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SPECIAL ARTICLE

Obstetrics

Fetal death: Expert consensus of the French College of Obstetricians and Gynecologists

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Abstract

Fetal death is defined as the spontaneous cessation of cardiac activity after 14 weeks gestational age (GA). Regarding prevention of fetal death in the general population, it is not recommended to counsel or prescribe rest, aspirin, vitamin A, vitamin D, or micronutrient supplementation; systematically look for nuchal cord during prenatal screening ultrasound; or perform systematic antepartum monitoring by cardiotocography for the sole purpose of reducing the risk of fetal death. It is recommended to offer vaccination against influenza in epidemic periods and against SARS-CoV-2. Regarding evaluation in the event of fetal death, it is recommended that a fetal autopsy and anatomopathologic examination of the placenta be performed; chromosomal analysis be performed by microarray testing, rather than by conventional karyotype (with postnatal sampling of the fetal placental surface preferred for genetic purposes); testing for antiphospholipid antibodies be performed, with systematic Kleihauer–Betke testing and for irregular agglutinins; and summary consultation to discuss these examination results be offered. Regarding announcement and support, it is recommended that fetal death be announced without ambiguity, using simple words adapted to each situation, after which the couple should be supported with empathy across the different stages of their care. Regarding patient management in cases of fetal death, it is recommended that: in the absence of risks for disseminated intravascular coagulation or maternal demise, the patient's wishes regarding the timing between the fetal death diagnosis and labor induction should be considered; return home is possible, according to the patient's wishes; in all situations except maternal life-threatening emergencies, the preferred mode of delivery is vaginal, regardless of previous cesarean section(s); mifepristone 200 mg be

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prescribed at least 24 h before induction; and perimedullary analgesia be initiated at the start of induction if requested by the patient, regardless of GA. Of note, there is insufficient evidence to recommend either the administration route (i.e., vaginal or oral) of misoprostol or prostaglandin type. Regarding the risk of recurrence after unexplained fetal death: the incidence does not appear to be increased in subsequent pregnancies; in cases with a history of fetal death due to vascular problems, low-dose aspirin is recommended to reduce perinatal morbidity (otherwise, evidence is insufficient to recommend the prescription of aspirin); no optimal delay in initiating another pregnancy should be recommended based solely on a history of fetal death; fetal heart rate monitoring is not indicated based solely on a history of fetal death; although systematic labor induction is not recommended, induction may be considered depending on the context and parental request, and considering fetal age, benefits, and risks, especially before 39 weeks GA. Note that if the cause of fetal death is identified, management should be adjusted on a case-by-case basis. Regarding fetal death in a twin pregnancy, it is recommended that the surviving twin be examined immediately upon fetal death diagnosis; in a dichorionic twin pregnancy, preterm delivery induction is not recommended; in a monochorionic twin pregnancy, the surviving twin should be immediately evaluated for signs of acute fetal anemia, with weekly ultrasound monitoring for the first month, though immediate labor induction is not recommended.

KEYWORDS
fetal death, genetics, guideline, induction, prevention, risk factor

1 | INTRODUCTION

The aims of developing this expert consensus (EC) were to describe the definition, prevalence, and risk factors for fetal death; to summarize prevention strategies and assessments to be carried out; and to detail management in the event of fetal death, including the announcement, psychological management, advice for a subsequent pregnancy, and the particularities of twin pregnancies.

1.1 | Professionals concerned

This EC is intended to assist health care professionals in their daily clinical practice when working with patients who have had, or are having, a fetal death. It is intended for obstetrician-gynecologists, midwives, general practitioners, anesthesiologists, geneticists, and pathologists.

1.2 | Selection of experts and participating societies

French College of Obstetricians and Gynecologists (CNGOF) experts were nominated by the president and the three guideline coordinators. The following societies were invited to nominate one or more experts: the French Society of Anesthesia and Intensive Care; the Association of French-speaking Cytogeneticists; the National Association of Molecular Genetics Practitioners; and the French Fetopathology Society.

1.3 | Expert consensus versus clinical practice recommendation

Because the scientific literature on fetal death is generally poor in both quantity and quality, it was impossible to use the Grading of Recommendations, Assessment, Development, and Evaluations (GRADE) method to answer all Population, Intervention, Comparison, and Outcome (PICO) questions or provide clinical practice recommendations. We thus used an expert consensus (EC) method to define best practices, as described previously by the CNGOF.[1,2] Nevertheless, several questions could be addressed by the GRADE method, using the PICO format (AGREE guidelines).

2 | METHODS

2.1 | Selection of questions and methodology

First, the CNGOF president and working group coordinators defined the areas of EC application. Then, within each area, the questions to be addressed and the members of the working group responsible for drafting each were assigned. The questions were formulated according to either the EC (i.e., open question) or PICO-recommended format.

Expert consensus questions—After an initial proposal was drafted, modifications were made during multidisciplinary working group meetings, until consensus was reached.

PICO format—In a given population (P), the outcome of a treatment or intervention (I) is evaluated in relation to a comparison (C) reference treatment, or the absence of treatment, based on a priori defined assessment of a clinical or paraclinical outcome (O). Formulating a PICO format question includes classification of the importance of the assessment criteria as crucial, important, or unimportant.

The working group used the GRADE method to formulate recommendations. After analyzing the literature, this method allows determination of the evidence quality and estimating confidence in the effect observed for a given intervention and, ultimately, the strength of the recommendation. There are four evidence quality categories:

- High—future research is unlikely to change our confidence in the estimated effect.
- Moderate—future research is likely to change the confidence in the effect estimate and may change the effect estimate itself.
- Low—future research is very likely to affect confidence in the effect estimate and is likely to change the effect estimate itself and
- Very low—the effect estimate is highly uncertain.

An analysis of the quality of evidence is performed for each criterion, and an overall quality of evidence is defined based on the quality of evidence for the predefined criteria, with priority given to those of highest importance. The final wording of recommendations is always binary: positive or negative, and either strong or weak. The strength of the recommendation is determined according to five key factors and validated by expert voting using the GRADE method:

- Estimate of effect.
- Overall quality of the evidence—the higher the quality of the evidence, the stronger the recommendation. In some cases, the strength of the recommendation was not related to the quality of the evidence. In such cases, the working group provided a rationale.
- The balance between desirable and undesirable effects—the more favorable the balance, the stronger the recommendation.
- Values and preferences—the greater the uncertainty or variability, the weaker the recommendation. These values and preferences should be obtained as accurately as possible from the stakeholders (patient, physician, decision maker) and
- Cost—the higher the cost or use of resources, the weaker the recommendation.

2.2 | Literature search

An extensive bibliographic search was conducted using MEDLINE, Cochrane, and Google Scholar databases. To be included in the analysis, publications had to be considered important by the expert panel, written in English or French and published before July 2023.

2.3 | Delphi method

The working group's recommendations, along with their arguments and tables, were sent to 82 external experts (obstetrician-gynecologists, midwives, anesthetists, geneticists, anatomopathologists, and psychologists), who rated each recommendation on a scale from 1 (strongly disagree) to 9 (strongly agree). A recommendation was considered valid if it received at least 75% of answers for that section with a median ≥7. Recommendations that did not receive reviewer agreement on the first evaluation, and the reason for the lack of agreement, were analyzed by the working group, then modified (or not) and sent back to the same external reviewers, with specific arguments for the recommendation's modification (or not). The requirements were the same to validate a recommendation during this second evaluation. Otherwise, no recommendation was formulated, and the recommendation was considered rejected.

For the Delphi rounds, only experts who had answered more than one question in the first round were invited to participate in the second round. Of the experts contacted, 79 (96%, 79/82) responded in the first round and 76 (96%, 76/79) in the second one. All recommendations were validated in the first round. However, a second round was organized after two questions were added and five questions were modified in response to reviewers' comments.

3 | TOPIC 1–DEFINITION AND EPIDEMIOLOGY

Fetal death is defined as the spontaneous arrest of cardiac activity after 14 weeks GA. This allows for temporal continuity with pregnancy losses related to early abortion (disappearance of cardiac activity <14 weeks GA) and early miscarriage (spontaneous expulsion of an intrauterine pregnancy <14 GA), as defined in the 2016 CNGOF recommendations.[3] The inclusion of fetal death between 14 and 21 weeks allows the differentiation with mid-trimester fetal losses for which etiology differs.

In France, it is not currently possible to report fetal death rates at 14 GA. The prevalence of fetal death after 22 weeks is between 3.2 and 4.4/1000 births.[4,5]

4 | TOPIC 2–PREVENTION OF FETAL DEATH IN THE GENERAL POPULATION (TABLES S1–S11)

4.1 | Health and lifestyle

For the prevention of fetal death in the general population, it is not recommended to provide advice on bed rest (weak recommendation; low quality of evidence).[6]

The literature provides insufficient data quantity or quality upon which to make a recommendation on going-to-sleep position to reduce the risk of fetal death (absence of recommendation; very

low quality of evidence). Indeed, a meta-analysis of patients with a singleton pregnancy, without suspicion of congenital malformation and after 28 weeks GA, summarized case–control study data as individual-based.[7] Patients who reported falling asleep on their back had an increased risk of fetal death after 28 weeks of amenorrhea compared with patients who reported falling asleep on their left side (67/851; 7.9% and 73/2257; 3.2%, respectively; adjusted odds ratio [OR] 2.63; 95% confidence interval [CI]: 1.72–4.04). However, note that 246/3108 (7.9%) of included participants—and almost 10% of those who experienced fetal death—could not recall their sleeping position in the weeks before enrollment. Because the studies in this meta-analysis all carried an inherent risk of recall bias, this greatly reduced the level of evidence and limited the lessons that could be drawn.

4.2 | Prevention with medications

It is not recommended to prescribe vitamin A, vitamin D, or micronutrient supplementation for the sole purpose of reducing the risk of fetal death (weak recommendation; low quality of evidence). Several meta-analyses showed no effect of these supplements, particularly in developed countries where the risk of deficiency is low, and the prevalence of fetal death is lower than in the countries where the studies were conducted.[8–12] Nor is it recommended to prescribe aspirin to the general population because of the lack of robust data indicating its efficacy for reducing the risk of fetal death, including among nulliparous women (weak recommendation; very low quality of evidence).[13,14]

It is recommended to offer vaccination against influenza during epidemic periods, and against SARS-CoV-2 (strong recommendation; low quality of evidence), because of their efficacy in reducing the risk of fetal death, based on data from population-based observational studies in countries at the same level of development as France, as well as other observed maternal and perinatal outcome benefits.[15,16]

4.3 | Complementary examinations

It is not recommended to look systematically for the nuchal cord at prenatal screening ultrasound (strong recommendation; low quality of evidence) or to perform systematic antepartum monitoring by cardiotocography (weak recommendation; very low quality of evidence).[17,18]

In the general population, the literature provides insufficient data quantity or quality to make a recommendation regarding the systematic use of umbilical Doppler during screening ultrasound for the sole aim of reducing fetal death risk (absence of recommendation; low quality of evidence). A Cochrane meta-analysis updated in 2015 included two studies.[19] Among obstetric criteria, the authors also assessed the risk of fetal death and perinatal mortality (including fetal death and neonatal mortality within the first 28 days after birth). Although neither study was conclusive, the meta-analysis showed a reduced risk of fetal death in the group that underwent at least one umbilical Doppler analysis after 26 weeks GA (5/3590; 0.1%) compared with the group without Doppler or in which the clinician was blinded (13/3287; 0.4%; relative risk 0.34; 95% CI: 0.12–0.95; $I^2 = 0\%$). However, the relevance of these results is questionable, given the years when the included studies were conducted (1994 and 1997) and the lack of information about the management (which was left to the clinician's discretion) associated with detecting Doppler abnormalities. In addition, its use in the general population has never been evaluated in terms of iatrogenic risk, especially unnecessary interventions (e.g., hospitalization, induced labor, cesarean section).

4.4 | Systematic induction at 39 weeks GA

The number and quality of data in the literature are insufficient to make a recommendation regarding systematic induction at 39 weeks GA for the sole purpose of reducing the risk of fetal death (absence of recommendation; low quality of evidence). Although 39 weeks GA appears to be associated with favorable perinatal and maternal outcomes in the United States (US),[20–23] including in the case of induction, population-based data and, *a fortiori*, data from different health care contexts, question the generalizability of induction at 39 weeks GA in the low-risk general population.[24–26] The issue of induction cannot be exclusively for reducing the risk of fetal death, and data remain insufficient to recommend systematic induction for this purpose.

5 | TOPIC 3–ACTIVE FETAL MOVEMENT AND RISK OF FETAL DEATH (TABLE S12)

5.1 | Counting active movements

The meta-analysis by Hayes et al. showed that neither counting active fetal movements (OR = 0.69; 95% CI: 0.18–2.65) nor encouraging women to perceive fetal movements regularly (OR = 1.19; 95% CI: 0.96–1.47) reduced the fetal death rate.[27] These results were confirmed in the AFFIRM study by Norman et al.[28] Therefore, it is not recommended to ask women to perform active fetal movement counts to reduce the risk of fetal death (strong recommendation; high quality of evidence).

5.2 | Management during a consultation for decreased active fetal movement

At the time of consultation for diminished active fetal movement, it is recommended to (expert opinion):

1. Assess for the presence of fetal heart activity.
2. Perform an initial assessment:
   - Search for a risk situation, particularly in utero growth retardation and fetal anemia, by clinical examination and analysis of the obstetric record, and
   - Perform a fetal assessment by:
     - Recording the fetal heart rate and perception of fetal movements during the test
     - And/or an ultrasound scan that objectifies fetal movements and assesses the amount of amniotic fluid without the need for a biophysical (i.e., Manning) score.

Assessment method choices depend on GA, context, and local resources. If the initial assessment is normal and no underlying pathology is suspected, the Kleihauer–Betke test should not be performed. Nor should specific monitoring or systematic induction of labor be planned. If the initial assessment is not normal, management should be adjusted on a case-by-case basis.[29–32]

6 | TOPIC 4–ASSESSMENT OF FETAL DEATH (TABLES S13–S16)

6.1 | Ultrasound examination

If fetal death is diagnosed, it is recommended to perform an ultrasound examination, which may be limited to checking fetal presentation, amount of amniotic fluid, placental position, and presence of abruptio placentae (expert opinion).

6.2 | Clinical assessment

It is recommended that systematic questioning combined with physical examination should be performed to guide the etiologic assessment (expert opinion).[33]

6.3 | Genetic assessment

Fetal genetic testing helps identify a genetic abnormality in 7.2%–18.5% of cases of fetal death, and is considered useful in determining the cause of death in 18.7% of cases.[33–35] Compared with karyotyping, microarray testing uses DNA and does not require cell culture or live cells[36]; consequently, it is less prone to failure, especially in the case of macerated samples. In addition, because it is easier to obtain a sample postnatally than with invasive sampling before induction, it is recommended that a postnatal sample be obtained from the placental fetal surface in the event of fetal death.

Therefore, it is recommended that chromosomal analysis by microarray testing be performed, instead of conventional karyotyping, to increase the likelihood of identifying a potentially causal abnormality (strong recommendation; moderate quality of evidence). Because of the greater ease of obtaining a postnatal sample compared with invasive sampling before induction, it is recommended that a postnatal sample be obtained from the placental fetal surface in the event of fetal death (expert opinion).

6.4 | External examination and autopsy

It is recommended that external examination of the fetus should be systematically offered in cases of fetal death.[37] The external examination should preferably be performed in the delivery room by a fetopathologist or, if this is not possible, another health professional, using a standardized form. If there is any doubt about the sex of the fetus, it is recommended that this not be recorded on the birth certificate, but instead await the results of any fetopathologic or genetic examination (expert opinion).

Fetopathologic examination is among the most important tests in determining the cause of fetal death.[33,38,39] In a 2017 multicenter retrospective study of 512 fetal deaths after 20 weeks GA in the US, fetopathologic examination was considered second only to placental examination for diagnosing the cause of fetal death, and was considered most useful in 42.4% of cases (217/512; 95% CI: 36.9–48.4) (33). Its diagnostic value was greater in cases of suspected antenatal fetal anomalies (90.3%; 95% CI: 60.0%–100%) and intrauterine growth retardation (79.2%; 95% CI: 57.1%–100%) than in cases of, for example, intrauterine infection (44.2%; 95% CI: 30.6%–61.7%). Thus, it is recommended that a fetopathologic examination be performed to help determine the cause of death (strong recommendation; moderate quality of evidence).

6.5 | Placental examination

A systematic review by Ptacek et al., including 13 studies (3636 fetal deaths), found that placental lesions could explain fetal death in 11.2%–64.6% of cases.[40] In a 2012 Dutch multicenter prospective study that included 1025 fetal deaths after 20 weeks GA, the placental examination was abnormal in 89.2% of cases (903/1012; 95% CI: 87.2%–91%), and 65.2% of fetal deaths were attributed to a placental cause.[38] Most common were abnormalities of the basal plate (placental malperfusion of maternal origin), villous development, and umbilical cord defects. Therefore, placental pathology is recommended to determine the cause (strong recommendation; moderate quality of evidence).

6.6 | Biologic evaluation

When fetal death is diagnosed, it is recommended to perform a hemostatic evaluation in cases of retroplacental hematoma, hypertensive pathology, or sepsis, to look for disseminated intravascular coagulation (expert opinion).

At the time of diagnosis, it is recommended to perform Kleihauer–Betke and irregular agglutinins tests systematically (expert opinion).[38] Depending on the clinical and ultrasound context, the following tests may be performed on a case-by-case basis (expert opinion):[38,41,42]

- Signs suggestive of infection—cytomegalovirus and parvovirus B19 serologies and/or amniocentesis and placental viral PCR. In case of suggestive signs and negative serologies during pregnancy—toxoplasmosis, rubella, and syphilis serologies.
- Signs suggestive of intrauterine infection—bacteriologic sampling including vaginal sampling and/or placental bacteriology, to adjust maternal antibiotic therapy.
- Vascular pathology—CBC, liver function tests, creatinine, and proteinuria.
- With evidence of clinical dysthyroidism—TSH and thyroxin.
- In cases of obesity, macrosomia, family history of diabetes, or suggestive symptoms—fasting blood glucose or HbA1c and
- In the case of maternal pruritus—bile acids.

It is recommended to test for antiphospholipid antibodies in cases of fetal death.[33] Testing for classic constitutional thrombophilia should be reserved for women with a personal or family history of thromboembolic events, given the high prevalence in the Caucasian population and the lack of benefit of heparin therapy in recurrent fetal death, particularly in patients with identified thrombophilia.[43,44]

6.7 | Use of classification

It is recommended to classify the cause of fetal death, to improve epidemiologic knowledge and help standardize these causes. There is no ideal classification, and the choice of classification will depend on the objective to be achieved; however, the expert panel encourages local harmonization (expert opinion).[45,46]

6.8 | Summary consultation

It is recommended to offer a summary consultation, with the aim of assessing the parents' physical and psychological statuses, reporting results, discussing the cause, and providing information on monitoring a subsequent pregnancy (expert opinion).

7 | TOPIC 5—DELIVERY AND POSTNATAL CARE (TABLES S17–S22)

If there is no risk of disseminated intravascular coagulation or maternal morbidity, the woman's wishes should be considered when determining the time between diagnosis of fetal death and labor induction. Return home is possible if it is the woman's wish (expert opinion).

In all situations except maternal life-threatening emergencies, the preferred delivery mode is vaginal, regardless of previous cesarean section history (expert opinion).

It is recommended to administer mifepristone 200 mg at least 24 h before induction. The woman should be informed about the possibility of labor with this treatment (low recommendation; low quality of evidence).[47,48]

It is recommended that osmotic dilators and prostaglandins not be used concurrently (low recommendation; moderate quality of evidence).[49] Data on their sequential use are insufficient to make a recommendation.[50,51]

Regarding induction after mifepristone, and depending on the cesarean section history, the following are recommended (expert opinion)[52–54]:

No previous cesarean section

- GA weeks 14–31, induction with oral or vaginal misoprostol 400 µg every 4 h.
- After 31 weeks GA, induction methods used with the live fetus are possible. For misoprostol induction, the maximum recommended dose is 200 µg every 4 h.

One previous cesarean section

- In most cases, vaginal delivery is preferred, after discussing the risks and benefits of delivery methods with the patient.
- Between GA weeks 14–31, induction with oral or vaginal misoprostol 200 µg every 4 h, not to exceed 600 µg in 24 h.
- After 31 weeks GA, induction methods used with the live fetus are possible.

Two or more cesarean sections

- Vaginal delivery is preferred in most cases.
- If vaginal delivery is chosen, the protocol as described in the case of a history of one cesarean section can be followed.

In all cases, membranes should be ruptured as early as possible, to reduce the time between induction and delivery.

Perimedullary analgesia should be used at the start of induction, per the woman's wishes, or intravenous morphine analgesia if contraindicated (expert opinion).

Regarding management in the immediate postpartum period, it is recommended that cabergoline be prescribed to prevent lactation onset, regardless of GA at fetal death, after discussing treatment side effects with the patient (expert opinion). The length of hospital stay after delivery should be adjusted on a case-by-case basis according to the risk or occurrence of maternal complications (expert opinion). Postpartum consultation should be scheduled before discharge (expert opinion).

8 | TOPIC 6–ANNOUNCEMENT OF FETAL DEATH AND PSYCHOLOGICAL SUPPORT

Particular attention must be paid to the way a fetal death is announced, to avoid increasing the parents' distress, and should be adapted to the uniqueness of each situation. The announcement should be made in simple, unambiguous words, avoiding medical terms that are technical or leave room for doubt. This announcement can be preceded by an introductory sentence (expert opinion).[55–57]

To provide parents with emotional support, it is important to be familiar with the general principles of paraverbal and nonverbal communication, to adopt an empathic attitude, and to practice "active listening" during the announcement. It is recommended to identify the coping mechanisms parents express after the announcement, and for the caregiver to identify his or her own coping mechanisms and to avoid those that would indicate a low level of involvement with the parents.[58] It is recommended that the announcement be concluded with a proposal for a new discussion within a short period of time. The details of the treatment cannot be explained in the immediate aftermath of the announcement because the parents' ability to listen is saturated by the emotional charge. At this point, it may be useful to identify the support of family and friends (expert opinion).

Once the announcement has been made, one or more meetings should be organized to inform the parents about the progress of the treatment, the usefulness of additional tests (in particular, the fetopathologic examination), what will happen to the newborn body, administrative procedures, and their social rights, and to determine their wishes. It is recommended to collect memory traces (photographs, finger and footprints, birth bracelets), which will be made available to the parents (expert opinion).

In the delivery room, a peaceful, comfortable, safe environment should be created around the parents during induction and delivery. All measures to reduce anxiety should be encouraged.[59] Both parents should be free to choose whether to see their baby.[60] It is recommended to be cautious about sex determination based on genital examination, especially at early GAs. All measures that contribute to the humanization of the newborn should be encouraged (expert opinion).

It is recommended to inform women about the benefits of psychological support for themselves and their co-parents. Training in breaking bad news in perinatal care and perinatal bereavement is desirable for staff who care for these parents.[61,62] The services of a psychologist should be systematically offered (expert opinion).

Couples should be informed about the existence of associations that can help them to cope with perinatal bereavement (expert opinion).

Finally, it is recommended that psychological support be provided during pregnancies following fetal death, for both the woman and her co-parent (expert opinion).[63]

9 | TOPIC 7–MANAGEMENT OF SUBSEQUENT PREGNANCY

The risk of recurrence after unexplained fetal death does not appear to be increased in subsequent pregnancies.[64] The available data on the prescription of aspirin to reduce perinatal morbidity in cases of previous unexplained fetal death are very weak. Therefore, no recommendation can be made regarding the prescription of aspirin during subsequent pregnancies in cases of unexplained fetal death (absence of recommendation; very low quality of evidence).

If there is a history of fetal death due to a vascular cause, it is recommended to prescribe low-dose aspirin to reduce perinatal morbidity, and should not be combined with heparin therapy (low recommendation; very low quality of evidence).[65,66]

If there is a history of fetal death and antiphospholipid syndrome, it is recommended to prescribe aspirin combined with heparin therapy to reduce perinatal morbidity in future pregnancies (low recommendation; very low quality of evidence)[67] (Table S23).

It is recommended that the history of fetal death alone should not be used to recommend an optimal delay before initiating a subsequent pregnancy (expert opinion).

Regarding the management of the subsequent pregnancy, fetal heart rate monitoring is not indicated solely because of a history of fetal death (expert opinion). Labor should not be systematically induced. However, induction may be considered depending on the context and parental request. The GA should be discussed, considering the benefits and risks, especially before 39 weeks. If a cause of fetal death was identified, management will be adapted on a case-by-case basis (expert opinion).

10 | TOPIC 8–SPECIAL FEATURES OF FETAL DEATH MANAGEMENT IN TWIN PREGNANCIES

In a recent meta-analysis, Mackie et al. found an in utero fetal mortality rate of 22.4% in bichorionic pregnancies.[68] Because this risk is equally high in monochorionic pregnancies, it is recommended that the surviving twin be evaluated as soon as the diagnosis of fetal death is made (expert opinion).

It is recommended that the etiologic assessment of fetal death at the time of diagnosis be adapted to the circumstances of the case, and should focus on assessing whether there is a risk to the co-twin. After delivery, cytogenetic, fetopathologic, and placental studies may be recommended as in singleton pregnancies, but the couple should be informed that they may be less useful if there is a long delay between fetal death and delivery (expert opinion).

In the case of a dichorionic pregnancy, it is recommended to offer monthly ultrasound monitoring because of the risk of mortality (expert opinion). It is recommended not to deliver prematurely after the fetal death of a twin (expert opinion).

If fetal death occurs in a monochorionic twin pregnancy, urgent ultrasound screening for signs of acute fetal anemia in the surviving twin is recommended.[69] Weekly ultrasound monitoring is recommended for the first month. Fetal brain imaging with diagnostic ultrasound and MRI is recommended at least 4 weeks after diagnosis of a twin fetal death, depending on GA (expert opinion).[70]

It is not recommended to induce labor immediately. GA at delivery can be discussed on a case-by-case basis.

AUTHOR CONTRIBUTIONS

All authors contributed to the conception of the guidelines, draft of the work or reviewed it critically for important intellectual content. They have approved the final the version to be published; and agree to be accountable for all aspects of the work.

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CONFLICT OF INTEREST STATEMENT

Olivia Anselem has attended board meetings and symposia for Sanofi and Pfizer and has attended symposia in the last 3 years. Julie Blanc has attended board meetings for Organon and Effik in the last three years. Matthieu Dap has attended a symposium for Exeltis in the last three years. Charles Garabedian has attended board meetings for Organon and symposia for Ferring and General Electrics in the last three years. Paul Guerby has attended board meetings for Norgine and Alexion and symposia for Organon, Theramex and General Electrics in the last three years. Alexandre Vivanti has attended a board meeting for Norgine in the last three years. The other authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

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