none"> • Pharmacological: <ul style="list-style-type: none"> ◦ Refer to Section 4.3 Induction of labour • Mechanical induction: <ul style="list-style-type: none"> ◦ Balloon (transvaginal) catheter (e.g. Cook cervical ripening balloon) ◦ Artificial rupture of membranes • Refer to Queensland Clinical Guideline: <i>Induction of labour</i>¹⁴ • Provide adequate analgesia to the woman as requested <ul style="list-style-type: none"> ◦ Refer to Table 9. Labour and birth

4.3 Induction of labour

If the woman declines or has risk factors for expectant management then induction of labour is indicated. Mifepristone followed by misoprostol significantly improves the rate of successful vaginal birth with a shorter induction–birth interval compared with misoprostol alone after a fetal death⁷⁵. The dose and frequency are influenced by the maternal response to the medications (e.g. woman may become febrile or develop diarrhoea). Refer to Section 4.2.2 and Section 4.2.3 for suggested induction regimens for women with and without risk of uterine rupture. Regimens vary and different local protocols may be appropriate.

Table 13. IOL medications

Aspect	Good practice points
Dinoprostone* (Prostaglandin E2)	<ul style="list-style-type: none"> Refer to Queensland Clinical Guideline: <i>Induction of labour</i> for dosing regimen and further information¹⁴
Misoprostol* (Prostaglandin E1)	<ul style="list-style-type: none"> Superior to oxytocin as has: <ul style="list-style-type: none"> Shorter induction to birth interval Shorter duration of hospital stay Lower complication rates⁷⁶ Indicated in a woman with an unfavourable cervix with diagnosis of fetal death⁷⁷ May be used for medical management of fetal death in second trimester If PGE1 analogue Gemeprost pessary used: <ul style="list-style-type: none"> Do not use lubricants other than water Advise woman to lie down for 30 minutes after administration Do not replace if it falls out Only use oxytocin six hours after pessary removed (due to additive effects of both on uterus)
Mifepristone* ⁷⁸	<ul style="list-style-type: none"> Effective for terminating pregnancy from second trimester where there is fetal death³⁸
Oxytocin*	<ul style="list-style-type: none"> Refer to Queensland Clinical Guideline: <i>Induction of labour</i>⁷⁹ for dosing regimen and further information Avoid oxytocin infusion within 6 hours of misoprostol or dinoprostone

*Refer to an Australian pharmacopoeia for complete drug information

4.3.1 Care during induction of labour

Table 14 Care during induction of labour

Aspect	Considerations
Cautions	<ul style="list-style-type: none"> Seek expert advice from a higher-level service as required
Pre-care	<ul style="list-style-type: none"> Refer to 3.2 Labour and birth Baseline vital signs, vaginal loss, pain prior to commencement IV access is recommended If Rh negative, administer Rh D Immunoglobulin Full blood count (FBC), group and hold as clinically indicated
Inpatient clinical care	<ul style="list-style-type: none"> Offer analgesia Offer antiemetics if required Vaginal examination as clinically indicated Bed rest 30 minutes after each dose but may mobilise freely at other times Consider administration of oxytocin intravenously at time of birth If the placenta is not spontaneously delivered within 60 minutes of the baby (or earlier if excessive bleeding occurs) consider operative removal
Observations	<ul style="list-style-type: none"> 30–60 minutes after initial dose of misoprostol and after each subsequent dose <ul style="list-style-type: none"> Vital signs vaginal loss, contractions, assess pain

4.3.2 Induction regimen for women at risk of uterine rupture

Table 15 Induction of labour for women at risk of uterine rupture

Risk of uterine rupture or previous uterine surgery	
Cautions	<ul style="list-style-type: none"> • Consider IV access and monitor closely for evidence of scar complications so as to preserve the uterus for future pregnancies • Review by obstetrician prior to commencement
Less than 34+0 weeks	<ul style="list-style-type: none"> • Day 1: mifepristone 200 mg oral⁸⁰ • Day 2: 36–48 hours after mifepristone <ul style="list-style-type: none"> ○ Misoprostol 200 micrograms inserted into the posterior fornix of the vagina ○ If undelivered at 4 hours after initial dose, then misoprostol 200 micrograms inserted into the posterior fornix of the vagina every 4 hours for 4 doses (may also be given sublingual or buccal) • If undelivered at 24 hours after initial dose, then review by obstetrician indicated <ul style="list-style-type: none"> ○ May consider misoprostol 400 micrograms inserted into the posterior fornix of the vagina every 6 hours for a maximum of 4 further doses • If undelivered at 48 hours after initial dose, then review by an obstetrician is indicated. Options may include: <ul style="list-style-type: none"> ○ Continue with misoprostol 400 micrograms 6 hourly or ○ Rest day then recommence or ○ IV oxytocin is most effective if some effacement and dilation has occurred or ○ Surgical delivery
34+0 weeks or more	<ul style="list-style-type: none"> • Transcervical catheter • Oxytocin infusion and artificial rupture of membranes • Avoid misoprostol or dinoprostone

*Refer to an Australian pharmacopoeia for complete drug information

4.3.3 Induction regimen for women not known to be at risk of uterine rupture

Table 16 Induction of labour for women with no known risk of uterine rupture

Follow protocol according to gestational age	
13+0 to 24+6 weeks	<ul style="list-style-type: none"> • Day 1: mifepristone 200 mg oral⁸⁰ • Day 2: 36–48 hours after mifepristone⁸¹ <ul style="list-style-type: none"> ○ Misoprostol 400 micrograms vaginal or sublingual ○ Followed by misoprostol 400 micrograms vaginal or sublingual every 3 hours up to a maximum of four further doses
25+0 to 33+6 weeks	<ul style="list-style-type: none"> • Day 1: mifepristone 200 mg oral⁸⁰ • Day 2: 36–48 hours after mifepristone⁸¹ <ul style="list-style-type: none"> ○ Misoprostol 200 micrograms vaginal or sublingual every 3–6 hours for six doses over 24 hours
34+0 weeks or more	<ul style="list-style-type: none"> • Pre-induction: <ul style="list-style-type: none"> ○ Dinoprostone or transcervical catheter • Induction: <ul style="list-style-type: none"> ○ Misoprostol 50–100 micrograms sublingually or per vagina 3–6 hourly for five doses over 24 hours ○ Oxytocin infusion and consider artificial rupture of membranes after labour established

*Refer to an Australian pharmacopoeia for complete drug information

4.4 Care during labour, birth and post birth

Respect and support the wishes and preferences of the parents. Provide culturally sensitive care and acknowledge and support the religious beliefs, practices, and rituals of the parents and family.

Table 17. Labour, birth and post birth care

Aspect	Considerations
Labour	<ul style="list-style-type: none"> • Analgesia <ul style="list-style-type: none"> ○ Ensure adequate analgesia ○ Refer to Table 9. Labour and birth • Observe for complications including shoulder dystocia, postpartum haemorrhage and amniotic fluid embolism⁸²
Birth	<ul style="list-style-type: none"> • Discuss and support requests to normalise the birth (e.g. cutting the umbilical cord) • Suggest active third stage management <ul style="list-style-type: none"> ○ Refer to Queensland Clinical Guideline: Normal birth⁶⁵
Post birth	<ul style="list-style-type: none"> • Provide the woman and partner with appropriate debriefing, support, referral and follow-up to reduce the risk of postnatal depression, anxiety and post-traumatic stress disorder • Provide usual post birth care • Lactation <ul style="list-style-type: none"> ○ Provide advice about lactation suppression (pharmacological and non-pharmacological) ○ Offer opportunity for breast milk donation if appropriate <ul style="list-style-type: none"> ▪ Give consideration to inclusion and exclusion criteria and screening tests that may be necessary ▪ Contact Milk_Bank_RBWH@health.qld.gov.au for further information ○ Refer to Queensland Clinical Guideline: <i>Establishing breastfeeding</i>⁸³ • Provide verbal and written contraception advice <ul style="list-style-type: none"> ○ Return to a normal fertile cycle with lactation suppression is rapid • Advise on postnatal exercises <ul style="list-style-type: none"> ○ Refer to physiotherapy services if required • Refer to home visiting midwifery service and notify primary health care provider (e.g. general practitioner, community health facility, local hospital) • Offer postnatal review to discuss stillbirth and further investigations
Management of maternal medical conditions	<ul style="list-style-type: none"> • Consider maternal conditions requiring further investigation and management (e.g. pre-eclampsia, HELPP syndrome) • Full blood examination to assist detection of: <ul style="list-style-type: none"> ○ Infection ○ Maternal anaemia (e.g. caused by thalassaemia) ○ Low platelet level—a marker for pre-eclampsia ○ Autoimmune diseases (e.g. systemic lupus erythematosus and idiopathic thrombocytopenia) ○ Elevated platelet level may be indicative of thrombocythemia² ○ Parental platelet typing indicated if intracranial haemorrhage identified on ultrasound scan or autopsy¹⁸: • Renal function tests—urea and creatinine if renal disease or pre-eclampsia <ul style="list-style-type: none"> ○ Abnormal renal function tests may be indicator of systemic lupus erythematosus²

5 Investigation of stillbirth

Stillbirth continues to be a public health concern with the risk of stillbirth in a subsequent pregnancy high if the cause is known to be a potentially recurrent cause. Where the cause of a stillbirth is not known the risk in subsequent pregnancies is unclear. Stillbirth is the result of many complex and interacting factors and may be unexplained for many reasons including because of inadequate investigations.⁸⁴ Knowledge and understanding of aetiology and association with stillbirth inform the direct investigations required. Avoid assumptions about the cause of death until the autopsy and subsequent maternal investigations are completed. Offer the woman investigations, targeted to her obstetric history and the circumstances of her baby's death, that are going to help inform or manage her postnatal care and subsequent pregnancies.¹⁸

Explain the investigations and the type of information they may provide to the parents. Offer the parents copies of any results from the investigations.

5.1 Maternal investigations

Table 18. Core maternal investigations

Aspect	Considerations
Context	<ul style="list-style-type: none"> • Cause of death most likely determined by: <ul style="list-style-type: none"> ○ Placental histopathology and chromosomal microarray ○ Autopsy of baby
Maternal history	<ul style="list-style-type: none"> • Comprehensive medical, obstetric, social, family and travel history including: <ul style="list-style-type: none"> ○ Current and previous pregnancies—screening, diagnostics, monitoring and outcomes ○ Pre-existing medical conditions (e.g. diabetes, hypertension, hypothyroidism) ○ Medications ○ BMI ○ Substance use including tobacco, alcohol and other drugs ○ Pruritis history
Core	<ul style="list-style-type: none"> • Kleihauer-Betke test⁸⁵ or flow cytometry to detect fetomaternal haemorrhage¹⁸ <ul style="list-style-type: none"> ○ Prior to birth preferably

5.1.1 Selective testing

Consider maternal blood testing based on the woman's history and clinical presentation.

Table 19. Selective maternal tests

Aspect	Considerations
Blood group and antibody screen	<ul style="list-style-type: none"> To exclude haemolytic disease (e.g. from Rh D or Kell red cell antigens) Indications: <ul style="list-style-type: none"> Presence of fetal hydrops present or baby is anaemic or jaundiced Unknown—not undertaken during the pregnancy
Drug screen	<ul style="list-style-type: none"> Indicated from maternal history
Liver function tests and non-fasting bile acids	<ul style="list-style-type: none"> If there is a history of pruritus during the pregnancy Bile acid is most sensitive laboratory test for pre-eclampsia¹⁸ Markers for viral hepatitis, acute fatty liver of pregnancy, HELLP syndrome and obstetric cholestasis(OC)² <ul style="list-style-type: none"> Risk factors for OC—ethnicity, history of previous liver and or gallbladder disease, hepatitis B or C, prior OC and multiple pregnancy
Thyroid function tests	<ul style="list-style-type: none"> Disorders (overt hyper-and hypothyroidism) associated with increases risk of miscarriage, hypertension in pregnancy, low birth weight and stillbirth⁸⁶ Routine testing of euthyroid woman controversial² and is of limited value
HbA1c	<ul style="list-style-type: none"> Test if baby small for gestational or fetal growth restriction or large for gestational age <ul style="list-style-type: none"> Not required if oral glucose tolerance test normal two weeks earlier^{2,8} Consider random glucose also
Thrombophilia	<ul style="list-style-type: none"> Tests for <ul style="list-style-type: none"> Antiphospholipid syndrome (APS)—anticardiolipin antibodies, lupus anticoagulant, anti-B2 glycoprotein-1 antibodies^{18,30,87,88}, associated with early and late fetal loss, placental insufficiency and pre-eclampsia if indicated: Indications⁸⁷: <ul style="list-style-type: none"> Maternal or family history of thrombosis Fetal growth restriction Placental abruption Placental infarction Other thrombophilia studies as indicated—prothrombin G20210A mutation⁸⁸⁻⁹⁰ and Factor V Leiden mutation^{87,89} If positive repeat 12 weeks postnatal [refer to Table 24. Further investigations]
Infections	<ul style="list-style-type: none"> Indicated if maternal history, autopsy and/or placental findings and/or SGA baby Confirm positive serology with autopsy and/or placental findings consistent with infection^{85,91} Serology¹⁸ for: <ul style="list-style-type: none"> Cytomegalovirus— may infect the placenta and is associated with villitis <ul style="list-style-type: none"> If baby is SGA or placental histology indicates Toxoplasma—maternal-fetal transmission is more likely later in pregnancy <ul style="list-style-type: none"> Only if indicated Parvovirus B19 causes: <ul style="list-style-type: none"> Fetal anaemia, nonimmune hydrops and fetal death Indicated when signs in baby and/or placenta—severe anaemia and/or non-immune hydrops⁸⁵ Rubella if not undertaken during the pregnancy: <ul style="list-style-type: none"> Associated with variety of fetal abnormalities and also infects placenta Only test if indicated (most women in Queensland are immune) Syphilis if not undertaken during the pregnancy or is at risk of acquiring it during the pregnancy <ul style="list-style-type: none"> Only if indicated If known travel history by mother or partner consider testing for Zika virus^{37,38}, malaria, influenza or other relevant infections¹⁸

5.2 Investigations of baby and placenta

Table 20. Core investigations of baby

Aspect	Good practice point
External examination	<ul style="list-style-type: none"> • Initial examination by attending clinician (midwife, paediatrician, neonatologist, obstetrician) • Performed by perinatal pathologist, paediatrician or neonatologist where possible <ul style="list-style-type: none"> ○ Follow PSANZ guideline for clinical examination of the baby⁹² • Includes: <ul style="list-style-type: none"> ○ Physical examination ○ Accurate anthropometric measurements of birth weight, head circumference and length (using measuring board) plotted on Fenton growth charts ○ Clinical photographs (available electronically)—document consent from parents and file photographs in the medical record [refer to Appendix B: Postmortem imaging and clinical photography] ○ Medical imaging [refer to Appendix B: Postmortem imaging and clinical photography] • Cord¹⁸—examine for : <ul style="list-style-type: none"> ○ Thrombosis ○ True knot <ul style="list-style-type: none"> ▪ Generally occur intrapartum if causative of stillbirth ▪ Confirmed at autopsy ▪ Keep cord insitu and wrapped around baby if possible—take clinical photograph if removed ○ <i>Group B Streptococcus</i>, <i>Listeria monocytogenes</i> and <i>Escherichia coli</i>³⁰—culture fetal surface
Surface swabs	<ul style="list-style-type: none"> • Swab the ear and pharynx of the baby • Culture for anaerobic and aerobic bacteria • If known travel history of woman or partner to Zika infected country: <ul style="list-style-type: none"> ○ Consider testing fetal tissue for Zika virus³⁷
Blood samples	<ul style="list-style-type: none"> • Collect cord blood sample or cardiac puncture can be performed with parent's consent when insufficient cord blood available for: <ul style="list-style-type: none"> ○ Microbiological culture and assessment of fetal inflammatory response ○ Haematological assessment—full blood count, nucleated red cell count, group and antibody screen ○ Chromosomal analysis: <ul style="list-style-type: none"> ▪ Microarray superior to karyotype as can be detected in macerated fetal tissue ▪ If family history or specific phenotype suspected test using fetal and/or placental DNA ○ Neonatal screening test
Autopsy/partial autopsy	<ul style="list-style-type: none"> • Gold standard for determining the cause of stillbirth² • Recommend full autopsy to all women following stillbirth • Provide autopsy consent form and copies of the death certificate, clinical obstetric history, antenatal ultrasound scan reports, prenatal karyotype results (if available), clinical photographs • Refer to Section 5.3 Autopsy • If parents decline autopsy: <ul style="list-style-type: none"> ○ Discuss non-invasive/minimally invasive autopsy ○ Complete external examination, clinical photographs and babygram ○ An MRI may be offered as an alternative ○ Other alternatives include needle biopsies, laparoscopic autopsy and access to tissue by small incision access

Table 21. Core investigation of placenta, cord and membranes

Aspect	Considerations
External	<ul style="list-style-type: none"> Examine for: <ul style="list-style-type: none"> Infarcts, calcifications, thrombosis, haematoma, abruption (clot) and vascular malformation Signs of subclinical infection—funisitis and amnionitis <ul style="list-style-type: none"> Swab between the chorion and amnion for microscopy and culture
Histopathology	<ul style="list-style-type: none"> Send placenta (fresh and unfixed) for macroscopic and histological examination⁵ Inform pathology service if placenta is to be returned to parents If chronic villitis is reported consider maternal serology to exclude infectious causes <ul style="list-style-type: none"> Refer to Table 19. Selective maternal tests
Chromosomal micro-array⁹³	<ul style="list-style-type: none"> More likely to yield results than karyotyping Provides better detection of genetic abnormalities Detects small deletions and duplications

5.3 Autopsy

Autopsy is the gold standard for determining the cause of fetal deaths. However, the rate in Queensland has dropped to only 32.2% of stillborn babies being autopsied.²⁷ Of those stillborn babies that were autopsied 41.8% were classified as unexplained antepartum death.⁴⁷

Table 22. Autopsy

Aspect	Considerations
Benefits	<ul style="list-style-type: none"> Encourage parents to consider permission for autopsy Benefits of perinatal autopsy include⁷⁰: <ul style="list-style-type: none"> Explanations about cause of death More accurate genetic counselling to the family regarding the reason for the stillbirth and the recurrence risk for future pregnancies Help in planning for the management of future pregnancies⁸⁴ Auditing of perinatal program outcomes Ensuring that families receive emotional support and bereavement care from more information about cause of stillbirth Enhancing teaching and medical knowledge that may reduce stillbirths for other families
Discussion with parents	<ul style="list-style-type: none"> When discussing autopsy include: <ul style="list-style-type: none"> Options for full, limited or stepwise examination; issue of retained fetal tissues; value of autopsy and benefits to them and others Advice about incisions, size and appearance and fragility of baby after autopsy Provide verbal and written information that is respectful of personal, cultural and religious beliefs of parents⁷⁰ Respect the parents decision to decline an autopsy with sensitivity and understanding Parents who decline may: <ul style="list-style-type: none"> Feel baby has suffered enough already Assume antenatal investigations provide sufficient information Have received inadequate explanation by health professionals Not be aware of options Have personal values or cultural or religious beliefs⁷⁰
Documentation	<ul style="list-style-type: none"> Requires comprehensive accompanying information: <ul style="list-style-type: none"> Detailed history Physical examination (external) Laboratory investigations and placental pathology examination⁹⁴ Include the following: <ul style="list-style-type: none"> Autopsy consent form Placenta (fresh not in formalin) Clinical history including current and previous obstetric history Copy of the death certificate Copies of antenatal ultrasound reports and antenatal karyotyping results (if available)

6 Follow-up care and management

Arrange postnatal follow-up with experienced medical clinician involved in the woman's antenatal care to discuss cause of death (or progress being made) and any additional investigations that are advised to inform the cause of death and future pregnancy care.

Table 23. Follow-up care and management

Aspect	Considerations
Discharge	<ul style="list-style-type: none"> • Contact local doctor to advise of stillbirth <ul style="list-style-type: none"> ◦ Provide copy of relevant medical record • Ensure follow-up phone call to woman after discharge • Offer clinical follow-up in area away from maternity service <ul style="list-style-type: none"> ◦ Provide support as required from other clinicians (e.g. social worker, bereavement midwife) ◦ Offer debriefing and/or open disclosure meeting to woman and family • If appropriate offer referral to perinatal mental health service
8–12 weeks postnatally	<ul style="list-style-type: none"> • Investigate further for thrombophilia • Refer to Table 24. Further investigations
Death certificate	<ul style="list-style-type: none"> • Following review and perinatal death classification amendments to the baby's death certificate may be required • Contact parents prior to sending an amended death certificate⁵
Next pregnancy	<ul style="list-style-type: none"> • Risk of stillbirth in next pregnancy is increased (OR 3.38, 95% CI 2.61–4.38⁸⁴) • Vulnerability, depression and anxiety in the next pregnancy and puerperium may be related to the length of time since the stillbirth <ul style="list-style-type: none"> ◦ More recently bereaved women are at greater risk⁷⁰ • Offer woman opportunity to be cared for by same or different health care provider (if appropriate and available) • Provide additional support during the next pregnancy and as required around the anniversary of the stillbirth⁶⁴ • Provide lifestyle advice (e.g. smoking, alcohol, drugs and weight loss) • Refer to Table 4. Prevention • Individualise management based on previous investigations and findings

6.1 Further maternal investigations

Further maternal investigations may be indicated for eight to 12 weeks after birth.² Investigations are based on the maternal history and findings at autopsy.

Table 24. Further investigations

Aspect	Considerations
Indications²	<ul style="list-style-type: none"> • The stillbirth is associated with: <ul style="list-style-type: none"> ○ Fetal growth restriction ○ Pre-eclampsia ○ Maternal thrombosis ○ Maternal history of thrombosis • The stillbirth remains unexplained following core investigations • Tests for thrombophilia were positive at the time of stillbirth, initial testing or not previously performed
Thrombophilia studies²	<ul style="list-style-type: none"> • If positive at birth repeat: <ul style="list-style-type: none"> ○ Anticardiolipin antibodies ○ Lupus anticoagulant • If APC resistance positive at birth test for Factor V Leiden mutation • If fasting homocysteine positive then test for methylene-tetrahydrofolate reductase (MTHFR) gene mutation • Protein C and S deficiency • Prothrombin gene mutation 2021A • Anti-thrombin III • If cleft lip/palate, neural tube defect or congenital cardiac defect test for MTHFR mutation
Anti-Ro or anti-La antibodies	<ul style="list-style-type: none"> • Evidence of atrioventricular node calcification on autopsy or hydrops in baby¹⁸

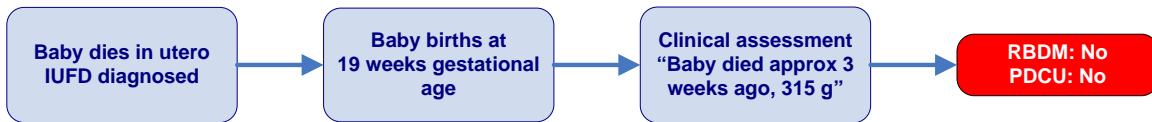
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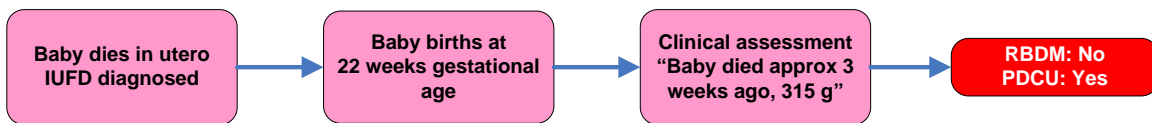
Appendix A: Scenario based reporting aid

Scenario One: Singleton Pregnancy



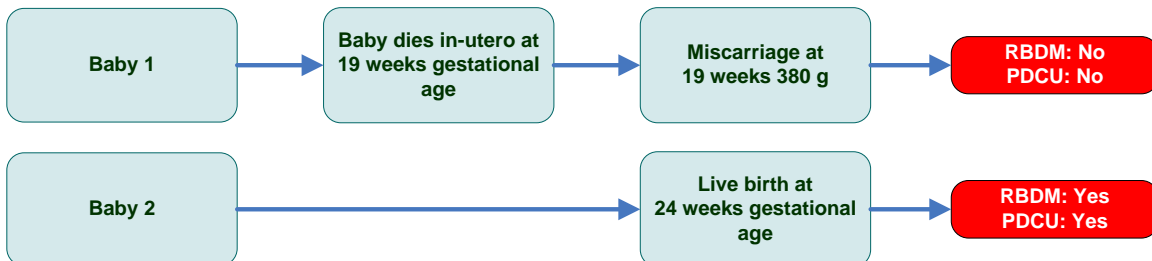
For PDCU Reporting: The date of birth drives or is the final determinant for assessing if a baby meets the criteria (i.e. ≥ 20 weeks and/or ≥ 400 g).
In the example above the baby is birthed less than 20 weeks and the baby is less than 400 g so is not to be registered to RBDM nor reported to PDCU.

Scenario Two: Singleton Pregnancy



For PDCU Reporting: The date of birth drives or is the final determinant for assessing if a baby meets the criteria (i.e. ≥ 20 weeks and/or ≥ 400 g).
In this example the baby died at approx 19 weeks but is birthed at 22 weeks. The birth registration is not required with the RBDM but must be reported to PDCU.

Scenario Three: Twin Pregnancy

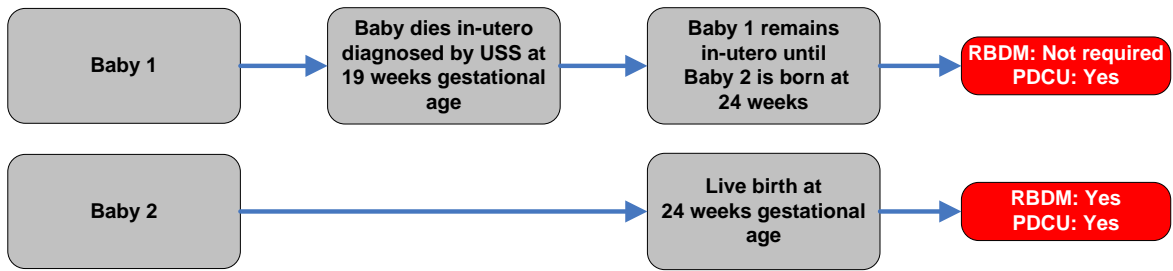


This a singleton pregnancy
Birth order of Baby 2 = 1
Plurality of pregnancy =1

For PDCU Reporting: The date of birth drives or is the final determinant for assessing if a baby meets the criteria (i.e. ≥ 20 weeks and/or ≥ 400 g).
In this example Baby 1 is birthed at 19 weeks with Baby 2 remaining in-utero to be birthed at 24 weeks. In this case Baby 1 is a miscarriage and Baby 2 then becomes a singleton birth of one baby. Baby 1 is not to be registered to RBDM nor reported to PDCU. Baby 2 is to be registered as a singleton as well as reported to PDCU as a singleton.

Abbreviations: IUFD In-utero fetal death; PDCU Perinatal Data Collection Unit; RBDM Registrar of Births, Deaths and Marriages;
USS Ultrasound scan

Scenario Four: Twin Pregnancy

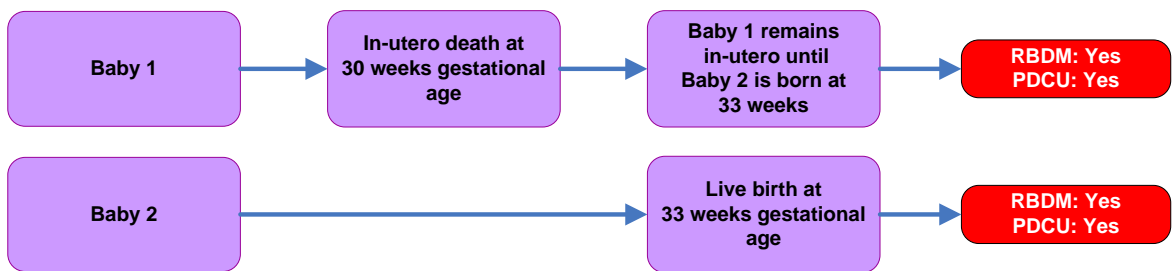


Twin pregnancy— Plurality of pregnancy = 2

- Gestation of Baby 1 = 24 weeks Birth order of Baby 1 = 1
- Gestation of Baby 2 = 24 weeks Birth order of Baby 2 = 2

In this example, even though Baby 1 is an IUFD at 19 weeks, both Baby 1 and Baby 2 are born together at 24 weeks. Registration to the RBDM is not required for Baby 1 and mandatory for Baby 2. Both Baby 1 and Baby 2 are reported to the PDCU.

Scenario Five: Twin Pregnancy



Twin pregnancy— Plurality of pregnancy = 2

- Gestation of Baby 1 = 33 weeks Birth order of Baby 1 = 1
- Gestation of Baby 2 = 33 weeks Birth order of Baby 2 = 2

In this example, even though Baby 1 is an IUFD at 30 weeks, both Baby 1 and Baby 2 are born together at 33 weeks. Registration to the RBDM is mandatory for both Baby 1 and Baby 2. Both Baby 1 and Baby 2 are reported to the PDCU.

Abbreviations: IUFD In-utero fetal death; PDCU Perinatal Data Collection Unit; RBDM Registrar of Births, Deaths and Marriages; USS Ultrasound scan

Appendix B: Postmortem imaging and clinical photography

Imaging*

- Standard radiographic: computerised tomography or medical resonance imaging antero-posterior (AP) babygram
 - Position baby in the anatomic position with head turned to one side,(true lateral), limbs straightened
 - Include head and all limbs including the hands and feet
 - If structural abnormalities of limbs take separate films of abnormal parts
 - If obvious dwarfism, short limbs or obvious skeletal dysplasia take films:
 - AP and lateral all limbs
 - AP hands
 - Lateral spine

Clinical photography*

- Photographs
 - Whole body frontal including the limbs
 - Frontal and lateral aspects of face
 - Any abnormalities
 - Genitalia if uncertain
- * As arranged or requested by the attending pathologist.

Source:

Society of Obstetricians and Gynaecology Canada. Fetal and perinatal autopsy in prenatally diagnosed fetal abnormalities with normal karyotype.SOGC Technical Update No. 267. Journal of Obstetricians and Gynaecology Canada 2011;October:1047-57.

Wisconsin Stillbirth Service Program. [Internet] 2004 [cited 2017 November 14]; Available from:

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Acknowledgements

Queensland Clinical Guidelines gratefully acknowledge the contribution of Queensland clinicians and other stakeholders who participated throughout the guideline development process particularly:

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Funding

This clinical guideline was funded by Healthcare Improvement Unit, Queensland Health.