



Birth & transfer



european standards of
care for newborn health

EFGNI european foundation for
the care of newborn infants

Topic Expert Group
Birth & transfer

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Topic Expert Group: Birth & transfer

Overview

Pregnancy and childbirth represent a critical time period requiring proper counselling about potential pregnancy complications. Women – especially those at risk – can be supported by a broad range of interventions that aim at reducing the risk of preterm birth and improving the health of mother and infant.

One aspect is that the regional organisation of perinatal care needs to be based on designated centres of care, categorised as specialist or non-specialist centres, specifying activity that is appropriate in each. (1–5) In order to manage women at risk, to prevent preterm birth, and to ensure appropriate care for preterm infants, differentiation between low-risk and high-risk pregnancies is important. One essential component of obstetric care is the education of pregnant women about signs and symptoms of preterm birth (6–9), as it fosters the early identification of women at risk for pregnancy complications and preterm birth.

In critical situations during the ante-, intra- and post-partum period, maternal and/or neonatal transfer may be required, as provision of specialist care may reduce the incidence of preterm birth and the associated fetal/neonatal and maternal complications. (5,10,11) As newborn infants born to women transferred antenatally have better outcomes than those transferred postnatally, the primary goal of perinatal centralisation is that women and newborn infants receive obstetric and neonatal care in appropriate facilities. (5,10,11) It is important to recognise that neonatal transports, when necessary, are a critical phase with specific needs for a specialised team and equipment to ensure maximal safety and efficiency. (12) Both maternal and neonatal transfer should be carried out in a timely, safe, and efficient manner, following the aim to avoid separation of mother and baby.

The Topic Expert Group on Birth and transfer develops standards on organisational aspects of perinatal care, including antenatal transport of the mother with her baby in the womb and adequate intra- and inter-hospital transport of the newborn baby. Furthermore, the standards focus on the management of the cord at the delivery of term and preterm infants as well as information provision and counselling about potential risk factors for preterm birth.

Source

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Collaboration with parents in ante- and perinatal care

Schlembach D, Simeoni U, Nagy Bonnard L, Bernloehr A, Cetin I, Gente M, Grosek S, Jourdain G, Rossi R, Roth-Kleiner M

Target group

Pregnant women, their partners, and families

User group

Healthcare professionals, neonatal units, hospitals, and health services

Statement of standard

Pregnant women and their partners receive complete and accurate personalised information and support during pregnancy and childbirth to achieve efficient, optimal and respectful collaboration.

Rationale

In order to achieve efficient and effective collaboration, parents must receive accurate and understandable information during pregnancy and birth. Better collaboration with parents will be achieved by timely and interdisciplinary counselling in a language they can easily understand. (1–5)

This should comprise of a comprehensive counselling/advice on pre-conceptual and maternal issues, sexual and reproductive health, healthy lifestyle, healthy pregnancy, and place and mode of delivery. (1,3–20)

Pregnancy and childbirth represent a critical time period when a woman can be supported through a variety of interventions aimed at reducing the risk of preterm birth and improving her health and that of her unborn infant. (8,10–23) This includes basic antenatal care, identification of women at risk for pregnancy complications and preterm birth, allowing preventive measures and therapeutic interventions to be implemented in cases of threatened preterm delivery (i.e. tocolytics, antibiotics, antenatal corticosteroids for lung maturation, and magnesium sulphate for neuroprotection). (1–28)

Benefits

- Better informed pregnant women and their partners (3–10,12,13,16–20)
- Reduced risk and early recognition of pregnancy complications allowing earlier prophylactic and therapeutic treatments (1,11–15,23–28)
- Better informed parents in situations necessitating consensual decisions such as preterm labour or preterm delivery and/or postnatal care (1–20)
- Improved parental confidence when interacting with healthcare professionals (2–20)
- Reduced stress and anxiety for parents (2–20)

Components of the standard

Component	Grading of evidence	Indicator of meeting the standard
For parents and family		
1. (Pregnant) women are informed by healthcare professionals about risk factors, symptoms/signs for impending pregnancy complications and information on patient organisations. (1,3,4,9,16)	A (High quality) B (High quality)	Patient information sheet
2. Parents are informed by healthcare professionals about available techniques and procedures for diagnosis, and therapies, including associated risks. (1,9)	A (High quality) B (High quality)	Patient information sheet
3. Parents receive timely counselling with trained and experienced multidisciplinary staff to discuss their fears and concerns and to make informed decisions about the pregnancy and their infant. (1,3,5,6,8)	A (High quality) B (High quality)	Clinical records, parent feedback, patient information sheet, training documentation
4. Parents have access to psychological support during pregnancy and during their time on the neonatal unit (see Follow-up & continuing care and Infant- & family-centred developmental care). (29,30)	A (High quality) B (High quality)	Parent feedback
5. Expectant parents with high-risk pregnancies can visit the neonatal unit and get to know the team (see Infant- & family-centred developmental care). (5)	A (High quality) B (High quality)	Parent feedback
For healthcare professionals		
6. A unit policy on collaboration with parents in ante- and perinatal care is adhered to by all healthcare professionals.	B (High quality)	Audit report
7. Training on communicating clinical information to parents to ensure they receive relevant information is attended by all healthcare professionals. (31,32)	A (High quality) B (High quality)	Parent feedback, training documentation
8. Data used to counsel parents set local specific data in context of national outcomes.	B (High quality)	Audit report, guideline

For neonatal unit		
9. A unit policy on collaboration with parents in ante- and perinatal care is available and regularly updated.	B (High quality)	Audit report
10. The neonatal and obstetric teams work together to produce information for mothers with high-risk pregnancies and jointly counsel parents.	B (High quality)	Clinical record, parent feedback
For hospital		
11. Training on communicating clinical information to parents in ante- and perinatal care is ensured.	B (High quality)	Training documentation
12. Accommodation is available for the partner in the hospital or nearby and other family members are allowed to visit. (5,33–35)	A (High quality) B (High quality)	Audit report
13. Satisfaction with parent information and communication are regularly audited.	B (High quality)	Audit report, parent feedback
For health service		
14. A national guideline on collaboration with parents in ante- and perinatal care is available and regularly updated.	B (High quality)	Guideline
15. Parent representatives contribute to the development of a guideline for high-risk pregnancies and infants.	B (Moderate quality)	Guideline

Where to go – further development of care

Further development	Grading of evidence
For parents and family	
<ul style="list-style-type: none"> Women of reproductive age are informed about healthy lifestyle in preparation for pregnancy by healthcare professionals. 	B (Moderate quality)
For healthcare professionals	
<ul style="list-style-type: none"> Offer second opinions for important decisions. 	B (Moderate quality)
For neonatal unit	
N/A	
For hospital	
N/A	
For health service	
<ul style="list-style-type: none"> Provide public information concerning management, survival and outcomes for infants born at extremely low gestation deliveries or with major anomalies. 	B (Moderate quality)

Getting started

Initial steps

For parents and family

- Parents are verbally informed about the importance of healthy pregnancy and about the risks and symptoms of preterm birth by healthcare professionals.

For healthcare professionals

- Attend training on communicating clinical information to parents in ante- and perinatal care.
- Establish joint counselling between the neonatal and obstetric teams.
- Develop strategies to allow parents to take their parental role.

For neonatal unit

- Develop and implement a policy on collaboration with parents in ante- and perinatal care.
- Develop information material on pregnancy complications and preterm birth including relevant support groups.
- Facilitate prenatal visits to NICU.

For hospital

- Support healthcare professionals to participate in training on communicating clinical information to parents in ante- and perinatal care.
- Develop strategies and resources to support parents in their wider societal context.

For health service

- Develop and implement a national guideline on collaboration with parents in ante- and perinatal care.
- Engage parent representatives in perinatal healthcare planning.

Source

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Cord management at the delivery of preterm infants

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Target group

Preterm infants, parents and families

User group

Parents and family, healthcare professionals, perinatal units, hospitals and health services

Statement of standard

Preterm infants receive optimal umbilical cord management for smooth transition at birth by waiting before clamping and cutting the cord for at least one minute.

Rationale

During pregnancy the fetal blood circulates between the fetus and the placenta with about 50% of the blood volume residing in the placenta. The placenta provides nutrients and oxygen to the fetus. After birth the infant needs to adapt to extrauterine life, which requires a lot of changes in their circulation. Around 8-10% of all infants are born prematurely. For preterm infants these changes can be challenging, especially if they do not have sufficient blood volume to go around their body. Preterm infants are at increased risk of death, and prematurity is the leading cause of infant death below one year of age. (1) Morbidities related to their prematurity include the need for blood pressure support through inotropes, several blood transfusions or intraventricular haemorrhage (IVH) resulting into long-term neurodevelopmental problems. Extensive studies comparing different timing of when to clamp and cut the cord have shown that by waiting for at least 60 seconds a significant amount of the baby's own blood can be transferred and helps them to adapt their circulation in the first 72 hours after birth. (2–4) As a result, the risk of death is reduced by 28%. In addition, preterm infants have higher blood pressure, need less inotropes and fewer blood transfusions. Reduction of infant mortality is one of the WHO millennium goals. Therefore, the WHO has recommended to wait at least one minute before clamping and cutting the cord at birth of preterm infants. (1) In case this is not feasible a gentle stripping of the cord towards the baby ("milking") can be considered as an alternative way of providing the placental transfusion. (1,4) One study reported a possible increased risk of IVH in very preterm infants born before 28 weeks gestation who received milking of the umbilical cord, but this association was not confirmed in a recent meta-analysis. (5) Local clinical teams should consider risks and benefits for their own patient population when determining their own approach to methods of optimal umbilical cord management.

Benefits

Short-term benefits

- Reduced mortality and morbidity (6)
- Reduced risk of brain injury and infections (6)
- Lower incidence of IVH and necrotising enterocolitis (6)
- Improved transition of circulation with better blood pressure (6)
- Reduced exposure to potentially painful and/or unnecessary interventions (blood transfusion, heel pick) (7)
- Minimised separation of mother and infant (8)

Long-term benefits

- Improved neuro-cognitive outcomes such as fine motor skills (9–11)
- Improved bonding between parents and babies (12–15)

Components of the standard

Component	Grading of evidence	Indicator of meeting the standard
For parents and family		
1. Parents are informed by healthcare professionals about the role of cord management at birth and timing of cord clamping both in vaginal and caesarean birth, as well as short- and long-term effects.	B (High quality)	Patient information sheet
2. Parents are informed by healthcare professional about the role of cord clamping at preterm delivery and/or in cord blood banking.	B (High quality)	Clinical record
3. Cord clamping preferences of parents should be reported in the birth plan.	B (Moderate quality)	Clinical record
For healthcare professionals		
4. Sessions to motivate the teams and update the evidence regarding cord clamping is promoted by a multidisciplinary team including leaders (midwives, obstetricians, paediatricians, neonatologists, nurses and anaesthetists).	B (High quality)	Training documentation, healthcare professional feedback
5. Training on optimising neonatal transition and cord clamping technique, including milking, neonatal stabilisation/resuscitation with intact cord, sample for umbilical artery pH strategies with intact cord is adhered to by all professionals. (16)	A (Moderate quality)	Training documentation, healthcare professional feedback
6. The definitions/terminology regarding cord management are shared.	B (Moderate quality)	Guidelines
For perinatal unit		
7. A guideline to ensure a standardised approach to third stage management, including cord traction and timing of cord clamping, is available both for low- and high-risk pregnancies/deliveries and both for vaginal and caesarean birth. (1,9,17)	A (High quality)	Guideline

8. Mode and timing of cord management are reported in medical record. (1,16)	A (High quality)	Clinical records
9. A protocol for cord clamping approach in special situations (e.g. asphyxia, sentinel events, twins, infection, immunisation) is available. (16)	A (High quality)	Guideline
10. The best strategy of cord management for every neonate both in low- and high-risk pregnancies/deliveries is planned/ensured (individualised) by a multidisciplinary team (midwives, obstetricians, paediatricians, neonatologists, nurses and anaesthetist according to the case). (9,16,17)	A (High quality)	Audit report, minutes of team meetings

For hospital

11. Training of relevant staff about optimal cord management is ensured.	B (High quality)	Training documentation
12. Equipment for optimal cord management such as monitors, heated mattresses, plastic bags and bedside resuscitation trolleys are provided.	B (High quality)	Audit report

For health service

13. A national guideline on optimal cord management is available and regularly updated.	B (High quality)	Guideline
14. Local implementation tools are available to use for clinical and ambulance services (such as teaching slides, leaflets, checklist for use at delivery).	B (High quality)	Audit report
15. Place of birth is ensured to be adequate for the provision of required level of neonatal care.	B (High quality)	Audit report

Where to go – further development of care

Further development	Grading of evidence
For parents and family	
<ul style="list-style-type: none"> Parents are routinely educated by healthcare professionals about umbilical cord management. 	B (High quality)
For maternity unit	
<ul style="list-style-type: none"> Initiate documentation on timing of cord clamping at every delivery. 	B (High quality)

- Initiate projects on quality indicators to monitor and investigate outcomes of infants and mothers in relation to umbilical cord management. (16) A (High quality)
 - Train and audit cord blood sampling practice on an unclamped cord. B (High quality)
- For perinatal unit**
- Audit the need of resuscitation and occurrence of respiratory distress syndrome in correlation to timing of umbilical cord clamping and cutting. C (High quality)
- For hospital**
- Facilitate information, education and training to the complete perinatal team (midwives, nurses, obstetricians, neonatologists etc.) on umbilical cord management under different circumstances, such as caesarean delivery, infection and compromised babies. C (High quality)
- For health service**
- Prioritise studies on optimal cord management and the initiation of advanced resuscitation with the intact cord. B (Moderate quality)

Getting started

Initial steps

For parents and family

- Parents are verbally informed about the benefits of optimal cord management at birth of their preterm infants.

For healthcare professionals

- Attend training about benefits of optimal cord management in the care of preterm infants.
- Provide positive feedback to colleagues.

For perinatal unit

- Develop multidisciplinary guideline for optimal cord management at preterm deliveries.

For hospital

- Support hospital staff in training for providing optimal cord management.

For health service

- Develop a national guideline on optimal cord management in preterm deliveries with input by professional bodies.

Description

Studies on cord management had a wide variety of designs and the methods include waiting before clamping and cutting the cord for a predefined period, milking of the cut or intact cord for 2-4 times or a combination thereof. Recently, studies of resuscitating the preterm with the intact cord have also been started. (17) For the purpose of widely introducing optimal cord management, this standard has focussed mainly on the implementation of waiting before clamping and cutting the cord for at least one minute. A plan, do, study, act approach for successful implementation has been described in the literature. (16)

Source

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Cord management at the delivery of term infants

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Target group

Term infants (≥ 37 weeks), parents, and families

User group

Healthcare professionals, perinatal units, hospitals and health services

Statement of standard

In vigorous vaginally born term infants, management of the umbilical cord includes waiting before clamping and cutting the cord for at least three minutes or until the cord is pale and collapsed. For vigorous term infants born by caesarean section a one-minute wait is adhered to before clamping and cutting the umbilical cord.

Rationale

Following birth of term babies, approximately 30% of their blood volume is still circulating through the placenta. (1) After birth a number of changes takes place in order for a baby to adapt to extra-uterine life including aeration of the lungs, and in connection to this, the establishment of a full pulmonary circulation. (2) If the umbilical cord is left intact for more than three minutes, oxygenation of the blood is improved and a majority of the blood earlier circulating through the placenta will be redistributed to the baby's body, resulting in a net blood transfusion of 25-30 ml/kg. (3) A more individualised, gentler, physiological transition could be achieved by keeping the umbilical cord intact and observing the infant until the cord is collapsed and pale. Research in term infants has shown short-term benefits such as earlier establishment of breathing, an improved Apgar score and reduced risk of neonatal anaemia. (4,5) Long-term benefits are manifold and include improved iron stores reduced risk for anaemia as well as improved neurodevelopmental and behavioural outcome. (4,6–9) There is no evidence to support routine immediate cord clamping, but there is evidence for apprehensiveness regarding harm from the intervention.

Benefits

Short-term benefits

- Improved oxygenation, Apgar score and earlier establishment of regular breathing (5)
- Improved transition of circulation with better blood pressure (10)
- Increased haemoglobin concentrations after birth (4,11)
- Provides no negative impact on the mother's health (12,13)
- Improved iron stores after delayed cord clamping for infants of HIV mothers with low viral load (11)
- Improved haemoglobin and haematocrit during the first days after birth (13–15)

Long-term benefits

- Improved iron stores and decreased iron deficiency at 2-8 months (4,7,16)
- Reduced risk of anaemia at 8 and 12 months of life (7)
- Improved myelination at 4 and 12 months of age (8,9)
- Improved development at 12 months of age in low-resource settings (17)

- Increased fine motor and social domain scores at 4 years of age, particularly for boys (6)
- Improved long-term outcome if resuscitation with cord intact (18)

Components of the standard

Component	Grading of evidence	Indicator of meeting the standard
For parents and family		
1. Parents are informed by healthcare professionals about keeping the umbilical cord intact initially, the benefits and practical management.	B (High quality)	Patient information sheet
2. Parents are informed by healthcare professional about the role of cord clamping in cord blood banking.	B (High quality)	Clinical record
3. Cord clamping preferences of parents are reported in the birth plan.	B (High quality)	Clinical record
For healthcare professionals		
4. A unit guideline on umbilical cord management is adhered to by all healthcare professionals.	B (High quality)	Guideline
5. Delayed cord clamping (DCC) for vaginal (3 minutes) and for caesarean birth (1 minute) are recommended. (19)	A (High quality)	Training documentation
6. Sessions to motivate the teams and update the evidence regarding cord clamping is promoted by a multidisciplinary team including leaders (midwives, obstetricians, paediatricians, neonatologists, nurses, and anaesthetist).	B (High quality)	Training documentation, healthcare professional feedback
7. Training on optimising neonatal transition and cord clamping technique, including neonatal stabilisation, sample for UA pH strategies with intact cord is adhered to by all professionals. (20)	A (Moderate quality)	Training documentation, healthcare professional feedback
8. The definitions/terminology regarding cord clamping are shared.	B (Moderate quality)	Guideline
For perinatal unit		
9. A guideline to ensure a standardised approach to third stage management, including cord traction and DCC, is available both for low- and high-risk pregnancies/deliveries, and both for vaginal and caesarean birth. (21)	A (High quality)	Guideline

10. Mode and timing of cord clamping are reported in medical records.	B (Moderate quality)	Clinical records
11. A protocol for cord clamping approach in special situations (asphyxia, sentinel events, twins, infection, immunisation etc.) is available. (20)	A (High quality)	Guideline
12. The best strategy of cord clamping for every neonate both in low- and high-risk pregnancies/deliveries is planned/ensured (individualised) by a multidisciplinary team (midwives, obstetricians, paediatricians, neonatologists, nurses, and anaesthetist according to the case).	B (Moderate quality)	Audit report, clinical record, minutes of team meetings

For hospital

13. Training on umbilical cord management is ensured.	B (High quality)	Training documentation
14. The hospital's policy regarding umbilical cord management is provided easily accessible at the official website.	B (High quality)	Training documentation

For health service

15. A national guideline on umbilical cord management is available and regularly updated.	B (High quality)	Guideline
16. Local implementation tools such as teaching slides, leaflets, checklist at delivery are available to use for clinical services.	B (High quality)	Audit report

Where to go — further development of care

Further development	Grading of evidence
For parents and family	
<ul style="list-style-type: none"> Parents are routinely educated by healthcare professionals about umbilical cord management. 	B (High quality)
For maternity unit	
<ul style="list-style-type: none"> Initiate documentation on timing of cord clamping at every delivery. 	B (High quality)
<ul style="list-style-type: none"> Initiate projects on quality indicators to monitor and investigate outcomes of infants and mothers in relation to umbilical cord management. (22) 	A (High quality)
<ul style="list-style-type: none"> Train and audit cord blood sampling practice on an unclamped cord. 	B (High quality)

For perinatal unit

- Audit the occurrence of jaundice, respiratory distress or need of resuscitation in correlation to timing of umbilical cord clamping and cutting. A (High quality)

For hospital

- Facilitate information, education and training to the complete perinatal team (midwives, nurses, obstetricians, neonatologists etc.) on umbilical cord management under different circumstances, such as caesarean delivery, maternal infection, and compromised babies. C (High quality)

For health service

- Monitor any health effects in national registries in relation to umbilical cord management. B (High quality)
- Support and/or promote sound and evidence-based information to parents and healthcare professionals. (23,24) A (High quality)
- Facilitate research or initiate research on unexplored areas of umbilical cord management, such as infants to mothers with diabetes, twins, as well as management at caesarean section and compromised newborn infants. (19,20,25) A (High quality)

Getting started

Initial steps

For parents and family

- Parents are verbally informed by healthcare professionals about umbilical cord management at the antenatal care centres and at the delivery department.

For healthcare professionals

- Document conversations with parents and family regarding cord management in the maternal notes.
- Attend training and education on umbilical cord management.

For perinatal unit

- Develop multidisciplinary guideline for optimal cord management at term deliveries.

For hospital

- Support healthcare professionals to participate in training on umbilical cord management in low- and high-risk deliveries.

For health service

- Develop and implement a national guideline on umbilical cord management with input by professional bodies.

Description

Harvesting umbilical cord stem cells:

There is no current evidence to support the use of autologous umbilical cord blood. Umbilical cord blood collection should not alter obstetric or neonatal care or intrude on routine practice of delayed cord clamping (DCC) with possible exception to directed (sibling/family) donation. Parents should be adequately informed on the opposition between the placental transfusion and collecting blood for stem cell banking. (26)

Non-vigorous neonates:

Pilot studies on intact cord resuscitation (ICR) provide new and important information on the positive effects of sustained cord circulation during transition. Newborn infants had improved oxygenation and higher Apgar score, and negative consequences were not recorded. More research is needed to provide evidence of effects and safety before a general recommendation can be issued. If teams practise ICR, it is important to audit patient outcomes prospectively or be part of a study. In non-vigorous infants it is important to ensure that ventilation can be initiated within 60 seconds after birth. (27)

Hyperbilirubinemia and jaundice:

There are reports on an association between DCC and the risk of jaundice requiring phototherapy. Several large studies the last decade have refuted this, the same studies have not shown any elevated risk for clinically relevant polycythaemia. (28–31)

Blood sampling from the umbilical cord:

Umbilical cord blood for gas analysis can be drawn from the pulsating cord immediately after birth. (12,32) A recent meta-analysis found umbilical cord milking and DCC to be comparable in improving short-term haematological outcomes in vigorous term and late-preterm infants. (33) As the quality of evidence was low more research needed before a clear statement can be issued in this standard.

Source

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Information provision for women about the risk for preterm birth (PTB)

Schlembach D, Simeoni U, Nagy Bonnard L, Bernloehr A, Cetin I, Gente M, Grosek S, Johnston L, Jourdain G, Kainer, Ratnavel N, Rossi R, Roth-Kleiner M, Visser G

Target group

Pregnant women and their partners

User group

Healthcare professionals caring for women, perinatal units, hospitals, and health services

Statement of standard

All (pregnant) women receive timely information and counselling about potential risk factors for and signs and symptoms of preterm birth and how to find appropriate healthcare advice (see Follow-up & continuing care).

Rationale

Risk identification and education regarding the signs and symptoms of preterm birth are essential components of obstetric care. They should be a routine part of obstetric care, since counselling of women and their partners and early intervention may be effective in reducing the risk of preterm birth. Healthcare providers (be it a midwife, general practitioner or an obstetrician/gynaecologist) should be able to advise and appropriately triage patients at risk for preterm birth. (1–10)

Differentiation between low risk and high risk pregnancies is important to assess the best strategy of preventing preterm birth or managing women at risk. Specific standards of care should be applied to women with known risk factors for preterm birth. Early detection and provision of specialist care may reduce the incidence of preterm birth and the associated fetal/neonatal and maternal complications. (1–10) Although for the majority of preterm births the cause may be uncertain, there are specific risk constellations that women and healthcare professionals should be aware of.

Criteria/risk factors for preterm birth include pregnancy related factors, demographic and behavioural factors, underlying medical conditions of the mother and fetal conditions (detailed information see Description). (1–10)

Benefits (4,7,11–22)

Short-term benefits

- Better informed women and partners (6,11–14,17,20–24)
- Improved pregnancy follow-up (4,11,15,17,20,21)
- Earlier recognition of impending complications (4,11,15,19–21)
- Earlier transfer/referral to a specialist (4,11,15,17,19–21)
- Better and earlier initiation of prophylactic or therapeutic regimens (4,11,15,17–21)
- Reduced perinatal mortality and morbidity (12,15–21,24)
- Reduced maternal mortality and morbidity (12,17–19,23,24)
- Reduced healthcare costs (12,17)

Long-term benefits

- Improved short- and long-term outcomes (mother and infant/child) (consensus)

- Reduced healthcare costs (consensus)
- Increased population awareness about pregnancy complications (consensus)

Components of the standard

Component	Grading of evidence	Indicator of meeting the standard
For parents and family		
1. (Pregnant) women are informed by healthcare professionals about risk factors and also symptoms and/or signs for impending pregnancy complications. (13,14,20–24)	A (High quality) B (High quality)	Patient information sheet
2. Accurate communication (all essential information) is provided. (13,14)	A (High quality) B (High quality)	Parent feedback
For healthcare professionals		
3. Training on the risks and signs of preterm birth and tools for assessment of risk for impending preterm birth is attended by all responsible healthcare professionals. (25–30)	A (High quality) B (High quality)	Training documentation
4. Professional and empathic communication is provided. (13,14)	A (High quality) B (High quality)	Healthcare professional feedback, parent feedback
5. Women at risk for very preterm birth are cared for exclusively in specialist centres. (31–33)	A (High quality) B (High quality)	Audit report
For perinatal unit		
6. A unit guideline on procedures and algorithms for the management of threatened preterm birth and underlying conditions is available and regularly updated. (34)	A (High quality) B (High quality)	Guideline
7. Women at risk for very preterm birth are referred and transferred to appropriate delivery clinic in a timely fashion. (31–33)	A (High quality) B (High quality)	Audit report
For hospital		
8. Training on the risks and signs of preterm birth and tools for assessment of risk for impending preterm birth is ensured.	B (High quality)	Training documentation
9. Continuous quality improvement programme is in place. (35)	A (High quality) B (Moderate quality)	Audit report

For health service		
10. A national guideline on procedures and algorithms for the management of threatened preterm birth and underlying conditions is available and regularly updated.	B (High quality)	Guideline
11. Regional networks for perinatal care are established. (36)	A (High quality)	Regional network
12. Risk reduction programmes are in place.	B (Moderate quality)	Audit report
13. An appropriate working environment for pregnant women is provided by employers. (37)	C (High quality)	Workplace legislation

Where to go – further development of care

Further development	Grading of evidence
For parents and family	
<ul style="list-style-type: none"> Advocate for enhanced maternity and paternity leave benefits. 	B (High quality)
For healthcare professionals	
N/A	
For perinatal unit	
N/A	
For hospital	
N/A	
For health service	
<ul style="list-style-type: none"> Encourage or promote increase in funding of research on the causes and prevention of preterm birth. 	B (Moderate quality)

Getting started

Initial steps
For parents and family
<ul style="list-style-type: none"> Parents are verbally informed in a timely manner on healthy pregnancy and pregnancy complications by healthcare professionals.
For healthcare professionals
<ul style="list-style-type: none"> Attend training on the risks and signs of preterm birth and tools for assessment of risk for impending preterm birth and pregnancy complications. Counsel women/couples (e.g. by midwives, general practitioners, obstetricians/gynaecologists).
For perinatal unit
<ul style="list-style-type: none"> Develop and implement a unit guideline on procedures and algorithms for the management of threatened preterm birth and underlying conditions. Distribute information material on healthy pregnancy and pregnancy complications for parents.

For hospital

- Support healthcare professionals to participate in training on the risks and signs of preterm birth and tools for assessment of risk for impending preterm birth.

For health service

- Develop and implement a national guideline on procedures and algorithms for the management of threatened preterm birth and underlying conditions.
- Develop information material on healthy pregnancy and pregnancy complications for parents.

Description

Risk factors for preterm birth (3–10)

Pregnancy related conditions

- Reproductive history: history of (spontaneous) preterm birth or abortion
- Preterm labour: may be caused by several conditions: multiples, hydramnios, infection
- Multiple pregnancy
- Pregnancy complications: Gestational diabetes, hypertensive disorders (preeclampsia), intrauterine growth restriction, vaginal bleeding in early pregnancy, cervical insufficiency
- Assisted reproduction techniques: higher number of multiples and increased risk of pregnancy complications
- Uterine/cervical infections

Fetal conditions

- Fetal malformations
- Intrauterine growth restriction

Underlying medical conditions

- Uterine or cervical abnormalities
- Chronical medical disorders: hypertension, renal insufficiency, diabetes mellitus, autoimmune diseases, anemia

Demographic factors

- Age: particularly young (<17 years) or older women (>35 years)
- Ethnicity: higher risk for preterm birth in black women
- Socioeconomic background: low education level, low income, little social support does play a role for preterm birth
- Genetic influence: Specific fetal and maternal genotypes

Modifiable lifestyle risk factors

- Short inter-pregnancy interval
- Smoking or substance abuse
- Exposure to environmental pollutants
- Under- and overweight (obesity)
- Unbalanced diet
- High stress level
- Suboptimal prenatal care

Source

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Maternal transfer for specialist care

Cetin I, Schlembach D, Simeoni U, Nagy Bonnard L, Bernloehr A, Gente M, Grosek S, Jourdain G, Kainer F, Radzeviciene L, Ratnavel N, Rossi R, Roth-Kleiner M

Target group

Pregnant women and their partners

User group

Healthcare professionals, perinatal units, hospitals, and health services

Statement of standard

Transfer of pregnant women for specialist care (for mother and/or newborn infant) is an essential component of perinatal care and is carried out in a timely, safe and efficient manner.

Rationale

As newborn infants born to women transferred antenatally have better outcome than those transferred postnatally, the primary goal of perinatal centralisation is that women and newborn infants receive obstetric and neonatal care in appropriate facilities. Maternal transfer refers to the transfer of a pregnant woman during the ante-, intra- and occasionally also postpartum period for special care of the woman, the newborn infant, or both. (1–15)

Antepartum transfer avoids separation of mother and the newborn infant in the immediate postpartum period, allows mothers to communicate directly with neonatal intensive care unit (NICU) healthcare providers, and supports the goal of family-centred care. (16) Establishing uniform indications and contraindications for maternal transfer and formal transfer agreements (emphasising needs and requirements and capacity of local resources and facilities) will help to ensure safe transfer. (12,15)

The main factor to consider when deciding the need for maternal transfer is that expected benefits outweigh potential risks of maternal transfer. (12,15) The condition to be ultimately avoided is a birth occurring during maternal transfer. In case this is foreseen, and the centre does not have the appropriate level of care for that birth, neonatal transfer has to be organised immediately, according to the clinical, structural and geographical situation already before birth. (1,2,12–15,17,18)

Benefits

- Improved medical care for pregnant women and their infants (2,19,20)
- Improved neonatal, maternal and family outcome (2–8,10,11,15,19,20)
- Improved long-term maternal and child health (consensus)
- Improved education/training for healthcare professionals (1,21,22)
- Improved organisation of perinatal care (1,2,18,20,21,23,24)
- Reduced healthcare costs (4)

Components of the standard

Component	Grading of evidence	Indicator of meeting the standard
For parents and family		
1. Expectant parents are referred prenatally to the appropriate centre. (11,25–29)	A (High quality) B (High quality)	Audit report, clinical records
2. Expectant parents are counselled about the reasons for maternal transfer by healthcare professionals.	B (High quality)	Patient information sheet
For healthcare professionals		
3. A unit guideline on maternal transfer identifying different degrees of urgency is adhered to by all healthcare professionals.	B (High quality)	Guideline
4. Training on the indications and contraindications for maternal transfer is attended by all responsible healthcare professionals. (12,15,30)	A (High quality) B (High quality)	Guideline, training documentation
5. Training on neonatal life support is attended by all responsible healthcare professionals (see Education & training).	B (High quality)	Training documentation
For perinatal units		
6. A unit guideline on maternal transfer identifying different degrees of urgency is available and regularly updated.	B (High quality)	Guideline
7. Step down care and transfer back to referring hospital is provided as soon as clinically indicated. (25)	A (Low quality) B (High quality)	Audit report, clinical records
8. Adherence to the requirements and boundaries of the assigned level of care is ensured.	C (Moderate quality)	Audit report guideline
9. Units are part of a regional perinatal network.	B (Moderate quality) C (Moderate quality)	Audit report
For hospital		
10. Training on the indications and contraindications for maternal transfer as well as neonatal life support is ensured.	B (High quality)	Training documentation

11. Appropriate resources necessary to facilitate maternal transfer are available, including an appropriately trained team. (12,14,15)	A (High quality) C (Moderate quality)	Audit report, training documentation
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For health service

12. A national guideline on maternal transfer identifying different degrees of urgency is available and regularly updated.	B (High quality)	Guideline
13. A real-time system to identify availability of beds (maternal/neonatal) is established.	B (Moderate quality)	Audit report
14. A regional perinatal transfer network according to the local necessities (distance, geographic peculiarities, communication) in order to ensure safety requirements for maternal/neonatal transfer is designed and quality is regularly controlled. (23,31)	C (Low quality)	Audit report

Where to go – further development of care

Further development	Grading of evidence
For parents and family N/A	
For healthcare professionals N/A	
For perinatal unit N/A	
For hospital	
<ul style="list-style-type: none"> Have a sufficient number of trained healthcare professionals (midwives, obstetricians, anaesthesiologists) in maternal transfer available. 	B (Moderate quality)
<ul style="list-style-type: none"> Provide appropriate facilities including parking for families who are separated in emergency situations. 	B (Moderate quality)
For health service	
<ul style="list-style-type: none"> Build communication tools between hub and sub centres with dedicated phones and web services (eHealth regional/national database for perinatal units). 	B (Moderate quality)

Getting started

Initial steps

For parents and family

- Parents are verbally informed by healthcare professionals about indications for maternal transfer to the appropriate level of care.

For healthcare professionals

- Attend education and training about indications, contraindications, and necessities for maternal transfer.
- Be aware of and follow protocols for maternal transfer.
- Attend specialty training through on-the-job training or through professional education programmes.

For perinatal unit

- Develop and implement a guideline on maternal transfer.
- Develop information material on maternal transfer for parents.
- Establish perinatal networks.

For hospital

- Support healthcare professionals to participate in training on the indications and contraindications for maternal transfer as well as neonatal life support.
- Provide perinatal units with appropriately trained healthcare professionals and equipment for transfer.
- Identify and provide resources for establishing and maintaining or cooperating with ambulance services.

For health service

- Develop and implement a national guideline on maternal transfer.
- Provide regional/national eHealth databases for perinatal units.

Description

When preterm or medical complications are anticipated, early consultation with and transfer to the appropriate centre as necessary is mandatory.

*The most common obstetric indications for maternal transfer** (12,14,15)

- Preterm labour
- Preterm rupture of membranes
- Severe hypertensive disorders (preeclampsia/HELLP syndrome)
- Antepartum haemorrhage (controlled haemorrhage and stable maternal condition)
- Medical disorders complicating pregnancy (such as diabetes, renal disease, etc)
- Multiple gestation
- Intrauterine growth restriction
- Fetal abnormalities
- Maternal trauma

*Usually for gestational ages below 32 or 34 weeks, depending on the health service structure

Under some circumstances, maternal transfer is not possible, such as: (12,14,15)

- Unstable condition of the pregnant woman
- Uncontrolled haemorrhage
- Unstable fetal condition, threatening to deteriorate rapidly
- Imminent delivery
- No experienced attendants available to accompany the woman
- Too risky weather conditions

Consent for transfer

Appropriate time should be dedicated to explaining to the mother and the family the reasons for transfer and provide adequate directions for the family to the new centre.

Equipment for maternal transfer (14, 15)

- Vehicles are equipped as for every high risk/emergency patient with an additional “Emergency Birth Kit” (a sealed kit should be available in every vehicle used for transfer of a pregnant woman):
 - Tocolytic drugs
 - Magnesium sulphate (for eclampsia prophylaxis)
 - Antihypertensive drugs
 - In case of unexpected birth: Cord clamps, scissor, warm blanket for the newborn infant (space blanket), uterotonic drugs, container for placenta, retaining system (to secure the newborn infant with the mother during skin to skin during journey)
 - If the delivery occurs in the ambulance, in most cases only initial steps of resuscitation may be needed (for about 99% of the newborn infants step A and B of ILCOR will be sufficient) – figure; someone skilled in neonatal life support should travel with the mother if she is in active labour (see Medical care & clinical practice). (32)
 - Equipment: neonatal bag/mask (sizes 0 to 2) system, neonatal laryngoscope, battery-powered suction device, suction catheter (size 8, 10 and 12 CH), Guedel airways (size 4, 5 & 6), SpO₂ probe, orogastric feeding tube

Appropriate transfer-protocols should be available, in particular for emergency events occurring during transfer such as eclamptic fits, placental abruption, cord prolapse, delivery during transfer, neonatal resuscitation, post-partum haemorrhage, sepsis, maternal cardiac arrest.

Drugs with the best safety profile should be utilised during transfer, i.e. tocolytics with less maternal side effects. MEOWS (maternal early warning signs) charts should be filled in during transfer. (33,34)

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Neonatal transport

Jourdain G, Simeoni U, Schlembach D, Bernloehr A, Cetin I, Gente M, Grosek S, Leslie A, Ratnavel N, Roth-Kleiner M

Target group

Infants and parents

User group

Healthcare professionals, neonatal units, hospitals, health services, and regional neonatal transport services

Statement of standard

Infants are transferred by a dedicated, specialised medical service that offers a quality of care similar to that promoted in a NICU.

Rationale

The regional organisation of perinatal care based on primary, secondary and tertiary care (see Birth & transfer) mandates the provision of infant transport services to facilitate the flow of patients through the system when antenatal transfer is impossible. (1) Neonatal transport is a critical phase of perinatal care, with specific needs for a specialised team and equipment to ensure maximal safety and efficiency. (2–5) Consensus guidelines and recommendations are proposed by healthcare professionals on paediatric and neonatal inter-facility transport. (1) Efficiency of specialised paediatric and neonatal transport has been evaluated in several studies. (6–15) When an infant no longer needs higher levels of care, a transfer to a hospital closer to the family's home is recommended. This also optimises the use of available cots for all levels of care and allows the local hospital staff to familiarise themselves with the patient who will be followed up locally.

A standard detailing facilities and capabilities of transport services in the special environment of an ambulance, helicopter or fixed wing aircraft is thus needed throughout Europe.

Inter-hospital communication and regulation of transfers are complex and time-consuming tasks that need to be managed by a dedicated call handling/regulation centre at the regional level, covering a sufficiently large area to reach a critical volume of activity.

Intra-hospital neonatal transfer, in particular in situations where the delivery room and the NICU are not adjacent, is also critical and warrants the same standard.

Benefits

Short-term benefits

- Improved medical care and outcomes for infants needing transfer (6–15)
- Improved transfer conditions (consensus)
- Optimised use of NICU and perinatal centres resources (consensus)

Long-term benefits

- Improved outcomes for infants and families (consensus)
- Improved overall performance of regional organisation of perinatal care and reduction of healthcare costs (consensus)

Components of the standard

Component	Grading of evidence	Indicator of meeting the standard
For parents and family		
1. Parents and family are informed about all aspects of the transfer of the infant by healthcare professionals.	B (High quality)	Parent feedback, patient information sheet
2. Parents/one parent are able to accompany the infant during transfer.	B (High quality)	Parent feedback, patient information sheet
For healthcare professionals		
3. A unit guideline on neonatal transport is adhered to by all responsible healthcare professionals.	B (High quality)	Guideline
4. Education and training, including medical simulation training and continuous education/training, are attended by members of the transport team and for other neonatal and obstetric healthcare professionals involved in neonatal transport (see Education & training). (16)	A (Moderate quality) B (High quality)	Guideline, training documentation
For neonatal unit and hospital		
5. A unit guideline on intra-hospital neonatal transport, including transport of newborn infants in critical conditions, as part of the hospital organisation is available and regularly updated.	B (High quality)	Guideline
6. Trained and experienced healthcare professionals as well as equipment resources needed for intra-hospital neonatal transport are provided.	B (High quality)	Audit report, training documentation
7. Education and training, including medical simulation training and continuous education/training, are attended by members of the transport team and other neonatal and obstetric healthcare professionals involved in neonatal transport (see Education & training). (16)	A (Moderate quality) B (High quality)	Guideline, training documentation
For health service and regional neonatal transport service		
8. A regional/national guideline on inter-hospital neonatal transport is available and regularly updated.	B (High quality)	Guideline

9. Health service is responsible for the provision of a regional neonatal transport service allowing complete preservation of life functions, such as body temperature maintenance, haemodynamic, respiratory, neurologic, metabolic functions and sepsis management (see Description).	B (Moderate quality)	Audit report
10. Nurse or midwife assisted neonatal transport of newborn infants who do not need medical assistance (e.g. transfer of newborn infants for step down care) is available.	B (Moderate quality)	Guideline
11. A unique regional call and transfer regulation center is organised and continuously available, with a dedicated call number and real time information on the available cots in primary, secondary and tertiary centres.	B (Low quality)	Audit report

Where to go – further development of care

Further development	Grading of evidence
For parents and family	
<ul style="list-style-type: none"> Parents are involved in the monitoring of quality of organisation of perinatal care and neonatal transport. 	B (Low quality)
For healthcare professionals	
<ul style="list-style-type: none"> Ensure that neonatal transport healthcare professionals are trained, using real conditions and medical simulation. (17,18) 	A (Low quality)
For neonatal unit	
<ul style="list-style-type: none"> Ensure the availability of a trained and experienced dedicated team for intra-hospital neonatal transport and for participation in regional transport. 	B (High quality)
For hospital	
N/A	
For health service and regional neonatal transport service	
<ul style="list-style-type: none"> Provide stringent quality improvement programmes including parental satisfaction. 	B (Low quality)

Getting started

Initial steps
For parents and family
<ul style="list-style-type: none"> Parents are verbally informed by healthcare professionals about the transport of their infant.

For healthcare professionals

- Attend continuous training on neonatal transfer.

For neonatal unit

- Develop and implement a unit guideline on neonatal transport.
- Develop information material on neonatal transport for parents.
- Equip and staff each neonatal unit for intra-hospital transport and eventual participation to inter-facility transport.

For tertiary level hospital

- Support healthcare professionals to participate in training on neonatal transport.
- Coordinate specialised inter-hospital transport service.

For health service and regional neonatal transport service

- Develop and implement a national guideline and/or a policy statement on neonatal transport.
- Support the development of information material on neonatal transport for parents.
- Provide and structure regional perinatal transport services, including quality control.

Description

Staff and equipment for neonatal transfers

Staff and equipment should be dedicated to undertaking neonatal transport.

Vehicle for road transfer

- A dedicated vehicle should be reserved for neonatal transport
- Vehicles to be used for neonatal transport should conform to European Standard EN 1789 (16)
- In addition, vehicles should have
 - Seating for at least three staff/family
 - No-lifting loading & unloading of incubator equipment
 - Supplies of compressed medical gases sufficient for double the longest anticipated transfer.
 - Secure power supply such that medical equipment may be powered from the vehicle without using incubator batteries.
 - Fridge for drugs conservation

Air transport (helicopter or fixed wing)

- Neonatal transport service must have a structured access to air transport service and facilities.

Equipment

- The neonatal equipment used should conform to European Standards EN 13976-1 and EN 13976-2. (18)
- Equipment used for neonatal transport in air ambulances should additionally conform to EN 13718 - Medical vehicles and their equipment. Air ambulances. Requirements for medical devices used in air ambulances. (17)
- Equipment should be configured such that transported infants
 - Are kept in the thermoneutral temperature zone.
 - Receive the necessary respiratory support.
 - Receive the necessary fluid and drug infusions.
 - Have their vital signs monitored appropriately.
 - Who become critically unstable in transit can receive emergency care (airway, breathing, circulation).

Staff for transfer

- For ground transfers the drivers of vehicles should hold relevant training for driving emergency vehicles.
- The clinical team should include nurse, advanced clinical practitioner, doctor or paramedic depending on the clinical needs of the patient. Healthy infant transfers may be conducted by a nurse alone.
- The clinical team should have received neonatal transport-specific training and be supported by continuing education for transport.
- The work of the clinical team should be supported by transport-specific clinical guidelines.
- Where air transport is anticipated all the staff involved should have received air transport training and preparation and this should be refreshed annually.

Source

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Organisation of perinatal care

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Target group

Infants, parents, and families

User group

Healthcare professionals, perinatal units, hospitals, and health services

Statement of standard

Perinatal care is organised in specialist and non-specialist centres to ensure access to optimal, preferably evidence-based, care with respect to medical knowledge, organisation structure, and staff.

Rationale

In order to deliver the appropriate level of maternal and perinatal care tailored to the severity of risk, the regional organisation of care needs to be based on designated centres of care, categorised as specialist or non-specialist centres, specifying activity that is appropriate in each. (1–10) Establishing clear, uniform criteria for designation of maternal and perinatal centres that are integrated with emergency response systems will help ensure that the appropriate numbers of trained personnel, physical space, equipment and technology are available to achieve optimal outcomes. It will also facilitate subsequent data collection regarding risk-appropriate care and has been shown to be efficient and effective in producing the best outcome for mothers and infants. (1–35)

Benefits

- Improved medical care for all pregnant women and their partners, but especially for women at risk for pregnancy complications (1,10,15,23–25,27,28,34–36)
- Improved (physical and psychological) maternal outcome (1,10,15,22,24,25,27–29,34,36)
- Improved neonatal care and outcome (1,8,10,11,13,14,16,18,19,21,23,26,30–33,36)
- Improved education/training for healthcare professionals (1,27,28,36,37)
- Increased specialist expertise (1,24,25,27,28,36,37)

Components of the standard

Component	Grading of evidence	Indicator of meeting the standard
For parents and family		
1. Expectant parents are informed by healthcare professionals about the organisation of perinatal care and the importance of appropriate level of care.	B (High quality)	Patient information sheet
2. Expectant parents receive appropriate expert care. (1,5,7–10,12,13,15–17,19,22,28–37)	A (High quality) B (High quality)	Parent feedback, patient information sheet

3.	Care is relocated as close as possible to home as soon as clinically indicated. (5)	A (Low quality) B (High quality)	Audit report
For healthcare professionals			
4.	A unit guideline on the management of high-risk pregnancies is adhered to by all healthcare professionals.	B (High quality)	Guideline
5.	Training on the management of high-risk pregnancies is attended by all responsible healthcare professionals.	B (High quality)	Training documentation
6.	Healthcare professionals' practice as part of a regional perinatal care network with access to agreed protocols and guidelines.	B (Moderate quality)	Audit report, training documentation
For perinatal unit			
7.	A unit guideline on the management of high-risk pregnancies is available and regularly updated.	B (High quality)	Guideline
8.	Expertise in the management of high-risk pregnancies is developed in specialist centres.	B (Moderate quality)	Audit report
9.	Capacity planning is facilitated.	B (Moderate quality)	Audit report
10.	Care is enhanced by network-based education in non-specialist centres.	B (Moderate quality)	Audit report
For hospital			
11.	Training on the management of high-risk pregnancies is ensured.	B (High quality)	Training documentation
12.	Appropriate resources are available for the level of perinatal care. (38)	C (Moderate quality)	Audit report, training documentation
13.	A continuous perinatal care quality improvement programme is established. (38)	C (Moderate quality)	Audit report
14.	Accommodation is available for the partner when required (see NICU design).	B (Moderate quality)	Audit report
For health service			
15.	Regional perinatal networks are organised.	B (High quality)	Audit report

16. A national guideline on the management of high-risk pregnancies is available and regularly updated.	B (High quality)	Guideline
17. Regional / national oversight is established to ensure safety requirements for pregnancy and birth. (9,36)	A (Low quality)	Audit report
18. A perinatal information system to support quality assessment, certification, and audit of network units is established and maintained. (38)	C (Moderate quality)	Audit report

Where to go – further development of care

Further development	Grading of evidence
For parents and family	
<ul style="list-style-type: none"> Parents are involved in the monitoring of quality of organisation of perinatal care and neonatal transport. 	B (Low quality)
For healthcare professionals	
N/A	
For perinatal unit	
<ul style="list-style-type: none"> Ensure the availability of trained and experienced maternal-fetal specialists throughout the 24 hours. 	B (High quality)
<ul style="list-style-type: none"> Dedicate accommodation within the hospital for expectant parents. 	B (Low quality)
<ul style="list-style-type: none"> Benchmark services against national/international data (such as Europeristat). (38) 	A (High quality)
For hospital	
N/A	
For health service	
<ul style="list-style-type: none"> Benchmark perinatal outcomes using European obstetric surveillance system (such as Europeristat). (38) 	A (High quality)
<ul style="list-style-type: none"> Regional / National oversight is established to ensure safety requirements for pregnancy and birth. (9,36) 	A (Low quality)

Getting started

Initial steps
For parents and family
<ul style="list-style-type: none"> Parents are verbally informed by healthcare professionals about perinatal care.
For healthcare professionals
<ul style="list-style-type: none"> Attend training on perinatal care. Enhance specialty training through on-the-job training and professional education programmes.

For perinatal unit

- Develop and implement a unit guideline for standard and emergency care as well as transfer.
- Distribute information material for parents on perinatal care.
- Develop clinical perinatal networks.

For hospital

- Support healthcare professionals to participate in training on perinatal care.
- Collect information on perinatal care standards and equip perinatal units with appropriate healthcare professionals and material for patient care and training.
- Provide resources for establishing and maintaining a perinatal unit.
- Provide opportunities for on-the-job training, and experiential learning environments (clinical placements) for students undertaking professional education programmes.
- Develop clinical perinatal networks.

For health service

- Develop and implement a national guideline for standard and emergency care as well as transfer.
- Develop information material for parents on perinatal care.
- Submit and review perinatal data and output of surveillance systems.
- Monitor perinatal outcomes using European obstetric surveillance system (such as Europeristat).

Source

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