

# L01: Maternity (General)

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## Introduction

Pregnancy is the process of human growth and development while in utero. It is often identified a few weeks after conception and lasts on average 37 to 40 weeks, which is considered full-term. The process is divided into 3 trimesters - the first trimester ranges from week one to week 12, the second trimester ranges from week 13 to week 28, and the third trimester ranges from week 29 to week 40+. Patients may present with various complaints at any point along the course of the pregnancy.

## Essentials

- Pregnancy is a natural process and should be treated as such by health care providers as long as the patient and the unborn child remain stable and have been identified as low risk.
- Labour and delivery:
  - 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 infant; 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
  - Imminent delivery:
    - [→ L02: Normal Labour](#)
  - Trauma in pregnancy:
    - [→ L10: Pregnancy and Trauma](#)

## Additional Treatment Information

- When conveying a pregnant patient, particularly during the third trimester, the patient should be positioned appropriately to avoid compression of the inferior vena cava by the uterus, which can compromise venous return and cardiac output. This can be accomplished through left-lateral positioning, the use of a hip wedge or board, or manual uterine displacement. This positioning is unnecessary during delivery, when the patient can be placed supine.
  - If the patient requires spinal motion restriction, they can be packaged and tilted to 15° as an entire unit
- Multiple clinical and non-clinical factors must be considered in deciding whether to convey or attempt delivery on scene, including high or low risk delivery, the environment for delivery, conveyance time to next level of care, and road and weather conditions. If providing conveyance and delivery becomes imminent, stop the ambulance if and when safe to do so.

## Referral Information

- All stable pregnant patients should be referred to their primary care provider and may choose to stay at home.
- Any unstable pregnant patients, or presenting with concerning signs and symptoms such as vaginal bleeding at any point during the pregnancy, should be conveyed to the emergency department regardless of the gestational age of the embryo or fetus.
- Collaboration between midwives and paramedics or EMRs/FRs:
  - Registered British Columbia midwives can be the primary care provider during maternity and delivery calls; their scope of practice with respect to neonatal resuscitation exceed those of ACP providers
  - Responsibility for maternal resuscitation remains with paramedics; midwives do, however, have an expanded scope of practice for medications
  - Patients under the care of a midwife may refuse conveyance to a hospital prior to or following a delivery; this is a discussion to have with all parties present with the goal of patient and family centred decisions and care, while keeping in mind the health of the mother and neonate

## General Information

- Definitions of note:
  - Term: 37 - 40 weeks gestation
  - Pre-term: 24 - 36 weeks gestation
  - Show: vaginal discharge of mucus and blood (i.e. mucus plug)
  - Spontaneous rupture of membranes: outpouring of normally clear or pinkish fluid; can occur from prior to onset of labour until baby is born
  - Meconium-stained amniotic fluid: greenish or brown stained amniotic fluid visible in ruptured membranes
  - Imminent birth presentation: active pushing or grunting; rectal pressure (e.g., urge to use bowels or bladder); anal pouting or bulging perineum; strong unstoppable urge to push; presenting part on view or crowning; or patients stating, "I'm going to have the baby," or "It's coming now"
  - Precipitous birth: unusually rapid labour, less than four hours long with extremely quick birth; the rapid change in pressure from intrauterine life may cause cerebral irritation
- Patients who are pregnant experience a number of physiological changes. Of relevance to paramedics and EMRs:
  - Cardiovascular
    - Blood pressure experiences minimal changes, though there is an initial decrease in the first and second trimesters with a return to baseline in the third; systolic blood pressures above 160 mmHg and diastolic pressures greater than 110 mmHg are considered significant
    - Heart rate elevates by 15-20 beats per minute; normal heart rate in pregnancy is 80-110 beats per minute
    - Cardiac output increases by 30-40% to a normal volume of 6-7 L per minute during pregnancy
    - Non-specific ST segment changes are sometimes seen on ECG, along with Q waves in leads III and aVF and atrial and ventricular ectopic beats
    - Systemic vascular resistance often decreases due to the effects of progesterone
  - Respiratory
    - Respiratory rate increases by 15% (2-3 breaths/minute)
    - Oxygen demand increases by 15-20%
    - Tidal volume and minute ventilation increase by 25-50%
    - Arterial pH rises to 7.40-7.45
    - PaO<sub>2</sub> increases by 10 mmHg
    - PaCO<sub>2</sub> decreases to 27-32 mmHg
  - Hematological
    - Blood volume increases by 30-50%
    - Hemoglobin falls to 100-140 g/L
    - Hematocrit falls to 32-42, producing physiological anemia
    - Plasma volume increases by 30-50%
  - Health care providers often use the acronym GTPAL to assess pregnant women:
    - G - Gravida: number of previous pregnancies
    - T - Term: number of infants born between 37 and 40 weeks gestation
    - P - Pre-term: number of infants born before 37 weeks gestation
    - A - Abortions: number of abortions (spontaneous or therapeutic)
    - L - Living: number of living children
  - A focused maternal history, in addition to routine history and examination, is essential on every maternity or delivery call and includes the following information:
    - Current pregnancy:
      - Current gestational age?
      - Multiple births expected?
      - Membranes ruptured or intact? If ruptured, colour of amniotic fluid?
      - Is the patient currently having contractions? Assess duration, intensity, and frequency.
      - Does the patient have an uncontrollable urge to push?
      - Has the patient felt fetal movements? If so, when were the last?

- What hospital interventions, if any, have been performed?
- Are there any anticipated problems or complications?
- Has the patient had any prenatal care?
- Any current complaints? Vaginal bleeding, hypertension, pain, trauma, etc.
- Previous pregnancies:
  - Any/number of previous pregnancies?
  - Prior caesarean sections/interventions?
  - Complications/problems with previous pregnancies?
  - Length of previous labours?

## Interventions

### First Responder

- Place patient in position of comfort, attempting to reduce pressure on the inferior vena cava
- Keep patient warm and prevent heat loss
- Communicate situation to follow-on responders

### Emergency Medical Responder – All FR interventions, plus:

- Detailed assessment of the patient, which includes a detailed history of the current and all previous pregnancies
- Convey the patient in the left lateral position whenever possible to reduce pressure on the inferior vena cava, or in a position of comfort
- Consider analgesia:
  - [Nitrous oxide](#)
- Consider request for additional resources
- Prepare for delivery and potential neonatal resuscitation

## Evidence Based Practice

Perinatal Mother Care

### Supportive

### Neutral

- [Oxygen](#)

### Against

## References

1. Ambulance Victoria. Clinical Practice Guidelines: Ambulance and MICA Paramedics. 2018. [\[Link\]](#)
2. Mandy GT. Incidence and mortality of the preterm infant. In UpToDate. 2020. [\[Link\]](#)
3. Prager S, et al. Pregnancy loss (miscarriage): Risk factors, etiology, clinical manifestations, and diagnostic evaluation. In UpToDate. 2020. [\[Link\]](#)

