

Advance life support



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1. Emergency childbirth

1.1. Introduction and Objectives

Emergency childbirth is as it indicates, Ambulance Technicians are not trained midwives, or obstetricians who specialise in childbirth. However they may well be called upon to convey at any time a woman whom has started the process of childbirth, time may well not be on the Technicians side, and the baby may well present itself either at the house, or on-route to the place of confinement.

This chapter objectives are for you to understand:

- An insight to pregnancy.
- The stages of labour.
- The signs and symptoms of immediate delivery.
- Complications of childbirth.
- Hygiene and infection protection.
- Care of the new-born and mother.

1.2. Anatomy and Physiology, of the Female Reproductive System

The female reproductive system includes the ovaries, fallopian tubes, uterus, cervix, vagina, and the breasts. The ovaries are two glands, one each side of the uterus, they are similar in function to the male testes. Each ovary contains thousands of follicles, and each follicle contains an egg (the female contribution to conception)

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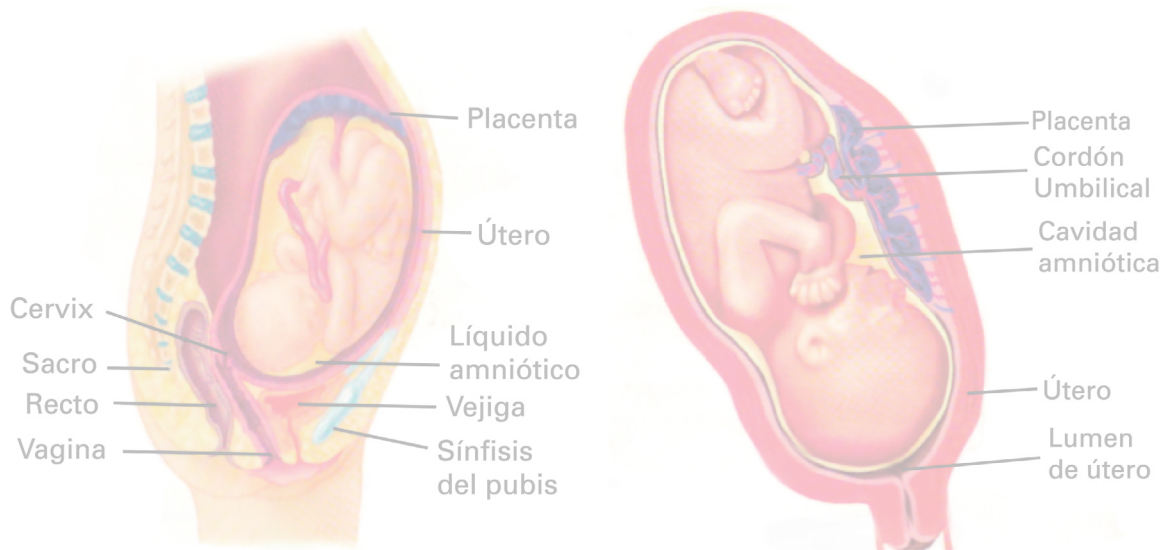
Females are born with all the eggs they will release in their lifetime. Once puberty is reached, the monthly process of the menstrual cycle begins.

During each normal menstrual cycle, there will only be one follicle that is successful at maturing and able to release an egg. The process that the follicle goes through and the actual release of the egg (ovulation) are stimulated by the release of specific hormones in the female body. Ovulation occurs approximately 2 weeks prior to menstruation. In the next step the endometrium, or the lining of the inside of the uterus, begins to thicken and prepare for the potential fertilised egg to implant. If the egg is not fertilised within 36-48 hours after it has been released from the follicle, it will simply die. Eventually, the lining that has thickened inside the uterus will be shed because it is no longer needed. This shedding is the menstrual flow that occurs around the 28th day of a woman's cycle.

The fallopian tubes extend out laterally from the uterus, with one tube associated with each ovary. When the egg is released from the ovary, it travels through the fallopian tube to the uterus. Fertilization, when the male sperm meets the egg, usually occurs when the egg is inside the fallopian tube. The fertilized egg then continues to develop into an embryo (early stage of foetus after fertilization) and it implants in the wall of the uterus.

(At this stage it should be noted that on very few occasions a complication can occur in that the fertilized egg gets stuck and begins to grow in the fallopian tube, this is stated to be an ectopic pregnancy and it can become a life threatening emergency as the baby grows within a restricted place).

The uterus, or womb, is a muscular organ, and it is here that the foetus (the developing unborn infant) grows for approximately 9 months (40 weeks) the uterus is responsible for contractions during the labour, and ultimately helps push the infant through the birth canal. The birth canal is made up of the vagina and the lower third or neck of the uterus called the cervix. During pregnancy, the cervix contains a mucous plug that seals the uterine opening, preventing contamination from the outside world. When the cervix begins to dilate, this plug is discharged into the vagina as a pink tinged mucus, or blood show. This small amount of blood appears at the beginning of labour and may signal the first stage of labour.



1.3. Stages of Labour

Childbirth is the process by which the foetus with a gestational age ranging around 37 to 42 weeks is complete, and child leaves from the inside of the womb to the outside of the uterine cavity through the vagina.

According to the form of expulsion of the foetus delivery may be:

- Normal this is one that occurs naturally, the foetus is presented in a head first position to the exterior and comes out of vaginally (most common).
- Complex This is not exteriorly (i.e. breach).

According to the time of maturity of the foetus it can be:

- Extremely premature (-25 weeks)
- Premature infant (37 weeks)
- Full term (37-42 weeks)
- Post term child (42 weeks)

Signs of childbirth due:

- Bloody show (sometimes even days before).
- Starting of the uterine contractions due to increased activity of the uterine muscle, producing a hardening of the abdomen. Most times they are painful and usually are associated with the expulsion of the mucous plug. Each contraction can have duration of 90 to 120 seconds. Between contractions there is normally no pain. Home delivery must be considered when encountering two contractions every 10 minutes or 1 in every 5.
- Breaking of the waters, Sensation for the pregnant woman is like a pee, but if so then if the waters have broken delivery must occur within 24 hours.
- If the patient is unable to walk during labour consideration must be given to a home or ambulance birth.

The stages of labour are:

- Labour begins when the cervix dilates from 3-10 cm.
- The mother should be placed in an environment that is warm, comfortable, well lit, away from people and especially clean, the patient should be monitored and constantly controlled.
- You should time the rate between contractions.
- Prepare the materials needed for the delivery to be performed.

Expulsion period:

- It begins when the cervix is dilated to 10 cm (you may see the head in the birth canal) and it ends when the foetus is expelled completely to the exterior.
- The contractions occur about every two minutes and accompanying with a wish to push. The total time that this period may last varies depending on whether the woman is primiparous (first time birth) or multiparous (had births before). In the first case it can last up to 60 minutes, decreasing significantly for the multiparous.

Period of Delivery:

- This is the period from the time the child is delivered until the placenta is delivered spontaneously, as well as the egg membranes.
- It lasts approximately 30 minutes.
- It is important to the assessment of the bleeding woman, to take constantly vital signs using monitoring equipment such as an ECG, pulse oximetry, and sphygmometer.

- Provide maintain oxygen if required.
- Collaborate in techniques that may need to be carried out to the patient by medical staff primarily such as fluid administration.
- Never pull the cord to facilitate the delivery of the placenta.
- Bleeding decrease's significantly when the placenta is delivered.

False Labor or Braxton-Hicks Contractions	True Labor
Contractions are not regular and do not increase in intensity or frequency. Contractions come and go.	Contractions, once started, consistently get stronger and closer together. Change in position does not relieve contractions.
Pain is in the lower abdomen. Contractions start and stay in the lower abdomen.	Pains and contractions start in the lower back and “wrap around” to the lower abdomen.
Activity or changing position will alleviate the pain and contractions.	Activity may intensify the contractions. Pain and contractions are consistent in any position.
If there is any bloody show, it is brownish.	The bloody show will be pink or red and generally accompanied by mucus.
There may be some leakage of fluid, but it is usually urine and will be in small amounts and smell of ammonia.	The amniotic sac may have broken just before the contractions started or during contractions. A moderate amount of fluid will be present and may smell sweet, and fluid will continue to leak.

1.4. Childbirth Complications

1.4.1. Umbilical Cord Prolapsed

This is the presentation of the foetal cord, ahead of the babies' head, when the sac has been broken.

In this case, it is an extreme emergency. The situation is dangerous because the babies head will compress the cord during birth and cut off the circulation to the child. **Do not attempt to push the cord back into the vagina.**



A prolapsed umbilical cord is a life threatening situation for the newborn and must be treated in hospital.



In rare cases, an infant's limb, usually a single arm or leg presents first. This is a life threatening situation, and you must provide prompt transport for hospital delivery.



In a breech presentation, the buttocks are delivered first. Breech deliveries are usually slow, so you often have time to transport the mother to hospital.

There is usually time to get the patient to the hospital, your job is to try and keep the infants head from compressing the cord. Place the woman on a trolley in the “Trendelenburg Position” with her hips elevated on a pillow, alternatively, the mother may be placed in a knees-chest position, kneeling and bent forward facedown. Either of these positions are meant to help keep the weight of the infant off the prolapsed cord. Carefully insert your sterile gloved hand into the vagina, and gently push the babies head away from the umbilical cord (note this is the only time that you should ever actually place a hand into the vagina, You should maintain this position and continue to keep the pressure off the cord continuously throughout the transport to hospital and possibly until the operating room. Wrap a sterile towel, moistened with saline, around the exposed cord, give the patient high flow oxygen and transport rapidly.

1.4.2. Limb presentation

These are rare, you cannot successfully deliver an infant with limb presentation, you must transport the patient to hospital immediately, never push it back, never pull on it, place the patient on her back, with head down, and pelvis elevated, cover limb with sterile towel, give high flow oxygen to patient.

1.4.3. Breech presentation

These are usually found and adjusted during pre-maternity care, you should seek help.

1.4.4. Pre-eclampsia and eclampsia

These are two situations that may occur in pregnant woman who are in the 20th week of pregnancy that have high blood pressure readings above 140/90 mmHg. Symptoms with these features can also appear in multiple pregnancies with woman presenting with less than 20 weeks gestation.

Pre-eclampsia. May present in a lighter form, by figures of blood pressure below 160/110 mmHg. There may also be the presence of oedema. The more serious form is characterised by the presence of B.P. readings above

160/110 mmHg, decreased urine output in pregnancy, and the presence of visual and neurological disturbances. The patient may also present with a right upper quadrant or gastric area pain, there may also be present nausea and vomiting in many of these situations.

When **eclampsia** is established, in addition to the above there may be an occurrence of seizures.

Procedure

- Place patient in the three quarter prone position.
- Proceed with ECG monitoring, pulse oximetry, and B.P.
- Collaborate with the healthcare/Paramedic team based on the assessment that has been undertaken.
- If infusion is necessary prepare the peripheral lines, prepare materials for vene-puncture, two calibre catheters, 16g-14g sera 0,9% saline or ringer lactate systems and the stopcock with extension (this is not undertaken by Technicians in the UK only Paramedics).
- In case of seizures you must provide a safe environment, in order to prevent any possibility injury from nearby items. This should be treated as for any other type of seizure.
- Transport to hospital.

1.4.5. Bleeding and Hypovolemic shock

Metrorrhagia: this is an excessive discharge of blood from the womb, it may occur for the following reasons.

- Due to separation of the placenta from its implantation site in the uterus, before the mother is due to give birth, you may find abdominal pain, pain in the back and the presence of vaginal bleeding.

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- On presentation of the placenta, that is the total or partial of the placenta in front of the foetal presentation, if present after full placenta arrival, it may be a post partum haemorrhage, this is an emergency situation and requires additional support, elevate hips and legs to reduce flow and convey urgently to hospital.

1.5. Infant Care with Mother

Care techniques in most cases for a new-born specifically at the time of birth, will usually, be only routine care (drying, cleaning the air with gentle aspiration and prevention of heat loss).



Newborn: The Ambulance Technician should know how to help in-hospital birth.

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Use clean sheets and blankets. If at a house ask for clean towels or linen in good condition. If possible heat them in a microwave or with an iron, in order to be able to dry the new-born so that the baby receives heat through clothing.

It is important to gather all the necessary information about any risk factors that may have presented the mother during pregnancy.

Always unless a midwife is present always transport the patient to hospital, however, in some cases this may not be possible due to the birthing process being advanced and you cannot do anything but assistance in the same place (the house or vehicle).



Ambulance Mother and child: it is important wherever possible that the mother and child should go to the hospital together.

1.6. Care of the Mother

1.6.1. During birth

- Control the patient's anxiety, reassure her.
- Administration of oxygen therapy (if necessary).
- Disinfection of the perineum and placement of sterile drapes to create a zone of cleanliness as aseptic as possible, using the material available from inside the ambulance (Maternity Pack) or if necessary ask at the house for clean clothes, towels and sheets.
- Collaborate with health staff in making constant catheterisation if necessary.
- Respiratory Control: Be aware of when to inform the patient to push, this must be intense and maintained continuously in time for it to be effective, it is important to undertake this at the onset of the contraction: It is like pressing the abdominal and pushing as if to defecate.
- C: ECG monitoring, heart rate, BP, pulse oximetry, as required.
- Assist in the preparation of material to carry out the infusion routes for peripheral circulatory support.
- D: Assessment of level of consciousness.
- Create a warm atmosphere at the point of care in order to avoid hypothermia.
- Listen to the patient concerns and fears and try to reassure her. Note the presence of any external bleeding.
- Identifying signs that the mother is in hypovolemic shock.
- Between contractions, tell the mother that it is good to rest in order to regain strength for the next push.

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- At the time that the head is observed, the birth is imminent, it is important to place the right hand under the perineum to control the ejection force of the head; the left hand is placed on the occiput of the child in order that at the time of departure, this is done in a controlled manner and thus the appearance of tears in this area are avoided.

1.7. Assessment of the newborn

- Hold the baby as it is born and do not lift baby up onto abdomen.
- Suction mouth **first** then nose.
- UNLESS CRYING.
- Dry the baby and wrap in a warm blanket. Caution silver swaddler in a cold baby Check Respiration Rate / Heart Rate and be prepared to Resuscitate if necessary.
- Check the umbilical cord for cessation of pulse. Cord around Baby's Neck??? Cutting the Cord IF YES.
- Clamp with three clamps four fingers width from the baby, Place clamps 4,6,8 inches apart Cut between 6&8.
- **Monitor for bleeding** and if present place another clamp. Place gauze wipes on both ends of cord.

Apgar Scoring System. This is a standard scoring system used to assess the status of a newborn, the system assigns a number value 0-1-or2 to five arrears of activity, this should be calculated 1 minute after birth and five minutes after birth. Most will score 7-8 one minute after birth and 8-10 four minutes later.

Area of Activity	2	1	0
Appearance	Entire infant is pink.	Body is pink, but hands and feet remain blue.	Entire infant is blue or pale.
Pulse	More than 100 beats/min.	Fewer than 100 beats/min.	Absent pulse.
Grimace or irritability	Infant cries and tries to move foot away from finger snapped against sole of foot.	Infant gives a weak cry in response to stimulus.	Infant does not cry or react to stimulus.
Activity or muscle tone	Infant resists attempts to straighten hips and knees.	Infant makes weak attempts to resist straightening.	Infant is completely limp, with no muscle tone.
Respiration	Rapid respirations.	Slow respirations.	Absent respirations.



Neonatal Resuscitation Efforts. **A.** Chest compressions should be given with the hands encircling the infant and thumbs side by side. **B.** In very small infants you may have to over lap the thumbs. **C.** In larger infants, you may use the two finger technique, using the middle and ring fingers.

1.8. Delivery of Placenta

- Pain returns.
- Urge to bear down.
- Cord lengthens.
- A gush of blood can be expected 200 - 300 mls.
- Never pull cord.
- Do not wait on scene for delivery of placenta.
- If necessary enroute pull in to deliver placenta.
- Usually less than 250 ml blood loss pre delivery of placenta.
- Take placenta to hospital.
- Observe for heavy bleeding post delivery.
Note: Any bleeding in excess of 300ml may indicate a PPH, post-partum haemorrhage.
- The placenta may have torn away part of the wall of the uterus. This is a serious condition. Treat for hypovolemic shock.
- Consider: Uterine massage (only if uterus had not constricted) or Breast feeding (oxytocin).
- Rapid transport.