L02: Normal Labour and Delivery

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Updated: May 27, 2021
Reviewed: March 01, 2021

Introduction

In the out-of-hospital realm, childbirth is defined as the unplanned delivery of a newborn outside of a hospital, which may or may not require resuscitation. "Imminent delivery" is defined as the moment when the head, buttocks, or legs, of the baby become visible at the vaginal opening between contractions. This is also known as crowning and signals that delivery will occur within minutes.

Childbirth is a natural process and only a small number of cases will require aggressive intervention. The successful transition from intrauterine to extrauterine life depends on significant physiological changes that occur at birth, and although most newborns make this transition successfully, a small but significant number will require additional support, including resuscitation. Paramedics and EMRs/FRs must, therefore, prepare for the case where acute care and intervention are required. It is critical to remember that maternity cases involve at least two patients and both require assessment.

Essentials

- Labour consists of 3 stages:
  - 1st stage: Dilation of cervix by regular and painful contractions. This stage may last up to 12 hours.
  - 2nd stage: Birth of the neonate. This stage may last between 2 and 3 hours, but can also be much shorter in subsequent deliveries.
  - 3rd stage: Delivery of the placenta. This stage may last up to 1 hour.
- Signs of imminent and inevitable delivery include the following:
  - Delivery is imminent when contractions are less than 2 minutes apart and very strong.
  - Delivery is inevitable if the perineum is bulging, the head is crowning, or the patient complains of an urge to "push", "bear down", or "have a bowel movement".
- Uncomplicated/normal birth:
  - See Adult Childbirth - Imminent Delivery Algorithm in Additional Treatment section
  - The uncomplicated delivery:
    - Term gestation with a breathing and crying neonate exhibiting good tone.
    - Neonate stays with mother, skin to skin, continued observation, and maintain warmth.
  - Complicated/high risk birth:
    - → L08: Complications of Delivery (e.g., malpresentation, shoulder dystocia, cord prolapse)
    - → L07: Preterm Labour
    - → L09: Postpartum Hemorrhage
- Multiparity: Ensure that sufficient resources are assigned to each patient. Note that multiparity (twins, triplets, etc) often deliver preterm. Review CPG L07: Preterm Labour for additional information.
- Cord clamping: It is now accepted and preferred practice to delay cord clamping at least 2 minutes or longer. The practice is appropriate for healthy vigorous infants without birth complications. If resuscitation is required, the cord should be clamped immediately to facilitate the care of the neonate.
- In the event that neonatal resuscitation is required, follow the NRP principles.

Additional Treatment Information

- Patient assessment considerations:
  - Consider known malpresentation of fetus (e.g., breech)
  - Consider seeking consultation and additional resources as necessary
- General principles for active management of delivery:
  - Delivery should be controlled so as to allow a slow, controlled delivery of the neonate

- Support the neonate's head as required
- Check if the umbilical cord is around the neck; if it is, slip the cord over the head; if unable to free the cord from the neck, double clamp the cord and cut between the clamps
- Carefully hold the head with hands over the ears and lightly pull down to allow delivery of the anterior shoulder
- Gently pull up on the head to allow delivery of the posterior shoulder
- Slowly deliver the remainder of the infant
- If the neonate does not require resus, pass to mother for skin-to-skin contact; apply touque to neonate
- Instruct mother to encourage breastfeeding of neonate
- Clamp and cut umbilical cord after approximately 2 minutes; apply first clamp 10 centimetres from the neonate and second clamp 5 centimetres after the first; cut the cord between the clamps (if the mother's partner is available and the situation permits, offer for them to cut the cord)
- Calculate and record APGAR scores at 1 and 5 minutes

- Refer to NRP guidelines for neonatal assessment and resuscitation. See CPG M09: Neonatal Resuscitation for additional details.
- General principles for care of the mother:
  - The placenta will deliver spontaneously, usually within 30-60 minutes of the infant; do not force the placenta to deliver
  - Massaging the fundus may decrease bleeding by facilitating uterine contractions; this should be performed AFTER delivery of the placenta
  - Consider tranexamic acid in uncontrolled vaginal bleeding
  - Consider manual in utero pressure and packing
  - Midwives may give oxytocin or misoprostol for uncontrolled postpartum bleeding due to uterine atony

Referral Information

- All patients in labour should be conveyed to the nearest hospital unless delivery is imminent or the patient's primary care provider (i.e., midwife) is advising otherwise.
- Patients under the care of a midwife may refuse conveyance to a hospital following delivery. This is a discussion to have alongside all parties present with a goal of family centred decisions and care.

General Information

- The APGAR score is the tool most commonly used to assess neonates. The APGAR should be performed at 1 and 5 minutes of life.

Interventions

First Responder

- Provide position of comfort
- Keep patient warm and prevent heat loss
- If the decision is made to deliver in the field:
  - Assemble equipment, including a resuscitation area
  - Warm the environment, including towels and blankets if able; this should result in the room or space being uncomfortably warm
  - Position the patient:
    - Supine
    - Sims (lateral with knees to chest)
    - Alternate: will vary based on situation and what the patient desires
  - Delivery of the neonate (second stage):

- Allow the patient to push in coordination with contractions until crowning at of the vaginal opening appears - note that paramedics and EMRs are not trained to do internal vaginal exams to determine if the patient is fully dilated and effaced
- Control the delivery of the head by applying gentle pressure with the palm of your hand onto the fetal head and perineum; feel for nuchal cord
  - If nuchal cord present, gently lift it over the infant's head; DO NOT pull hard on the cord as avulsion can occur, gentle traction is acceptable
  - Clamping and cutting the cord may be necessary if it cannot be reduced; delivery must be completed quickly if the cord is cut
- Support the neonate's head and guide the delivery of the shoulders; gentle downward pressure towards the floor will assist the delivery of the anterior shoulder
  - After the anterior shoulder is delivered, direct the head upwards to help deliver the posterior shoulder
  - If shoulder dystocia is suspected, see →L08: Complications of Delivery

Post-delivery care of the neonate:

- Once the neonate is delivered: clear mouth then nose of secretions only if grossly contaminated; dry; stimulate; and reposition while ensuring warmth is maintained
- Place the infant on the mother's chest; apply touque to neonate
- Instruct mother to encourage breastfeeding of neonate
- The use of a food grade polyethylene plastic bag to place the neonate in has become an effective method to prevent hypothermia in both term and preterm neonates; cover the neonate up to the shoulders and do not secure the bag in any way around the neck
- Cord clamping:
  - Should be delayed at least 2 minutes in term and preterm vigorous infants
  - Place first clamp 10 centimeters from neonate and second clamp 5 centimeters after first; cut in between the clamps (if the mother's partner is available and the situation permits, offer for them to cut the cord)

Emergency Medical Responder – All FR interventions, plus:

- Consider inhalational analgesia
  - → E08: Pain Management
  - → Nitrous Oxide
- Routine suctioning of the mouth and nose is no longer recommended
  - If necessary, a 6 Fr catheter can be used; suction should be turned down to less than 100 mmHg
- Convey in a warm ambulance with the ambient temperature at 22 to 26 degrees Celsius
- Assess the infant:
  - APGAR at 1 and 5 minutes of life (see APGAR link in General Information section)
  - Normal vital signs for a newborn:
    - Temperature target is between 36.1°C and 37°C axillary
    - Heart rate - 120-160 beats per minute (can be palpated at the base of the umbilical cord or by auscultation)
    - Respiratory rate - 35-60 breaths per minute (should be counted over a full minute)
    - SpO_2: Target pre-ductal (right hand) SpO_2 after birth:
      - 1 minute: 60-65%
      - 2 minutes: 65-70%
      - 3 minutes: 70-75%
      - 4 minutes: 75-80%
      - 5 minutes: 80-85%
      - 10 minutes: 85-95%
    - Blood pressure can be measured using a neonatal-size blood pressure cuff in neonates with suspected cardiovascular or renal abnormalities, but is rarely performed on low risk infants
    - Blood glucose level - in healthy term neonates, routine blood glucose screening is not indicated

- Delivery of the placenta (third stage):
  - The placenta should naturally deliver on its own within 30-60 minutes; manipulation is not authorized
  - If delivered, the placenta and cord should be conveyed along with mother and neonate
  - Up to 500 mL of blood loss from mother is normal with childbirth; anything in excess of that amount, refer to L09 Postpartum hemorrhage
  - Palpate for contracted fundus; consider performing fundal massage

Primary Care Paramedic – All FR and EMR interventions, plus:

- Consider IV access as appropriate
  - → D03: Vascular Access
- Consider antifibrinolytic therapy (tranexamic acid) for postpartum hemorrhage
  - → L09: Postpartum Hemorrhage
  - → Tranexamic Acid
  - CliniCall consultation required prior to administration of tranexamic acid.
  - Neonates at risk of hypoglycemia (< 2.6 mmol/L) should have a sample obtained within 4-6 hours and neonates with diabetic mothers < 1 hour
  - Breastfeeding is first line treatment if the neonate is able to latch and suckle

Advanced Care Paramedic – All FR, EMR, and PCP interventions, plus:

- Consider IO access when appropriate
  - → PR12: Intraosseous Cannulation
- Consider pain management
  - → E08: Pain Management
- Routine early tracheal intubation and suctioning in the presence of meconium with baby that is not vigorous is no longer recommended

Critical Care Paramedic – All FR, EMR, PCP, and ACP interventions, plus:

- Active management of the third stage of labour:
  - Oxytocin as soon as the infant's anterior shoulder is delivered
  - Uterine/fundal massage
  - Gentle traction on umbilical cord
- Umbilical cord access
- Airway intervention
- Drug therapy:
  - Uterotonic agent
  - Blood products

Evidence Based Practice

Childbirth

Supportive

Neutral

- Trach. Suctioning via ETI

Against

Childbirth/Post Natal Mother Care

Supportive

- Syntocinon

Neutral

- Uterine Massage

Against

Childbirth

Supportive

Neutral

Against

References

1. Fernandes CJ. Neonatal resuscitation in the delivery room. In UpToDate. 2020. [Link]
2. McKee-Garrett TM. Overview of the routine management of the healthy newborn infant. In UpToDate. 2020. [Link]