

Free shipping: Precipitous Delivery

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Board Bombs

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Introduction

Even in the US, hundreds of deliveries per year occur precipitously in emergency departments and even outside the hospital setting. In the majority of cases, all goes well and thankfully mother and baby have good outcomes. It is interesting to think for tens of thousands of years we delivered babies outside the hospital setting prior to the advent of modern medicine, but this was not without cost. Infants died in droves, and maternal morbidity & mortality was substantial.

This review serves as a guide to the emergency physician in managing precipitous labor. We wanted to make sure we covered the most up-to-date information, so we asked a friend to join us. Dr. Briggs (senior) is an MFM specialist with >25 years of community experience. You can read more about him at the end of the review. If you are working in any ED, there is a high chance in your career at some point you will manage an unexpected labor & delivery, often with no OB/GYN available. Time to enter the nightmare.

Precipitous delivery = labor no more than 3 hours from the onset of regular contractions.

Cardinal movements of the fetus during the birth process are commonly tested on EM boards. No joke, you should know these.

Head flexion and descent → internal rotation → extension → external rotation → delivery of anterior shoulder → delivery of posterior shoulder

First step: **Call for help.** “Call for transfer” is more likely to be the first option considered by many EM physicians, but this review assumes the mother is *active labor* (see below for details what that means). Hitherto, you are stuck managing this situation. Calling for help is quite obvious to anyone who is not an obstetrician. Don't forget to call pediatrics (neonatology is preferred if available).

Rapid OB/GYN history: you can do this fast and it helps you understand any prior issues the mother may have had.

Gestational age: if only the estimated due date or the last menstrual cycle is available, you can use a calculator to find the current age. These are all over the internet and ([ACOG Calculator](#)). Let's say you are unable to talk to the patient due to their clinical condition or language barrier; palpate the abdomen for the uterine fundus. For example, if you measure using your fingertip 24 cm above the pubic symphysis at the uterine fundus, the pregnancy is ~24 weeks in gestational age. This method works best in those with a body habitus that allows this form of measuring.

Simplifying this more, if palpable above the umbilicus, then the pregnancy is likely >20 weeks. GA is critical because it prepares you for how to anticipate the type of delivery and the neonatal care needed. Any fetus born <24 weeks will have high morbidity and low survival rates.

Gravidity (number of prior pregnancies) and parity (offspring of those pregnancies >20w0d, summarized below): remember this cool mnemonic for asking about G's and P's. “Florida Power And Light (Full term, Pre-term, Abortions, Living)”. For the record, ectopic pregnancies do not count.

Medical/Obstetric problems: ask about previous c-sections (prior classical incisions on the skin carry an ~8% future risk of rupture), any present pregnancy fetal anomalies, maternal bleeding issues, preeclampsia, gestational or chronic hypertension, placental abruption. Ask about penicillin allergies (relevant for GBS prophylaxis).

GBS Prophylaxis

If you think the patient is <37w gestational age, and she has no *serious* allergy, 5 million units of penicillin G should be given immediately for GBS prophylaxis. If the patient is allergic to penicillins, give cefazolin 2g IV initially. These antibiotics will need to be re-dosed, but you can make a difference early. If the patient is *sure* of their due date and is >37 weeks, or you have their due date in the EMR, then antibiotics are unnecessary. Any fever on assessment could be an intra-amniotic infection and obviously requires immediate antibiotic therapy.

Determine rupture of membranes: if convinced the patient has ruptured the amniotic membrane, and if this occurred >18 hours, start antibiotic coverage ASAP. There is a high risk of GBS.

Rapid assessment: Check the BP. This is critical. If SBP >140 or DBP >90, have a high suspicion for preeclampsia in the patient who does not have previously diagnosed chronic hypertension. Further check for degree of proteinuria, headache, blurry vision, chest or epigastric or RUQ pain are suggestive of preeclampsia. Ask the patient if she has hand or facial edema. If elevated BP plus one of these is present, the patient requires prompt magnesium drip even as delivery is occurring. 6g loading dose over 20 minutes, followed by 1-2g per hour based on serum creatinine.

Beside ultrasound should be rapidly performed prior to any vaginal examination, in addition to patient history, so as to avoid examining a placenta previa or low-lying placenta which may result in vaginal bleeding. Look for vertex positioning of the fetus (headfirst) and look for position of the placenta. Placental previa can be rapidly identified using ultrasound. If present, the patient cannot proceed with vaginal delivery and needs a c-section.

Only after you do ultrasound you can do a vaginal exam to feel for cervical dilation, presence of fetal head at cervical opening (crowning), and presence of cord prolapse.

If there is a cord prolapse, where the umbilical cord slips down in front of the fetal head, stop right there and arrange for c-section. Delivery is contraindicated as the fetal head compresses the umbilical cord, cutting off the fetus' oxygen supply. Elevate the presenting part (fetal head) with your hand, shielding the umbilical cord from compression. You or an assistant need to be prepared to do this for quite some time until help arrives, and the fetus is delivered in OR.

Beside ultrasound can also assess fetal heart rate (normal 110-160). Fetal heart monitors and tocodynamic monitoring should be applied to mother if available. If no monitoring is available, perform FHR checks every 5-10 minutes.

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The ultimate question is whether or not the mother is near delivery or you have time to work with.

Is the mother voluntarily pushing with her contractions? If yes, then she is likely in the second stage of labor (dilated cervix), and about to deliver.

Is the fetus visible and beginning to emerge from the vagina? This indicates delivery is imminent within minutes (median time is 30 minutes for the 2nd stage of labor in nulliparous women; 12 minutes in multiparous women).

If you see a breech (3% of all deliveries) or if the amniotic sac is visible, **do not touch**. Frank breeches (butt first), and footling breeches (single or both legs are extended into the canal), are both difficult to manage (the latter being a nightmare) and are outside the scope of this review. Breech deliveries should never deliver with traction.

Setup the room for delivery: you want as large a room as possible. Precipitous deliveries can really make ED staff anxious, so as the physician it is your job to control the room and manage it as calmly as possible. Remove patient's clothing, properly place in a gown. Ensure proper lighting, get sterile gloves and lots of absorbent pads to place under the mother. Try to get a pelvic bed with stirrups for mother.

The best position is a semi-sitting one for mother, with hips flexed and abducted, knees flexed (lithotomy position).

Many hospitals with birthing capability will have a standard birthing kit that can be delivered to bedside.

If you do not have this, quickly have these supplies assembled at bedside: lots of gauze sponges, sterile gowns and gloves, sterile clothes, 2 sterile clamps and sterile scissors to cut the umbilical cord, red top tube to collect umbilical blood from the placental end of the cord, clean towel/sheets for the baby, warm blankets for mother, bucket for the placenta and cord.

Delivery procedure

1. Mother will feel the need to bear down and push according to her own reflex needs in response to the pain of contractions and the pressure from the fetal head. Ask her to pant through the peak of her contractions, resting in between with normal breathing. This may buy you time as you set up and if you are trying to wait for help. After you have gowned, sit down on the stool in front of the mother. **Never** take your eyes off the perineum, especially if she is pushing. You'd be surprised how fast these babies move through the canal out of the vagina.
2. If crowning is present or fetal head is visible, there's nothing stopping delivery. It's time to control and guide the delivery. Your main goal now is to safely guide the fetal head through descent and avoid causing vaginal trauma.
3. Place one hand on the crowning portion of the fetal head and apply very light pressure to maintain the head in a flexed position, slowing its descent. The fetal head most commonly faces the mother's back. Never pull on the fetal head. Never touch the baby's butt if frank breech.
4. After delivery of the head, it normally rotates to one side. Immediately feel for a nuchal cord (umbilical cord around baby's neck). If it is loose, unloop it from the head. If it is tight and you can barely fit your fingers under it, double clamp and cut it. However, if you do the latter, remember that you have now cut off the baby's blood supply.
5. Delivery of shoulders: within the next push, guide the delivered head downward so that the anterior shoulder slips under the symphysis pubis and delivers, then guide the head upward to deliver the posterior shoulder over the perineum. If the shoulder does not deliver easily, you might have a shoulder dystocia, a rare but critical obstetrical emergency. Have an assistant sharply flex mother's thighs and have mother push again (McRoberts maneuver). At the same time, apply aggressive suprapubic pressure with your palm to put direct force on the fetal anterior shoulder. These two methods are the most successful and relieve 90% of shoulder dystocias.
6. Once the head and shoulders are delivered, the body should come easily. Hold the baby properly: one hand around the upper back and cupping the nape of the neck with slight neck extension to encourage breathing, its body supported by your forearm. Cradle the baby against your body. These are slippery little ones! Do not drop any!
7. Perform proper neonatal resuscitation as indicated. Gently use bulb suction only. Don't use wall/catheter suction. This is in another review.
8. Delivery of the placenta. **Be patient. Never** pull excessively on the umbilical cord. Placental separation occurs naturally within 10 minutes or less of baby delivery. If it's been 10 minutes and it has not yet delivered, or there is no cord lengthening, start *gentle* traction with the mother pushing. Some cases can take up to 30 minutes. There is no benefit of rushing this process as long as there is no maternal hemorrhage. Cord avulsion may occur and makes your day a lot worse as you must manually enter the uterus and remove the placenta. Signs that the placenta is being separated from the uterine wall: gradual lengthening of the cord from the vagina, gush of blood from the vagina, change in shape of the fundus.
9. Start IV Pitocin once you are convinced the placenta is detaching (20 units in 500 mL crystalloid over 1 hour followed by a 2nd dose). Pitocin causes the uterus to clamp down and uterine vessels to vasoconstrict. Massage the uterine fundus which should feel firm. A boggy, flabby fundus that does not change in size suggests atony, the most common cause of maternal hemorrhage.
10. What if there is significant maternal bleeding? Besides atony (#1 cause overall causing 85% of postpartum hemorrhage), look at the vagina for evidence of tears and significant lacerations from delivery. We advise to wait for an obstetrician and not repair these yourself. Direct pressure is fine until help arrives. Another cause of postpartum hemorrhage is retained products. Ultrasound can really help here. The uterus should have a thin endometrial stripe on US after placental delivery. If this is not seen, be concerned for retained products which require manual removal by hand. Again, you may want to wait for an obstetrician and in the meantime may pack the area to tamponade bleeding as you wait for help.

Dr. Rodney Briggs is board certified in maternal fetal medicine, with over 25 years of experience, including director of MFM at Maricopa Medical Center in Phoenix AZ, Director at Rockford Memorial Hospital in Rockford, IL, and faculty appointments at Northern Illinois University, University of South Carolina, and University of Louisville.

References: for a complete list of references please visit our website under this topic's heading. We do not want to waste paper printing them! (We know your hospital is probably responsible for wasting an equivalent of an acre from the rain forest daily).