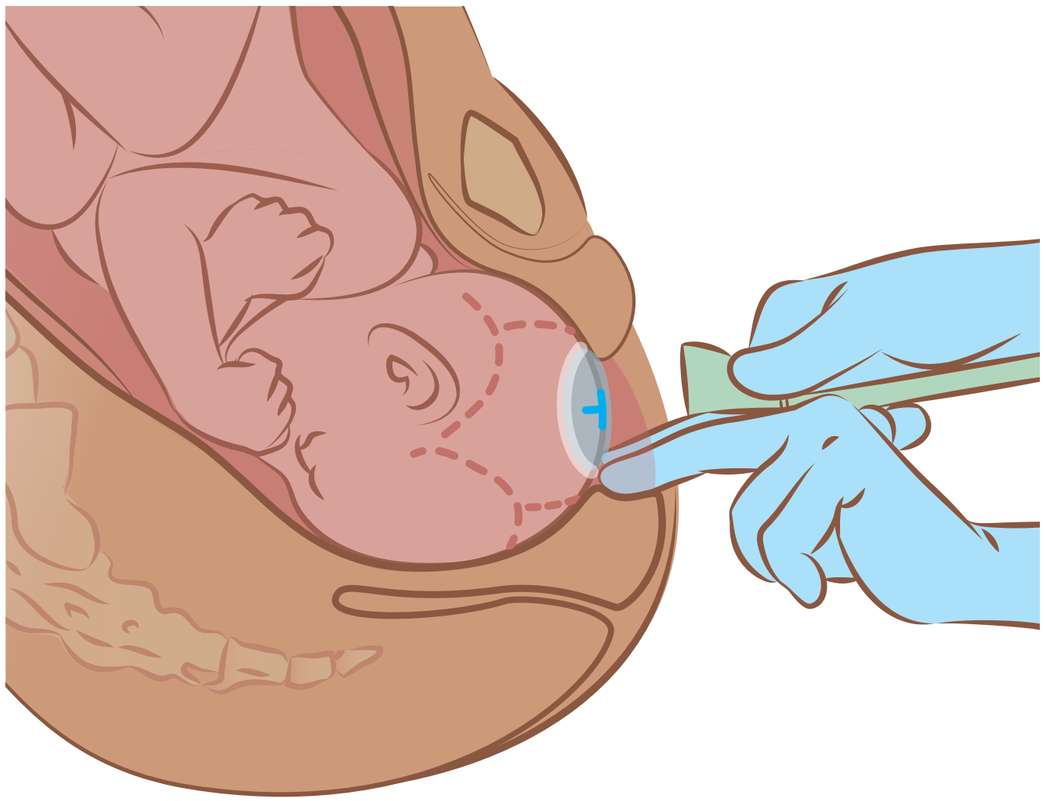
October 2022

Helping Mothers Survive

Vacuum-Assisted Birth

Flip Chart



NOTE: *All providers must complete the modules on "Essential Care for Labor & Birth (ECL&B)" and "Prolonged & Obstructed Labor" (P&OL) before attempting this module.*

FIGO International Federation of Gynecology and Obstetrics
the Global Voice for Women's Health

International Confederation *of* Midwives
Strengthening Midwifery Globally

UNFPA

American Academy of Pediatrics
DEDICATED TO THE HEALTH OF ALL CHILDREN®

jhpiego
Saving lives. Improving health. Transforming futures.

For the facilitator

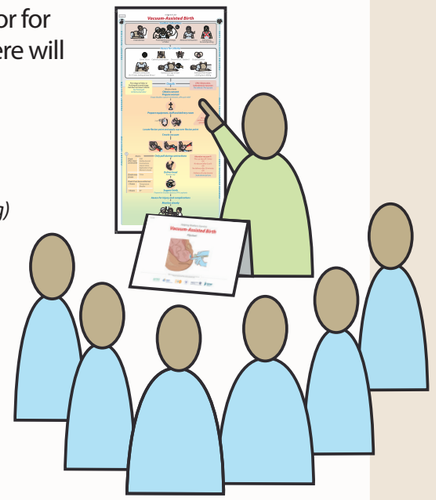
How to facilitate hands on training and ongoing practice

1 Before the training

- Plan for training with leadership and local organizers well in advance. Follow local guidelines as to who can do vacuum and under what clinical and facility decisions.
- Visit www.helpingmotherssurvive.org and hmbs.org to find the tools to help you prepare for and carry out training. You can download learning modules, a preparation checklist, sample agendas and other useful resources.
- Review the Laerdal video showing how to demonstrate a vacuum-assisted birth using MamaBirthie and practice the demonstration.
- Locate the vacuum device used in the facility and make sure you have the operating guidelines and how to assemble/disassemble, clean, and sterilize the device.
- Review service delivery data and documentation practices with facility management so you know the strengths and gaps.

2 Arrange materials and equipment and put up the Action Plan

- You will need 1 practice station, facilitator and birthing simulator for every 3-4 learners. If you can have fewer learners per group, there will be more time for hands-on work.
- Set up video with sound if you are able to use video.
- Ensure you have the following at each practice station:

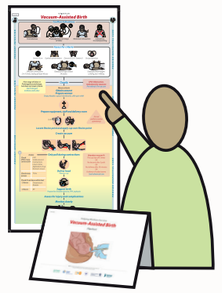


- *Pregnancy wheels or calendars*
- *Pens/pencils, paper, blank partographs and/or client records*
- *BP machine*
- *Stethoscope (adult / newborn)*
- *Thermometer*
- *MamaBirthie and BabyBirthie*
- *White skull (comes with MamaBirthie)*
- *Cervical inserts (comes with Mama Birthie)*
- *Gloves (clean and sterile)*
- *Fetoscope/Doppler and ultrasound gel*
- *Measuring tape*
- *Vacuum extractor and cups*
- *Soap or alcohol based hand rub*
- *Videos and projector/laptop (if using)*
- *Towels, baby hat, and blanket*
- *Scissors and/or blade*
- *Hemostats, clamps, ties for cord*
- *Basin/receiver for placenta*
- *Personal protection for provider*
- *Mock oxytocin, ampicillin, gentomycin, syringes and needle*
- *Suction device*
- *Ventilation bag and mask for baby*
- *Clock/watch*
- *Container for safe sharps disposal*
- *Gauze*

3 Welcome learners and identify level of knowledge and skills

- Welcome learners when they arrive.
- Hand out the Knowledge Assessment to be completed.
- Evaluate the learners and give feedback in a way that encourages learning.

4 Introduce the module and learning objectives



- Introduce the learning materials, including the Action Plan.
- Follow the content outlined in the Flip Chart.
- As you teach, point out where you are on the Action plan. Review how you got to each step to reinforce steps in the Action plan.
- Always emphasize and model respectful care and good communication.

5 Engage every learner in discussion and practice

- As you explain and demonstrate, involve learners by inviting discussion. Engage them in skills practice, simulations and role-plays.
- Use the "Discuss" questions to identify local problems and find local solutions to achieve the best care possible.

6 Evaluate learners

- Use the Knowledge Assessments and OSCEs for each module to check knowledge and skills

7 Encourage continued practice and quality improvement

- Help learners plan changes that will improve care in the facility.
- Identify 2 providers at each facility to help their peers practice after training.
- Use the plan for LDHF practice and quality improvement activities found in the back of the Provider Guide.
- Register your session information - what module, how many participated, where and when at www.helpingmotherssurvive.org

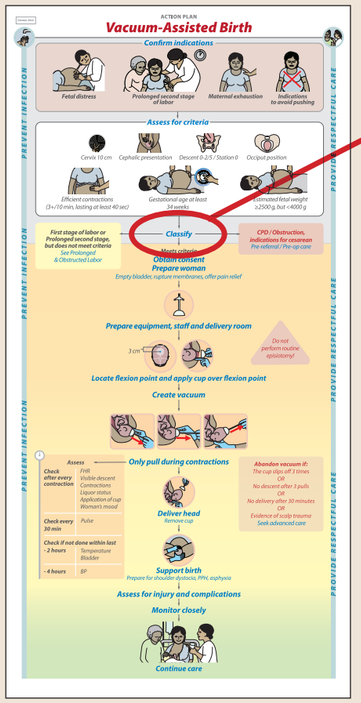
For the facilitator

How to use the course materials

NOTE: All providers must complete the modules on "Essential Care for Labor & Birth (ECL&B)" and "Prolonged & Obstructed Labor" (P&OL) before attempting this module.

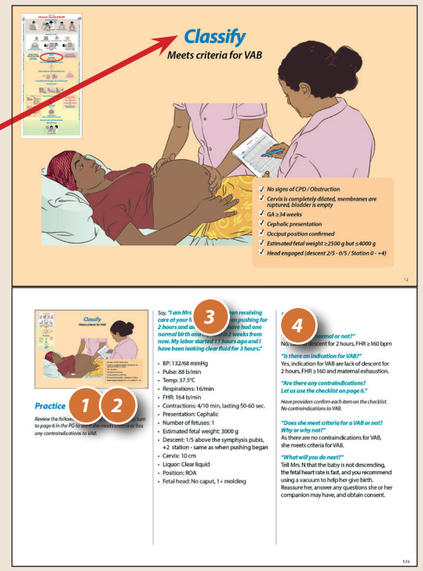
Action Plan

Ask a participant to point out the relevant action.

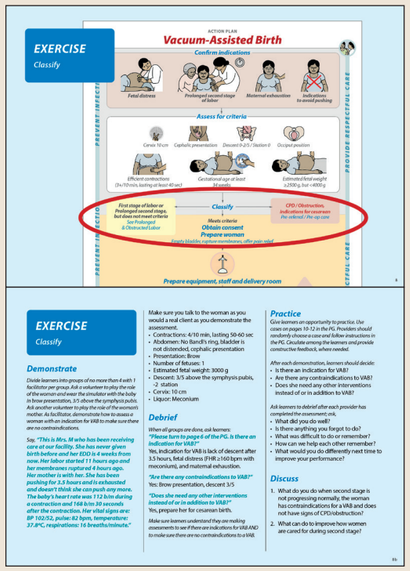


Flip Chart

Use illustrations and text to teach the action.

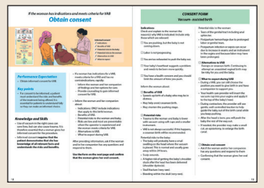


Practice the sequence of the Action Plan using the practice exercises.



Provider Guide

Identify, plan for, and address changes that will improve care in the facility.



LDHF practice

Use the LDHF sessions in the back of the Provider Guide to ensure ongoing practice in the facility.

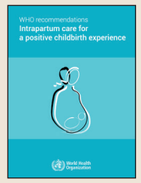
Additional resources

WHO policy guidance on integrated antimicrobial stewardship activities>

WHO recommendation on Routine antibiotic prophylaxis for women undergoing operative vaginal birth>

World Health Organization's Quality of Care Framework>

Survive & Thrive Quality Improvement Workbook>



https://apps.who.int/iris/bitstream/handle/10665/260178/9789241550215-eng.pdf?sequence=1

Scan QR Code

Use the camera if you have an Iphone, or download the QR Code App to go directly to the Helping Mothers Survive website.

www.helpingmotherssurvive.org

1 **2**

Explain and demonstrate

Explain: "Need to know" information to cover during this session. Involve participants by asking questions.

Demonstrate: Skills will be presented by video. If videos are not shown, give live demonstration as described and proceed to practice or the next section as directed.

3

Practice

Providers repeat newly learned or refreshed skills with feedback. Spend more time practicing than talking and use the group practices to ensure skills are mastered. Encourage self-reflection, feedback, and review of actions to improve performance (debriefing).

4

Discuss

Honor providers' experiences by encouraging them to share. Explore what is actually being done in their facility (Is this what you do now? Why or why not?). Identify ways to overcome barriers and put new skills into practice.

5

Knowledge check

Knowledge checks provide an opportunity to review and reinforce information learned.

Explain

Start with a story

Say to learners, ***"Close your eyes and imagine that a woman is referred to your facility for prolonged second stage with fetal distress. You refer her to the District Hospital".***

(Pause)

"She has a vacuum-assisted birth (VAB) at the referral hospital but, unfortunately, the baby was stillborn."

Pause again to allow learners to reflect.

Say, ***"Open your eyes. How do you feel? Have you seen a stillbirth because providers could not do a VAB for fetal distress?"***

Allow for response. Say, ***"Close your eyes again and imagine that you are caring for a woman. When she is in second stage the FHR drops to the 90's and does not come back to normal. You were trained to do a VAB and can identify that this woman is a good candidate. You help her to have a successful vaginal birth assisted with vacuum and she has a healthy baby girl."***

(Imitate a baby crying.)

Ask, ***"Now how do you feel? Would anyone like to share?"***

Thank learners and say, ***"Every woman needs a skilled provider during labor and birth to quickly identify and manage problems. Both the woman and her baby depend on you. Every one of us can make a difference."***

"Today we are going to review knowledge, skills and decision-making when the second stage of labor is not progressing or if the fetus is in distress in late second stage. Let us get started!"

Helping Mothers and Babies Survive

Helping Mothers Survive (HMS) and **Helping Babies Survive (HBS)** modules build the capacity of all providers to give compassionate, routine and lifesaving care to women and babies. If you are attending this training, you will have already had HMS Essential Care for Labor & Birth and HMS Prolonged & Obstructed Labor. Those two modules are the building blocks for VAB.

HMS learning materials:

Action Plan: a graphic job aid to help providers identify indications for a VAB, assess if a woman meets criteria for a VAB, decide what care the woman needs, perform a VAB if there are indications, she meets criteria and has no contraindications, and manage problems when performing VAB.

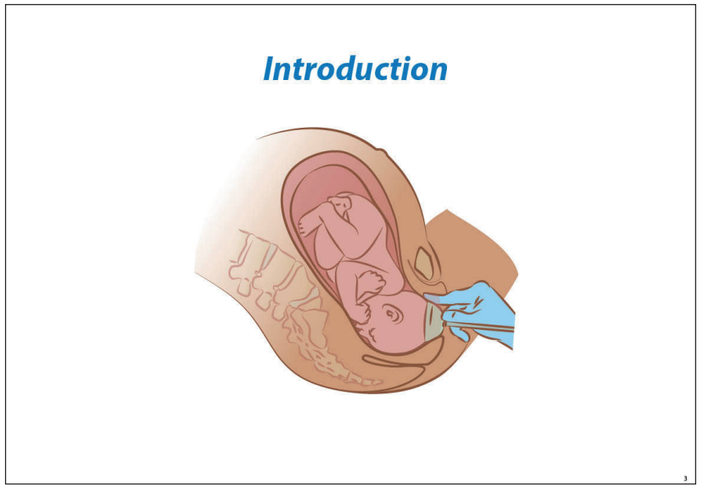
Flip Chart: used for instruction

Provider Guide: includes checklists, more information and help for ongoing practice. We will use this today for some activities.

Say, ***"After today's session, you will continue to do short practice sessions and other activities with a peer from your facility to help keep skills fresh."***

Say, ***"As we go through the day, we will write down any areas that may come up as challenges for us at this facility. We will revisit these items together later. Could a volunteer please agree to write these for us as they come up?"***

You can make a difference



Explain

A vacuum-assisted birth (VAB) is birth of a baby with the help of an obstetric vacuum. The vacuum puts traction on the fetal head to assist pushing efforts.

Prolonged second stage of labor can increase the risk for PPH, sepsis, uterine rupture, fistula, fetal hypoxia and birth asphyxia. These are major causes of perinatal and maternal morbidity and mortality.

When used appropriately, VAB can prevent these complications by shortening the second stage of labor. When selected for the right woman, VAB can also help avoid cesarean birth in some cases. Cesarean birth increases the risk of maternal and perinatal complications in the current and subsequent pregnancies compared to assisted vaginal birth.

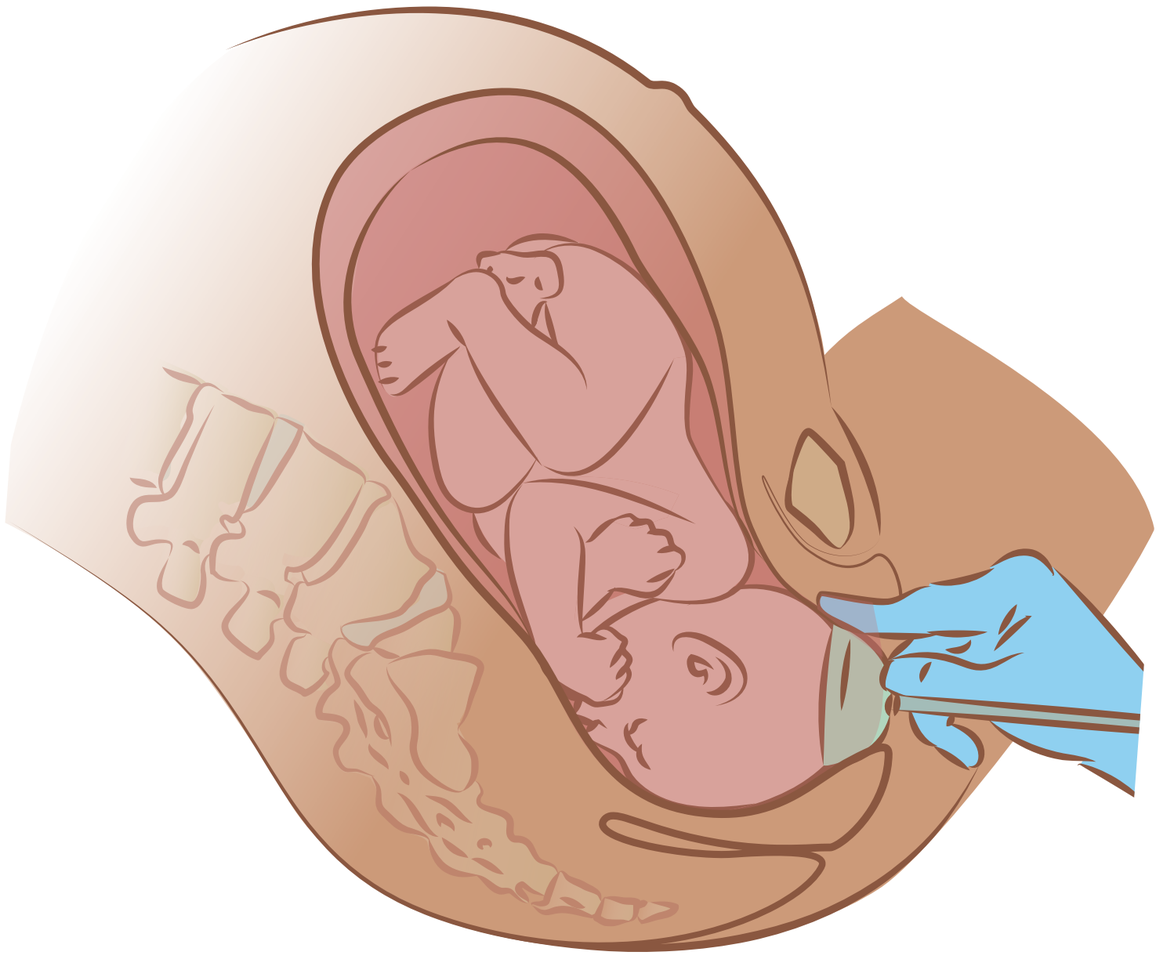
VAB is a life-saving procedure when used by clinicians who can confidently and competently:

- identify appropriate indications for VAB
- assess a woman to ensure she meets all criteria for VAB
- identify contraindications to performing a VAB
- perform the procedure
- manage any complications from VAB

Important definitions for this module:

- **Indications for VAB:**
  A sign or condition that suggests a VAB is appropriate.
- **Criteria for VAB:**
  Findings that must be present to perform VAB if the woman has an indication for VAB.
- **Contraindications to VAB:**
  A condition that indicates VAB should NOT be done even if there is an indication.

Introduction



Discuss

Ask learners, ***"Please take a minute to think about what you learned about respectful care, communication, and infection prevention in previous modules. How can we use what we learned when caring for women with prolonged second stage or who may need a VAB?***

Some examples:

Respectful care

- A good relationship between the woman and her provider is important to ensure she understands why VAB is being recommended so she can give informed consent.
- A good experience with a provider who assists her birth with a vacuum will empower and comfort her rather than decrease her self-confidence or self-esteem.
- A positive birth experience helps create a culture of confidence in birthing services at your facility even if there are complications.

Emotional support

Providing emotional care is especially important when conducting a VAB because:

- Women who require VAB may feel they have "failed". They may be anxious and afraid for themselves or their baby.
- This may be the first time a women learns about VAB and she may not know any friends or family who have had one.
- If she is too anxious or afraid, she may not be able to help you assist her birth with a vacuum.

Communication

Good communication is important for a successful VAB. Good communication must be between:

- Providers and the woman and her companion
- All providers caring for the woman during VAB
- Providers in the delivery room and providers from other services – newborn care, operating theater, referral facilities.

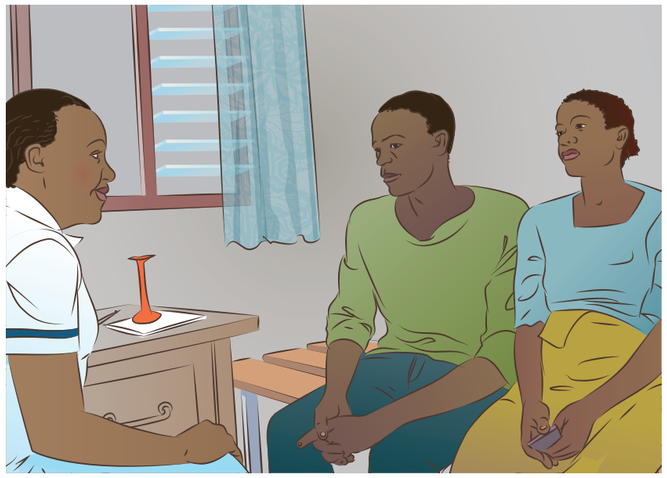
Infection prevention

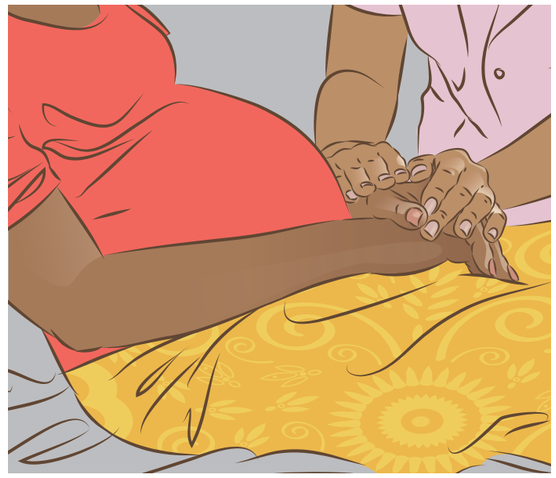
Women who have a VAB are at greater risk of infection because an instrument is being introduced into the vagina and providers will do more vaginal exams to assess position, locate the flexion point and apply the cup.

To reduce the risk of infection ensure:

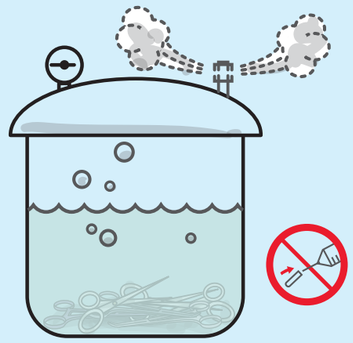
- Clean delivery room, table and supplies
- Clean hands
- Sterile gloves
- Clean perineum
- Sterile / High-level disinfected vacuum cups, tubes, and machines

Respectful care, Emotional support, Communication and Infection prevention

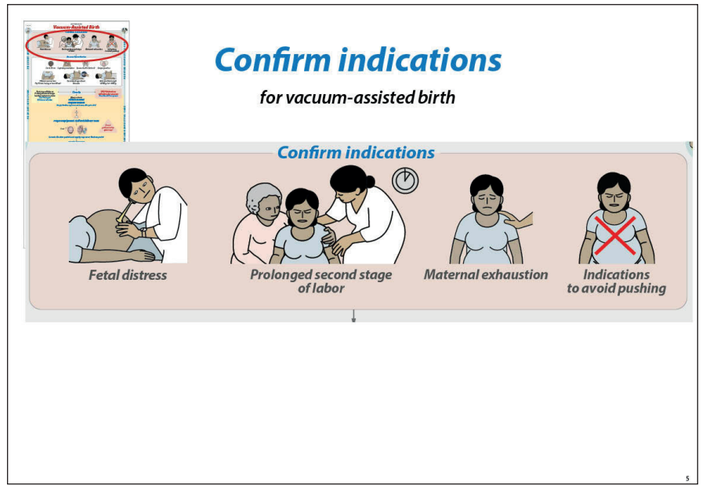




5 moments for hand hygiene



Clean equipment



Explain

To safely use an obstetric vacuum, providers must be able to identify indications for VAB.

Using vacuum to assist a birth requires skill and carries risks. It should only be used when a specific obstetric or medical indication is present.

Vacuum should NEVER be used to speed up a birth when labor is progressing normally.

Indications for VAB are:

- **Fetal distress in second stage requiring immediate birth:**
  - FHR <100 bpm OR ≥160 bpm between contractions or continuing after contractions during at least 3 contractions
  - NOTE: manage fetal distress! See HMS Prolonged & Obstructed Labor. Consider continuous fetal monitoring if available. Follow local guidelines.
- **Prolonged second stage**
  - In first labors, birth is not completed after 3 hours of pushing.
  - In subsequent labors, birth is not completed after 2 hours of pushing.
- **Maternal exhaustion**
- **Maternal conditions which require a shortened second stage or when pushing is contraindicated,** including:
  - Cerebral vascular disease, cardiac or pulmonary conditions.
    NOTE: These conditions should have been identified prior to a woman entering second stage. A vacuum would be applied once the head is engaged **if** she meets criteria for a VAB and contraindications for a VAB have been ruled out.

Discuss

1. What are the indications for VAB in your facility?
2. Do country guidelines require that VAB only be performed in a facility with capacity to perform cesareans?

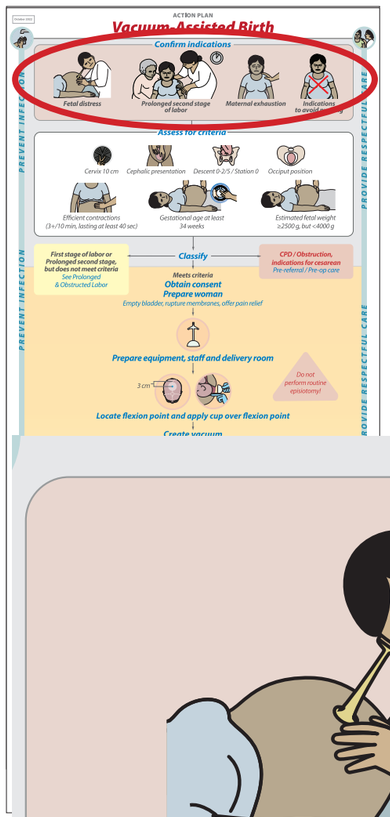
Knowledge check: True or False?

It is good practice to use a vacuum if the woman appears tired, but labor is progressing well.
False

It is good practice to use a vacuum if the FHR is 80 beats/minute between contractions for three consecutive contractions and the woman meets all other criteria.
True

It is good practice to use a vacuum if the woman has a cardiac condition and needs to avoid pushing.
True

It is good practice to use a vacuum if the FHR is 158 beats/minute between contractions for three consecutive contractions and the woman has a high fever, fast pulse, and uterine infection.
False



Confirm indications

for vacuum-assisted birth

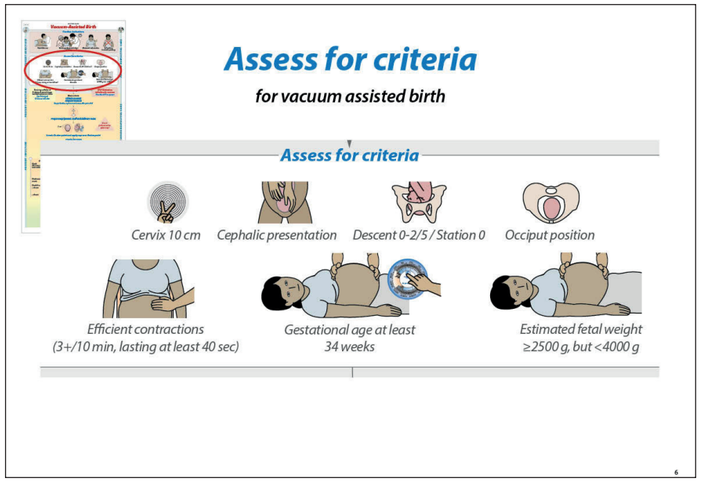
Confirm indications

Fetal distress

Prolonged second stage of labor

Maternal exhaustion

Indications to avoid pushing



Explain

For a vacuum birth to be safe and successful, you must carefully select the right client and the right situation. A failed attempt increases the risk of maternal and newborn complications.

- When there is **fetal distress, maternal exhaustion or a maternal medical condition**, rapidly confirm that she meets all criteria and has no contraindications for VAB.
- **If prolonged second stage is the only indication for a VAB**, rapidly assess the four "P"s (Patient-Passenger-Power-Passage) - see page 8 in the Provider Guide - to identify the cause of prolonged labor and decide if VAB is the most appropriate intervention. The differential diagnoses for prolonged second stage are:
  - misdiagnosis of second stage
  - CPD / obstruction
  - malposition/malpresentation
  - ineffective uterine contractions
  - maternal causes (anxiety/fear, exhaustion, full bladder, imposed birthing position, dehydration, infection, absence of a companion)

After the assessment, quickly decide the care she needs and the best mode of birth.

A VAB should only be attempted if the answer to each question below is "yes":

- Have CPD and obstruction been ruled-out?
- Is the cervix completely dilated at 10 cm?
- Is gestational age (GA) ≥34 weeks?
  NOTE: If you do not have an accurate GA, seek advanced care! Intracranial hemorrhage is more common before 34 weeks.
- Are there at least 3 contractions/10 minutes, each lasting at least 40 seconds?
- Is the presentation cephalic?
- Is the fetal head in an occiput position?
- Is the fetal head engaged [0 station or lower in the birth canal (+1 to +4)] - 0/5 - 2/5 palpable above the upper level of the pubic symphysis?
- Is the estimated fetal weight at least 2500g and not more than 4000g?
  NOTE: If you are unsure or are not confident to decide if fetal weight meets these criteria, seek advanced care.

Knowledge check

Will you attempt a VAB if you find the following?

Descent 3/5	*No*
Bandl's ring	*No*
Caput 3+	*No*
Cervical edema	*No*
OP position	*Yes*
+1 station	*Yes*
Brow presentation	*No*
Estimated fetal weight 2000 g	*No*

What are signs of CPD and obstruction?

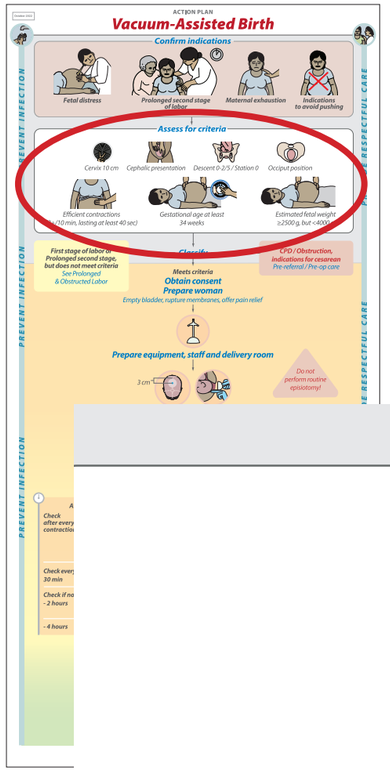
- *Presence of Bandl's ring*
- *Fetal distress / Maternal distress*
- *3+ caput / 3+ molding*
- *Lack of/poor descent in spite of good contractions.*

If there is fetal distress and you find ineffective contractions, should you attempt augmentation before performing a VAB?

- *No, proceed with VAB if there are no contraindications.*

If there is fetal distress and you find descent is 3/5, should you attempt a VAB?

- *No, proceed with preparation for a cesarean birth.*



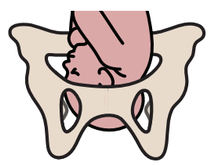
Assess for criteria

for vacuum assisted birth

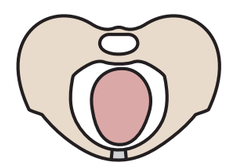
Assess for criteria

Cervix 10 cm

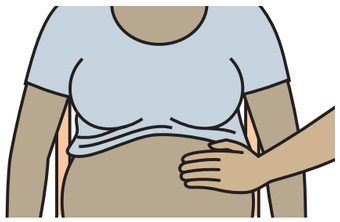
Cephalic presentation



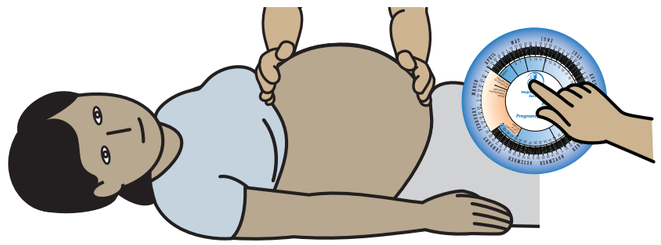
Descent 0-2/5 / Station 0



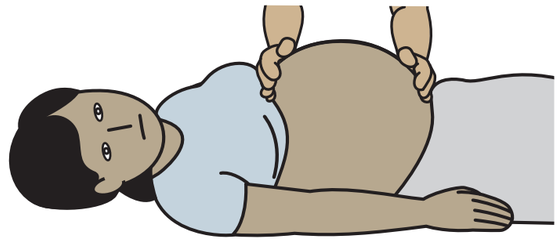
Occiput position



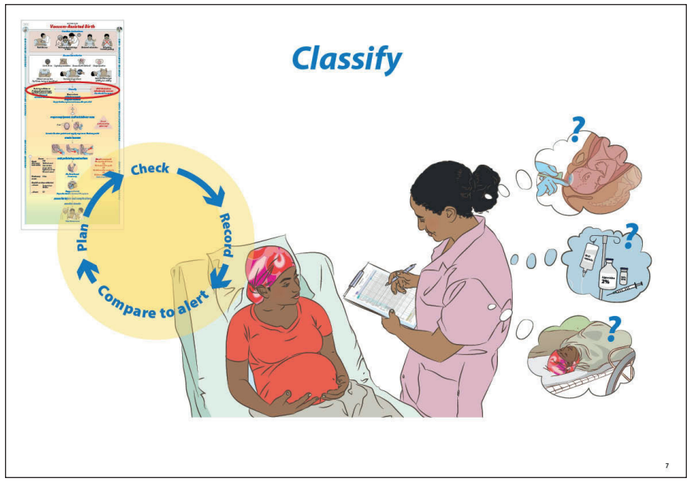
Efficient contractions (3+/10 min, lasting at least 40 sec)



Gestational age at least 34 weeks



Estimated fetal weight ≥2500 g, but <4000 g



Explain

Once you have made an assessment, you need to classify the labor. Point to the "Classify" section of the Action Plan as you explain each section.

The care you provide will depend how you classify her labor:

The woman needs advanced care for any of the following:

- Obstructed labor
- Signs of CPD
- Contractions stop and you suspect uterine rupture
- There is a malpresentation or malposition requiring cesarean birth: chin posterior, transverse lie, shoulder, brow, footling breech, or arm presentation; complete or frank breech with a poorly flexed head
- There is maternal and/or fetal distress and second stage has lasted more than 2 hours (multipara)/3 hours (nulliparas) BUT she does not meet criteria for a VAB
- She has any complication that you cannot manage at your facility

The woman's cervix is not yet fully dilated and there are no signs of CPD/obstruction.
*Refer to **HMS Prolonged & Obstructed Labor***

Second stage is prolonged and there are no signs of CPD/obstruction but she does not meet criteria for VAB.
*Refer to **HMS Prolonged & Obstructed Labor** and manage based on cause of prolonged second stage.*

The woman has indications and meets criteria for VAB.

Learning activity

*As a review of the **HMS Prolonged & Obstructed Labor** module, give learners 10 minutes to work in pairs to complete the exercise to match problems with possible interventions on page 10 in the Provider Guide.*

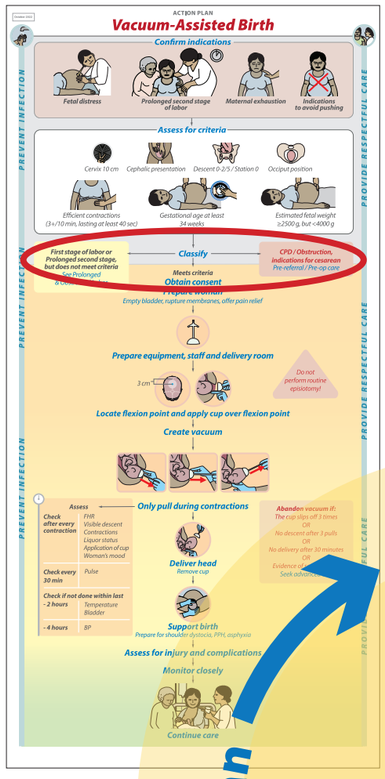
Advanced Care Note

In facilities without operating theater and advanced care, refer women who are unlikely to give birth vaginally or who have complications.

If country guidelines require that VAB can only be done in hospitals with operative capacity, activate your referral plan.

In facilities where advanced care is available, midwives and nurses should consult with physicians or other advanced care providers to co-manage the woman's care.

Classify


ACTION PLAN
Vacuum-Assisted Birth
Confirm indications
Fetal distress
Prolonged second stage of labor
Maternal exhaustion
Indications to avoid pushing
Assess for criteria
Cervix 10 cm
Cephalic presentation
Descent 0-2/5 / Station 0
Occiput position
Efficient contractions (3 x/10 min, lasting at least 40 sec)
Gestational age at least 34 weeks
Estimated fetal weight ≥2500 g, but <4000 g
First stage of labor or Prolonged second stage, but does not meet criteria
Classify
CPD / Obstruction, Indications for cesarean
Pre-referral / Pre-op care
Meets criteria
Obtain consent
Prepare a woman
Empty bladder, rupture membranes, offer pain relief
Prepare equipment, staff and delivery room
3 cm
Do not perform routine episiotomy!
Locate flexion point and apply cup over flexion point
Create vacuum
Assess
Only pull during contractions
Check after every contraction
FHR
Visible descent
Contractions
Liquor status
Application of cup
Woman's mood
Check every 30 min
Pulse
Check if not done within last
- 2 hours
Temperature
Bladder
- 4 hours
BP
Abandon vacuum if:
The cup slips off 3 times
OR
No descent after 3 pulls
OR
No delivery after 30 minutes
OR
Evidence of
Seek advanced
Deliver head
Remove cup
Support birth
Prepare for shoulder dystocia, PPH, asphyxia
Assess for injury and complications
Monitor closely
Continue care
PREVENT INFECTION
PROVIDE RESPECTFUL CARE


Check
Record
Compare to alert
Plan
20 IU oxytocin
Lignocaine 2%
Hyalo 50%

EXERCISE

Classify

Demonstrate

Divide learners into groups of no more than 4 with 1 facilitator per group. Ask a volunteer to play the role of the woman and wear the simulator with the baby in brow presentation, 3/5 above the symphysis pubis. Ask another volunteer to play the role of the woman's mother. As facilitator, demonstrate how to assess a woman with an indication for VAB to make sure there are no contraindications.

Say, ***"This is Mrs. M who has been receiving care at our facility. She has never given birth before and her EDD is 4 weeks from now. Her labor started 11 hours ago and her membranes ruptured 4 hours ago. Her mother is with her. She has been pushing for 3.5 hours and is exhausted and doesn't think she can push any more. The baby's heart rate was 112 b/m during a contraction and 168 b/m 30 seconds after the contraction. Her vital signs are: BP 102/52, pulse: 82 bpm, temperature: 37.8ºC, respirations: 16 breaths/minute."***

Make sure you talk to the woman as you would a real client as you demonstrate the assessment.

- Contractions: 4/10 min, lasting 50-60 sec
- Abdomen: No Bandl's ring, bladder is not distended, cephalic presentation
- Presentation: Brow
- Number of fetuses: 1
- Estimated fetal weight: 3000 g
- Descent: 3/5 above the symphysis pubis, -2 station
- Cervix: 10 cm
- Liquor: Meconium

Debrief

When all groups are done, ask learners:
"Please turn to page 5 of the Provider Guide. Is there an indication for VAB?"
Yes, indication for VAB is lack of descent after 3.5 hours, fetal distress (FHR ≥160 bpm with meconium), and maternal exhaustion.

"Are there any contraindications to VAB?"
Yes: Brow presentation, descent 3/5

"Does she need any other interventions instead of or in addition to VAB?"
Yes, prepare her for cesarean birth.

Make sure learners understand they are making assessments to see if there are indications for VAB AND to make sure there are no contraindications to a VAB.

Practice

Give learners an opportunity to practice. Use cases on pages 11-13 in the Provider Guide. Providers should randomly choose a case and follow instructions in the Provider Guide. Circulate among the learners and provide constructive feedback, where needed.

After each demonstration, learners should decide:

- Is there an indication for VAB?
- Are there any contraindications to VAB?
- Does she need any other interventions instead of or in addition to VAB?

Ask learners to debrief after each provider has completed the assessment; ask,

- What did you do well?
- Is there anything you forgot to do?
- What was difficult to do or remember?
- How can we help each other remember?
- What would you do differently next time to improve your performance?

Discuss

1. What do you do when second stage is not progressing normally, the woman has contraindications for a VAB and does not have signs of CPD/obstruction?
2. What can do to improve how women are cared for during second stage?

EXERCISE

Classify

ACTION PLAN

Vacuum-Assisted Birth

PREVENT INFECTION

PROVIDE RESPECTFUL CARE

Confirm indications

Fetal distress

Prolonged second stage of labor

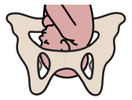
Maternal exhaustion

Indications to avoid pushing

Assess for criteria

Cervix 10 cm

Cephalic presentation



Descent 0-2/5 / Station 0

Occiput position

Efficient contractions (3+/10 min, lasting at least 40 sec)

Gestational age at least 34 weeks

Estimated fetal weight ≥2500 g, but <4000 g

Classify

First stage of labor or Prolonged second stage, but does not meet criteria
See Prolonged & Obstructed Labor

CPD / Obstruction, indications for cesarean
Pre-referral / Pre-op care

Meets criteria

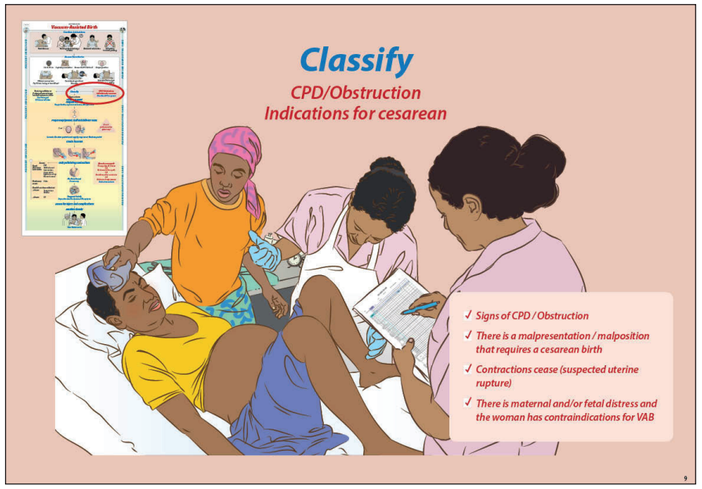
Obtain consent

Prepare woman

Empty bladder, rupture membranes, offer pain relief

Prepare equipment, staff and delivery room

Do not



Explain

When a woman has a complication you cannot manage or requires a cesarean, seek advanced care. This may mean referral to another facility or calling a senior provider in your facility.

To ensure continuity of care during the transfer:

- Communicate with the provider who you will consult with using the SBAR communication tool.
- Talk to the woman and her family about your findings and the need for advanced care or cesarean birth.

Practice

Divide learners in pairs. Using the SBAR tool on page 14 in the Provider Guide and the exercise on page 15 (and below) for Ms. X., have each learner communicate to their partner using SBAR. Circulate and offer supportive feedback as needed.

- Pushing at home for 2+ hours
- G3P2, age 24 years
- EDD: 5 weeks from today's date (35 weeks + 0 days).
- FHR: 188 bpm, 192 bpm, 184 bpm
- Contractions: 4/10 min, lasting 50-60 sec.
- Presentation: Cephalic (ROA)
- Number of fetuses: 1
- Estimated fetal weight: 3000 g
- No Bandl's ring
- Bladder not distended
- Descent: 4/5 above the symphysis pubis, -3 station
- Cervix: 10 cm
- Liquor: Clear
- Position: ROA
- Fetal head: 3+ caput, 2+ molding
- Vital signs: BP 132/78, R 20, P 88, T 37.
- Treatment:
  - IV with normal saline at 125mL/hr and blood for hemoglobin.
  - Positioned on her left side.
  - Oxygen given at 4 L/min.

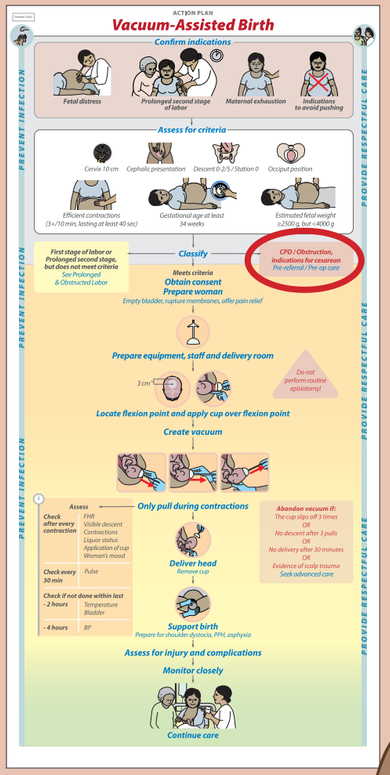
Communication using SBAR should be similar to below:

S = Situation.
Say, ***"I am (name) from the labor ward of (facility) caring for Ms. X who is in the delivery room. She came after pushing for 2+ hours at home and there is fetal distress and signs of obstructed labor."***

B = Background:
Say, ***"Ms. X. is a 24 yo G3P2. Her gestational age is 35 weeks by LMP. Her cervix is completely dilated. There is no Bandl's ring on abdominal assessment and her bladder is not distended. Contractions are 4/10 minutes lasting 50-60 seconds; fetal descent is 4/5. There is one fetus and the estimated fetal weight is 3000 gm. We are not sure when membranes ruptured; but liquor is clear. Position is ROA. We noted 3+ caput and 2+ molding. Vital signs are normal. We have placed Ms. X on her left side, are giving oxygen 4L/min, and have started an IV with normal saline at 125 mL in 1 hour. We sent her blood for hemoglobin but she has received no other medical treatment."***

A = Assessment:
Say, ***"I think her labor is obstructed and there is fetal distress."***

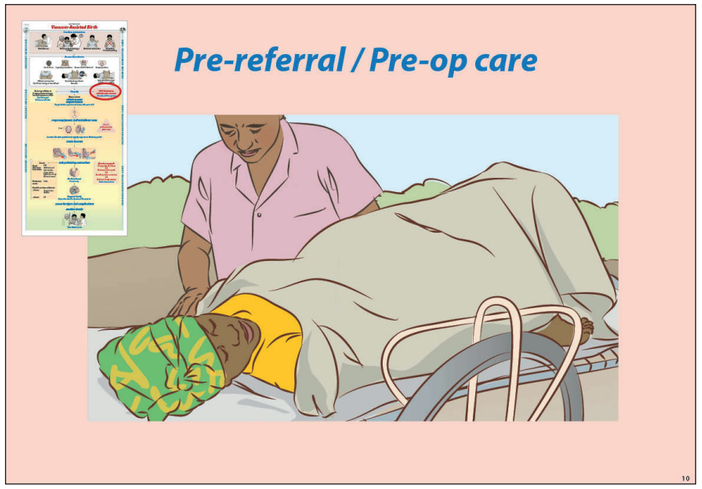
R = Recommendation:
Say, ***"I think Ms. X needs a cesarean. Is there anything you would like me to do until you arrive?"***



Classify

CPD/Obstruction
Indications for cesarean

- ✓ *Signs of CPD / Obstruction*
- ✓ *There is a malpresentation / malposition that requires a cesarean birth*
- ✓ *Contractions cease (suspected uterine rupture)*
- ✓ *There is maternal and/or fetal distress and the woman has contraindications for VAB*



Explain

Once you have decided to seek advanced care, continue care and monitoring until you have transferred her to an advanced care provider.

- Communicate with the woman and her family about what is happening, what you are doing, and why.
- Never leave a woman with a complication alone.
- Act quickly and ensure the most urgent tasks are done first.

Discuss

Ask learners to turn to the "Knowledge and Skills" section for pre-referral / pre-operative care on page 16 in the Provider Guide. This is a review from ***HMS Prolonged & Obstructed Labor.***

Ask learners:

Whom should you notify when a woman needs pre-referral or pre-operative care?"

- Notify the provider who will assume care.
- If you know a cesarean is likely needed, alert the surgical team so they can prepare.
- Notify the pediatric team to be ready to receive a distressed baby.

"What must you do if transfer to another facility is needed?"

- If you are transporting to another facility, begin your transport plan.
- Complete the referral note and call the referral center to alert them.

"How will you prepare women for referral or cesarean birth?"

- Explain to the woman and her companion what is happening and why cesarean birth or referral is needed. Answer any questions.
- Explain all procedures, gain her consent, discuss any test results with her, listen and be sensitive to her feelings.
- Give supportive care.

Which women should receive antibiotics?"

- Give antibiotics if there are signs of infection: temperature >38°C, foul-smelling vaginal discharge, uterine tenderness.

"How will you manage her fluids?"

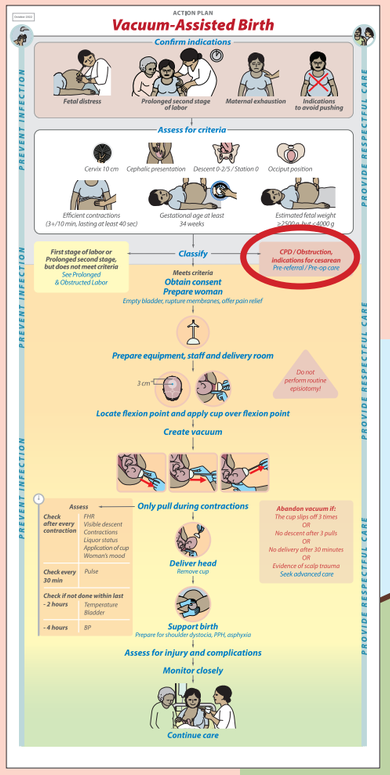
- Start an IV with Ringer's Lactate or normal saline. Collect blood for hemoglobin, cross-match and bedside clotting test before beginning infusion.
- The rate of the IV drip will depend on whether she is stable, in shock, or dehydrated.
- If the woman is in shock or will have a cesarean, insert a foley catheter to keep the bladder empty and to record output.
- Record all IV fluids infused, oral fluid intake, and all urine output. NOTE: Do not give oral fluids to a woman in shock!

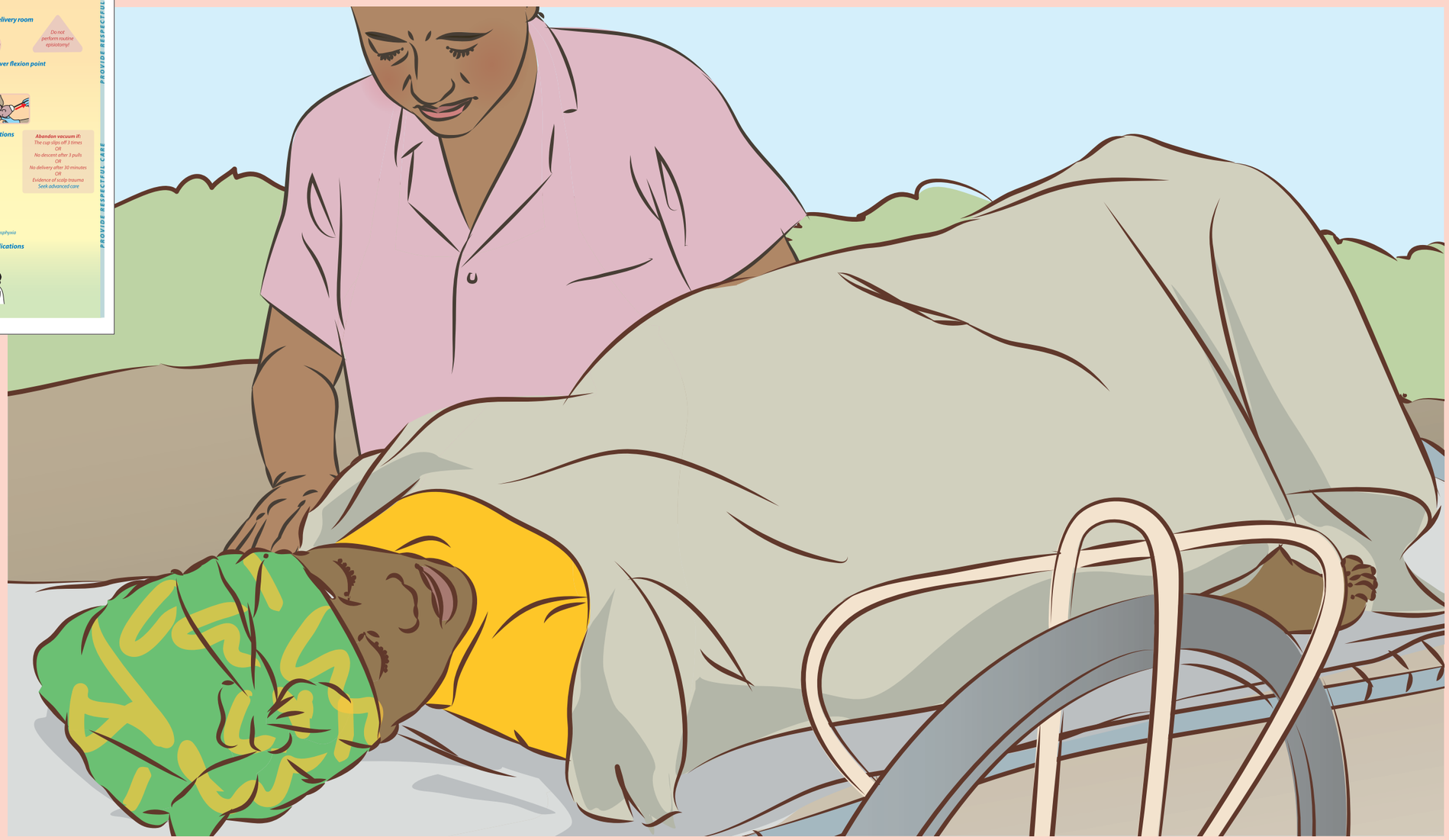
"What other care will you provide?"

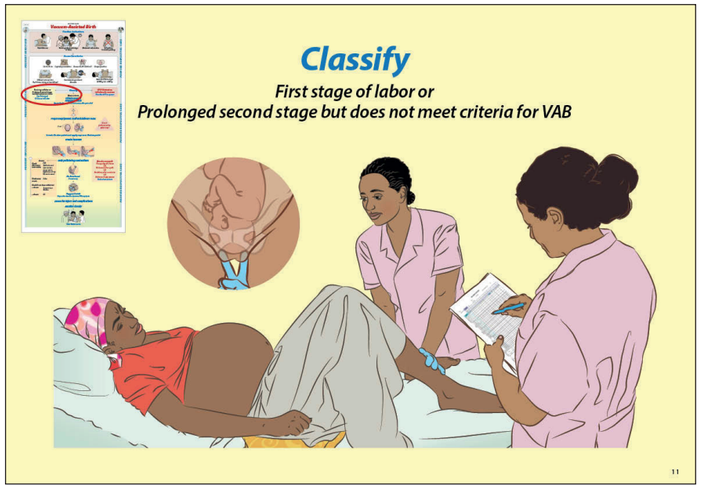
- Place the woman on her left side to improve blood flow to the uterus and vital organs.
- Provide pain relief as needed.
- Continue to monitor the progress of labor and the condition of the woman and her fetus closely. Never leave her alone.

Ask, ***"How can we be sure that women get this care in a timely manner?"***

Pre-referral / Pre-op care







Explain

If the cervix is not fully dilated and there are no signs of CPD/obstruction:

- Continue good labor care. If labor is prolonged, assess for and manage the cause.
- Ensure she has a companion of her choice.
- Help her companion provide care and comfort.
- Ensure she has adequate pain relief.
- Encourage her to be as mobile and upright as possible, to eat and drink as she wishes, and to keep her bladder empty.

*Refer to **HMS Prolonged & Obstructed Labor.***

If second stage is prolonged, but she does not meet criteria for a VAB, there are no signs of CPD or obstruction and no fetal distress, manage any identified problems:

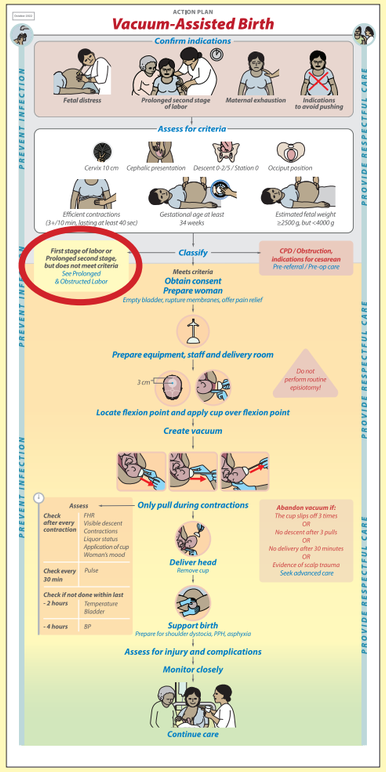
- If she anxious or struggling to cope, give her emotional support and encouragement.
- Make sure she has a companion of her choice and help the companion support and comfort her.
- If uterine contractions are ineffective, consider augmenting labor with oxytocin.
- If she is lying on her back, help her get into a position of her choosing or encourage her to change position.
- If she is dehydrated, offer fluids.
- If she has signs of infection treat with antibiotics.
- If her bladder is full, help her to the toilet. Catheterize only if she is unable to pass urine on her own.

*Refer to **HMS Prolonged & Obstructed Labor.***

For all women, continue to monitor her, the baby, and labor progress closely and act quickly if there are problems.

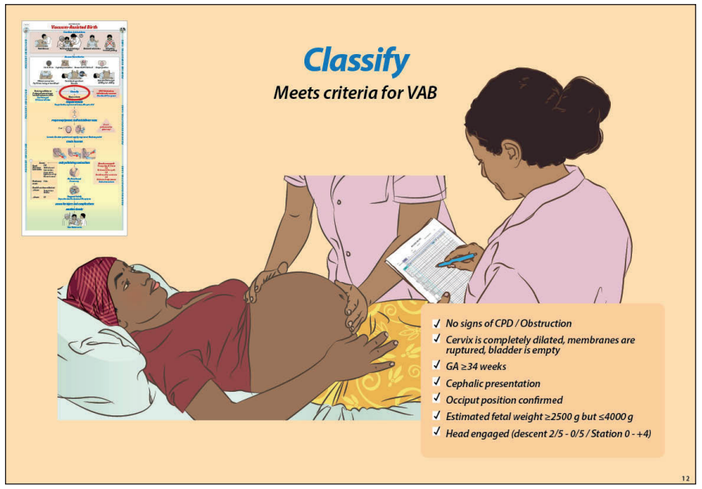
Discuss

1. Have anyone seen a case when a provider thought that a woman was having a prolonged second stage but, on assessment, her cervix was not yet fully dilated?
2. When do you encourage women to begin pushing? Do you usually wait until the woman has the urge to push?
3. What can you do to ensure that a woman can rest during the latent phase of second stage and wait for her urge to push?



Classify

First stage of labor or Prolonged second stage but does not meet criteria for VAB



Practice

Review the following exercise. Ask learners to turn to pages 6 -7 in the Provider Guide to see if she meets criteria or has any contraindications to VAB.

Say, ***"I am Mrs. N. and have been receiving care at your facility. I have been pushing for 2 hours and am very tired. I have had one normal birth and my EDD is 2 weeks from now. My labor started 11 hours ago and I have been leaking clear fluid for 3 hours."***

- BP: 132/68 mmHg
- Pulse: 88 bpm
- Temp: 37.5°C
- Respirations: 16/min
- FHR: 164 bpm
- Contractions: 4/10 min, lasting 50-60 sec.
- Presentation: Cephalic
- Number of fetuses: 1
- Estimated fetal weight: 3000 g
- Descent: 1/5 above the symphysis pubis, +2 station - same as when pushing began
- Cervix: 10 cm
- Liquor: Clear liquid
- Position: ROA
- Fetal head: No caput, 1+ molding

Debrief

Ask the learners,

"Are findings normal or not?"

No. Lack of descent for 2 hours, FHR ≥160 bpm

"Is there an indication for VAB?"

Yes, indication for VAB are lack of descent for 2 hours, FHR ≥160 and maternal exhaustion.

"Are there any contraindications? Let us use the checklist on page 7."

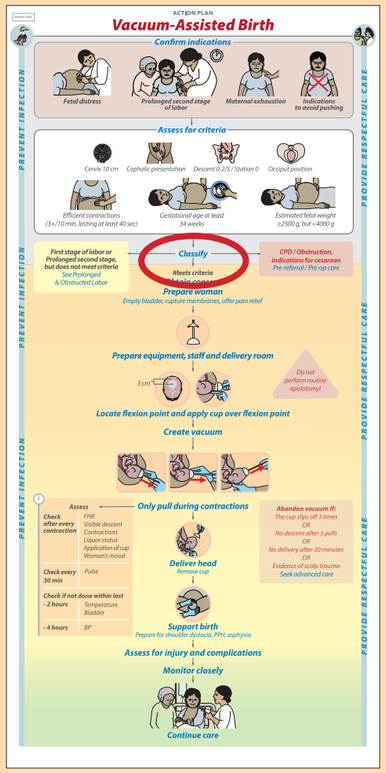
Have providers confirm each item on the checklist. No contraindications to VAB.

"Does she meet criteria for a VAB or not? Why or why not?"

As there are no contraindications for VAB, she meets criteria for VAB.

"What will you do next?"

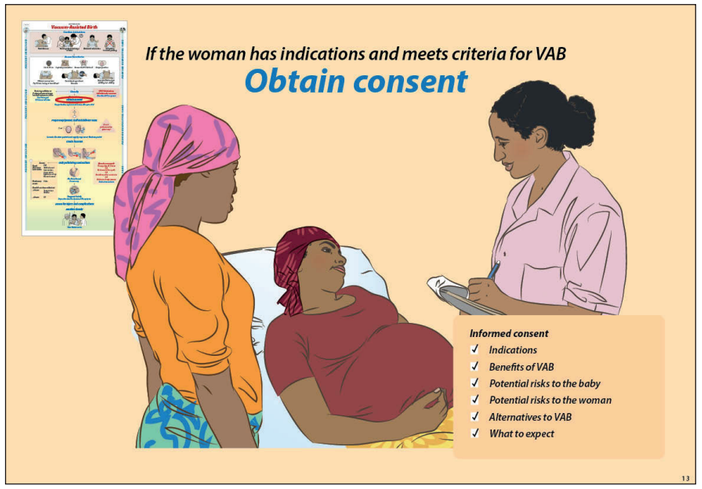
Tell Mrs. N that the baby is not descending, the fetal heart rate is fast, and you recommend using a vacuum to help her give birth. Reassure her, answer any questions she or her companion may have, and obtain consent.



Classify

Meets criteria for VAB

- ✓ *No signs of CPD / Obstruction*
- ✓ *Cervix is completely dilated, membranes are ruptured, bladder is empty*
- ✓ *GA ≥34 weeks*
- ✓ *Cephalic presentation*
- ✓ *Occiput position confirmed*
- ✓ *Estimated fetal weight ≥2500 g but ≤4000 g*
- ✓ *Head engaged (descent 2/5 - 0/5 / Station 0 - +4)*



Explain

If a woman has an indication for a VAB, meets criteria, and has no contraindications:

- Explain to the woman and her companion your findings and her options for care.
- Provide counseling to gain informed consent for a VAB.

Correct use of vacuum in the right cases can save lives, but obstetric vacuums can also cause trauma. It is essential that a woman give her informed consent before you proceed.

The woman needs to be told all the findings of her case and demonstrate that she understands.

If VAB is needed, **rapidly** obtain informed oral or written consent from the woman.

Tell the woman and her companion about:

- Indications: **ONLY include indications that apply to this birth and this woman.**
- Benefits of VAB
- Risks to her and her baby. The risks are low and most are preventable when the provider is experienced and the woman meets criteria for VAB.
- Alternatives to vacuum birth
- What to expect during vacuum birth
- Explain that she will receive -- a single dose of IV antibiotics (amoxicillin 1 g and clavulanic acid 200 mg or local protocol) right after her baby is born to help prevent infection.

After explaining what is happening and what is being recommended, ask if the woman and her companion have any questions.

Confirm that the woman gives her consent.

Demonstrate

Review the consent form on page 19 in the Provider Guide and demonstrate rapidly getting informed consent using a volunteer. Use the case of Mrs. N. from the preceding page - 12b. ***Remember to only include indications for Mrs. N's case when seeking consent: Lack of descent for 2 hours, FHR ≥160 bpm and maternal exhaustion.***

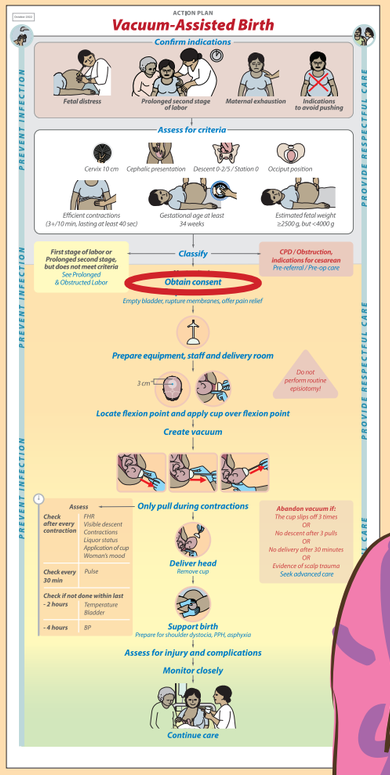
Practice

Divide learners in pairs to practice obtaining informed consent for VAB.

One person will be the "provider" and the other will be the "woman". Switch roles and repeat the exercise. Circulate and offer supportive feedback as needed.

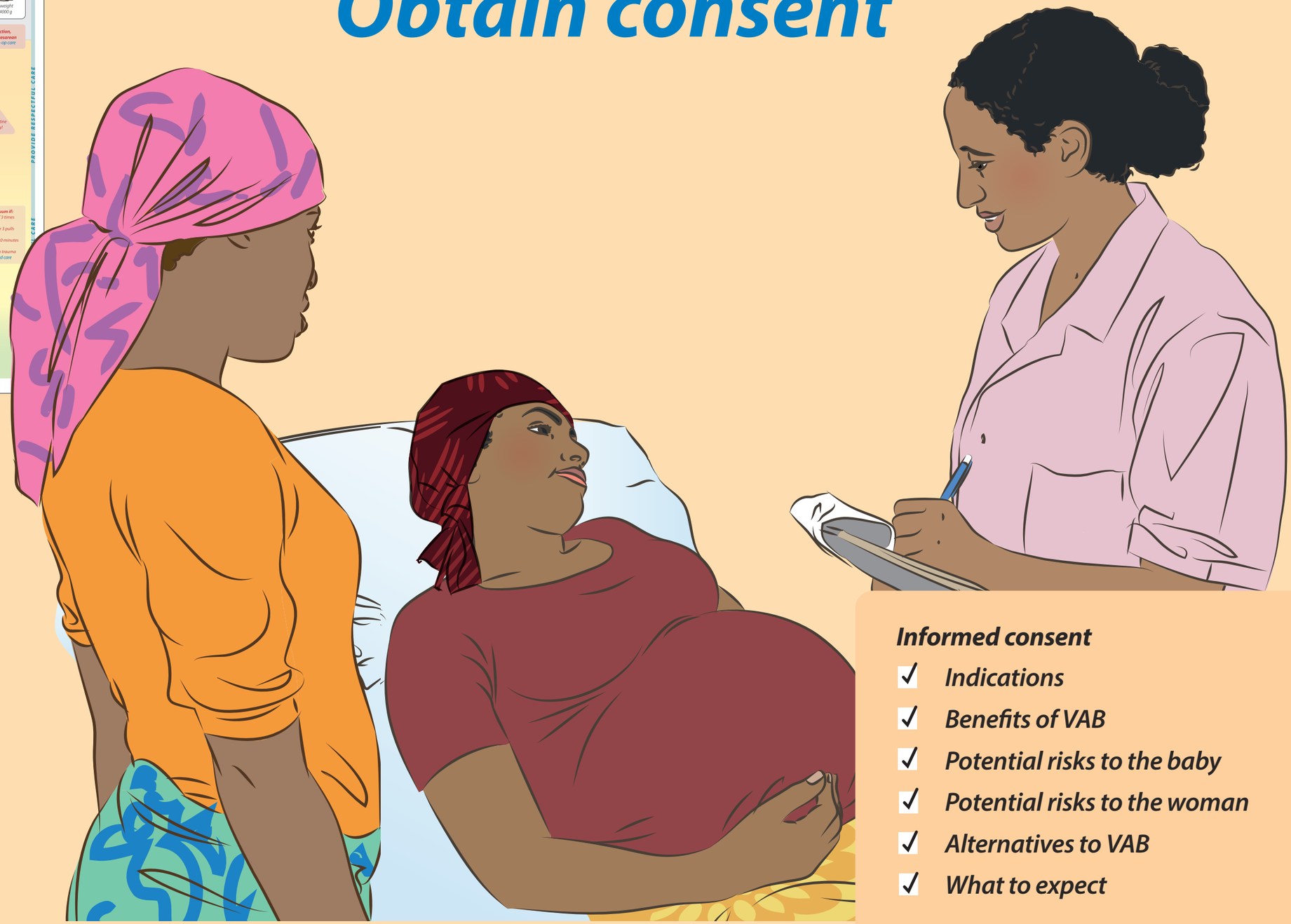
Debrief by asking:

- ***What did you do well?***
- ***Is there anything you forgot to do?***
- ***What was difficult to do or remember?***
- ***How can we help each other remember?***



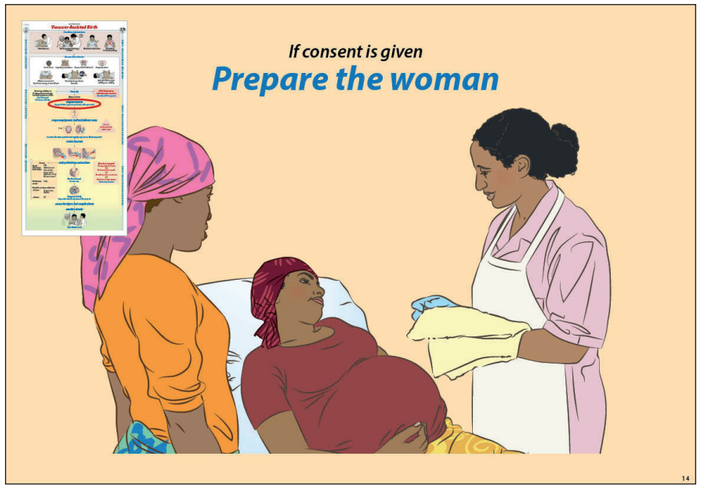
If the woman has indications and meets criteria for VAB

Obtain consent



Informed consent

- ✓ *Indications*
- ✓ *Benefits of VAB*
- ✓ *Potential risks to the baby*
- ✓ *Potential risks to the woman*
- ✓ *Alternatives to VAB*
- ✓ *What to expect*



Explain

Explain to the woman and her companion how a vacuum works and what to expect. Prepare her for birth. They may be anxious and will need emotional support and understanding.

Next:

- Make sure the woman's bladder is empty to decrease risk of trauma. Only catheterize her if she cannot pass urine on her own.
- If membranes are not yet ruptured, rupture them with a sterile instrument between contractions.
- Tell the woman that you will let her know how she is progressing during the procedure.
- Tell her that you will ask her:
  - To push with each contraction to help with your pulling efforts.
  - To pant or give only small pushes with contractions as the baby's head is born.
  - Not to push once the baby's head is born.
- **Remember to manage dehydration, infection or fetal distress if these are present in addition to assisting birth with an obstetric vacuum. If there is fetal distress, do not delay VAB trying to manage dehydration of infection.**

Provide supportive care to prepare for VAB:

- Continue monitoring the woman, fetus, and labor progress.
- Keep her well-hydrated.
- Provide pain management as needed.
- Assist the woman to get into the birth position of her choice. Vacuum-assisted birth is often conducted with the woman in semi-fowler's position to provide for optimal traction. **However, if the provider is comfortable and skilled, the woman may assume the position of her choice.** Routine lithotomy position is not necessary.

Knowledge check

How would you manage fetal distress when conducting a VAB?

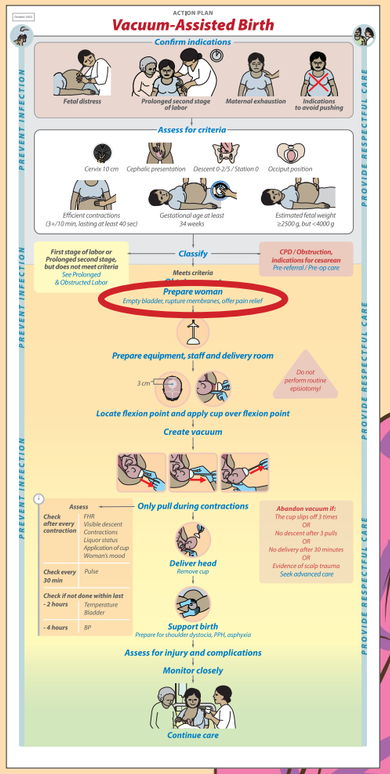
- *Ensure that she is not flat on her back. Place a pillow or rolled towel under her right hip to tilt her.*
- *Stop oxytocin if it is being given.*
- *Give oxygen 4–6 L.*
- *Give fluids by mouth or IV.*

What will you do if she is dehydrated?

- *Encourage her to drink fluids while pushing.*
- *Evaluate the her for signs of infection.*
- *Test urine for acetone. If acetone in urine ++ or more, encourage the woman to drink sweetened fluids.*
- *Treat with IV fluids: 500 mL over 30 minutes*
- *Evaluate BP, pulse, and signs of dehydration after every bolus; do not give more than 4 boluses – 2L*
- *Once the woman's condition improves (increased BP, lowered pulse rate), adjust the rate of infusion of IV fluids to 1 L in 6-8 hours*

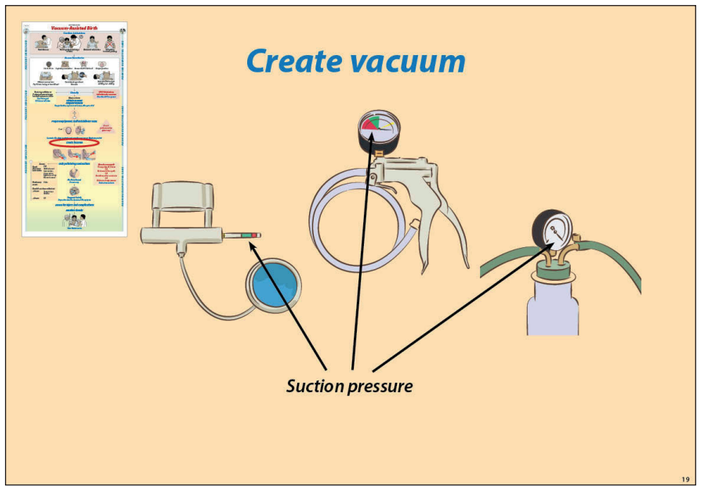
What antibiotics will you give the woman having a vacuum assisted birth if there are signs of infection such as temperature >38 °C, foul-smelling vaginal discharge, uterine tenderness?

- *ampicillin 2 g IV every six hours PLUS*
- *gentamicin 5 mg/kg body weight IV every 24 hours.*



If consent is given

Prepare the woman



Explain

Note to the Facilitator:

Make sure to use the operating instructions for the type of vacuum available at the facility.

Ask learners to refer to the safety checklist on page 22 in the Provider Guide.

Once the decision for VAB has been made and the woman has given her consent, you must:

- Prepare and check the equipment for VAB using operating instructions for the type of vacuum available at the facility. Ensure you have a clean cup and test the suction against the palm of your gloved hand.
- Prepare and check the equipment for newborn resuscitation.
- Check that the PPH kit is available and is complete.
- Prepare a single dose of intravenous amoxicillin (1 g) and clavulanic acid (200 mg) **to be administered as soon as possible after birth and no more than 6 hours after birth.** Where this combination is not available, follow local guidance for prophylactic antibiotics.
- Call for assistants:
  - One assistant to help monitor and care for the woman during the procedure and in case of shoulder dystocia or other problems.
  - Call for a second assistant to care for and resuscitate the baby if needed.
- Call the theater and tell them to prepare in case the procedure is unsuccessful.
- If not in a facility with a theater due to local standards permitting VAB in facilities without ability for cesareans, activate your transport plan.
- Assign roles to all assistants by name.
- Wash hands and put on apron, face shield or goggles, mask, and other delivery gear, as appropriate.

Demonstrate

- *Ask learners to refer to the operating instructions for the type of vacuum available at the facility.*
- *Ask a learner to read each step and then demonstrate the steps for preparing and testing the vacuum device.*

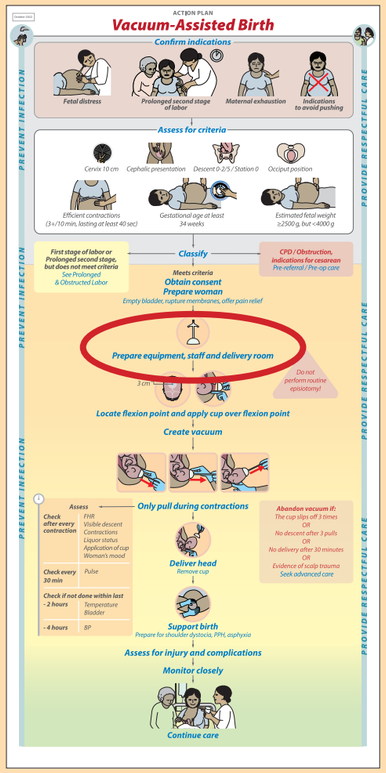
Practice

With all the learners observing, ask two learners to work together to demonstrate preparing the vacuum equipment. Have one read the steps while the other does them. Provide feedback as needed.

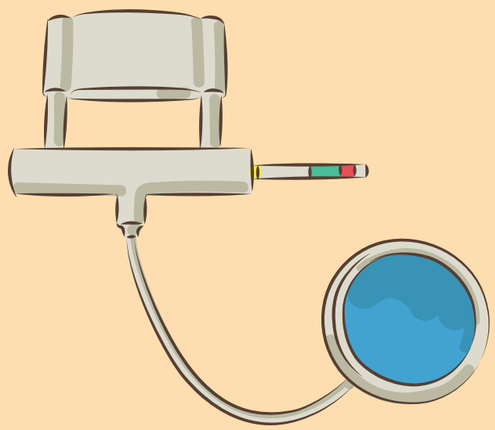
Knowledge check

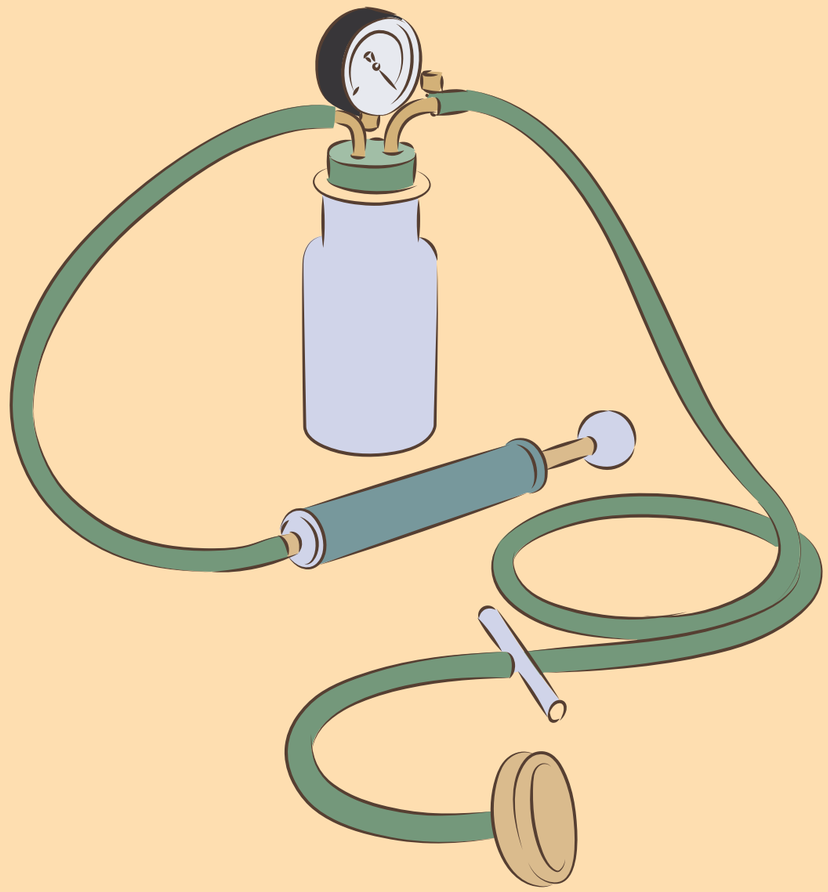
What assistants will you call once you have made the decision to perform a VAB?

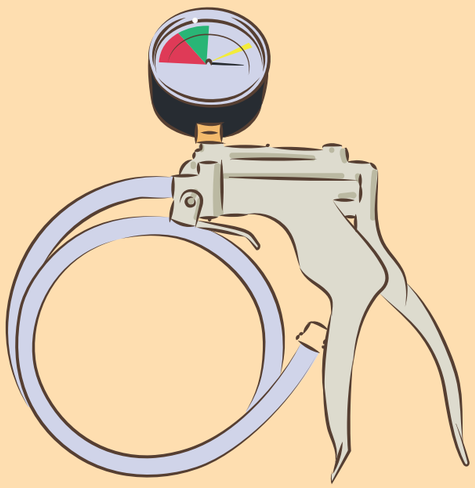
- ***Assistant to monitor the woman and fetus, provide emotional support to the woman, and assist you if there is shoulder dystocia***
- ***Assistant to help with the baby***



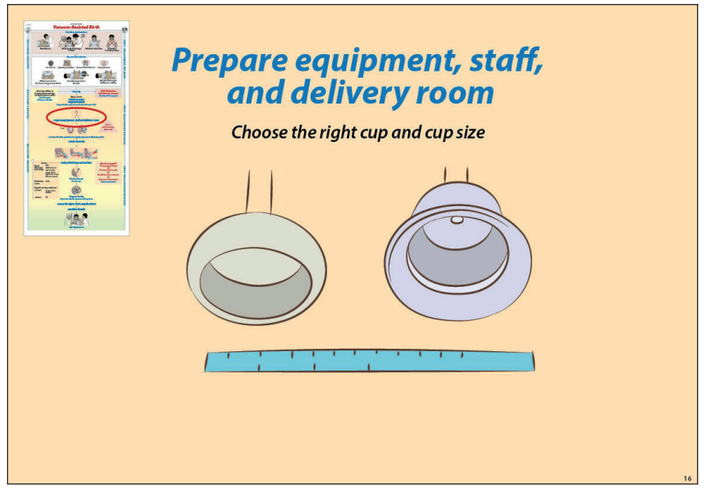
Prepare equipment, staff, and delivery room







NOTE: The illustrations may differ from the type of vacuum device available in your facility.



Explain

There is no single best cup. In most cases, providers are restricted to the type of cups available at their facility.

- **Soft cups** are pliable and usually bell shaped. They are best for cases where the baby is in simple OA position and less traction is needed. They are less likely to cause scalp injury than rigid cups but are more likely to fail.

- **Rigid cups** are hard plastic or metal and tend to be mushroom shaped. They are best for OP, OT, and asynclitic OA positions. Metal cups are associated with more scalp injuries, but are less likely to "pop off". All rigid cups are more likely to cause injury to the scalp but are less likely to fail.

- If more than one cup type is available at your facility, make a decision about the type of cup you will use based on the position of the baby's head:
  - Occiput Anterior (OA): Soft
  - Rotation >45° from OA: Rigid
  - Occiput Transverse (OT): Rigid
  - Occiput Posterior (OP): Rigid

If only one type of cup is available, use the cup that is available but be aware that VAB is more likely to fail or cause injury if a different type of cup is used.

Note: For OP position, the flexion point is posterior! Be sure to find the true flexion point. Misapplication of the cup over the anterior fontanel increases the risk of subgaleal hematoma!

Use the largest cup that will fit. Sizes vary somewhat by manufacturer; any standard cup size may be used for any fetus meeting the criteria for vacuum assisted birth.

Remember that cup size affects the overall force applied since: Force = (area under the cup) x (suction).

Demonstrate

Pass around the different cups that are available at the facility and give the learners time to touch and examine the cups.

Knowledge check

What type of cup will you use if the baby's head is in OP position?
Rigid

What type of cup will you use if the baby's head is in OA position?
Soft

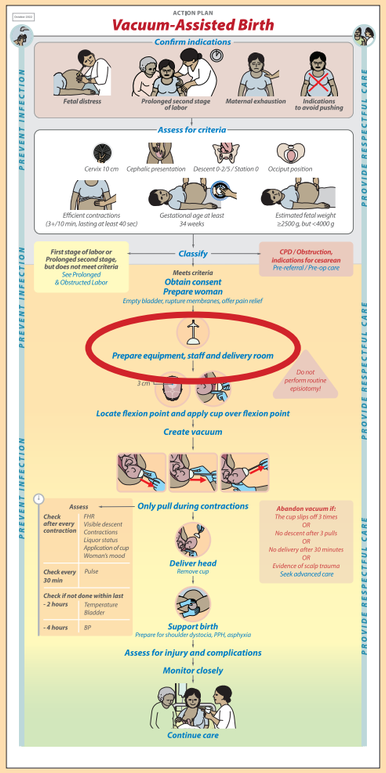
What criteria must the fetus meet for vacuum assisted birth?
≥34 weeks of gestation, at least 2500 gm and not more than 4000 gm, cephalic / vertex presentation

If you have several sizes of cup, which size will you use?
The largest cup that will fit

How will you identify asynclitism?
The center of the head is not in the middle of the pelvis when the cervix is ≥5 cm dilated. The cervix may be thicker on one side and thinner on the other side.

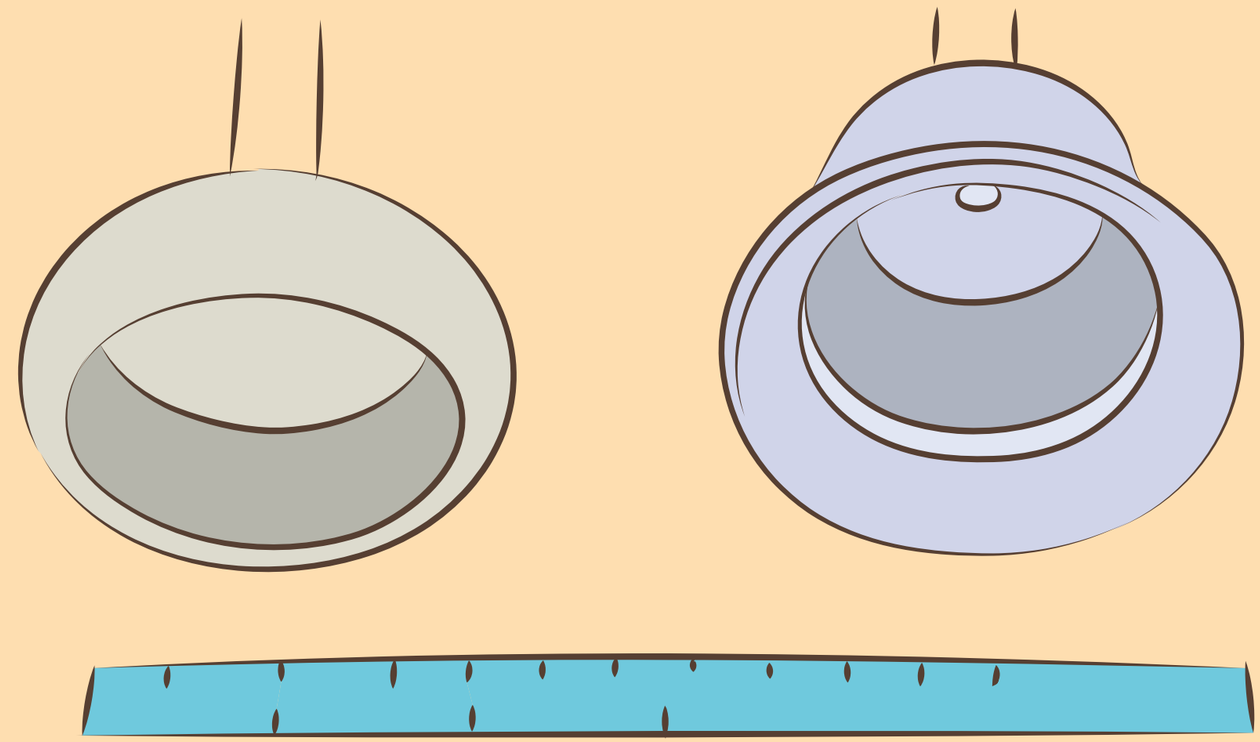
Video Demonstration

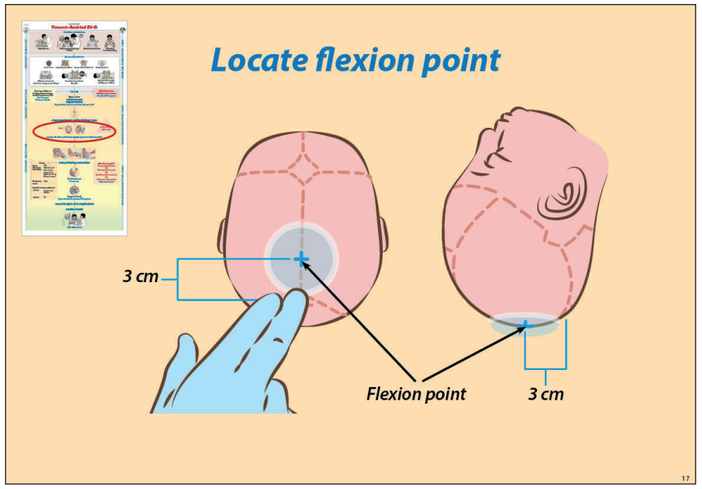
If available, show the video on vacuum-assisted birth. If the video is not available, move to the next page.



Prepare equipment, staff, and delivery room

Choose the right cup and cup size





Explain

To allow the widest diameter of the fetal head to fit through the pelvis, the head must flex and rotate. There is a place on the fetal head that when traction is applied, it helps keep the chin on the chest and the head flexed. This is called the flexion point. Placing the cup on the flexion point helps the fetal head stay in the smallest diameter to fit through the pelvis. This promotes flexion, descent and rotation during traction.

Remember:

- Tell the woman and her companion what will happen and respond to any questions and concerns.
- Provide ongoing emotional support and reassurance.

Demonstrate #1: Flexion point

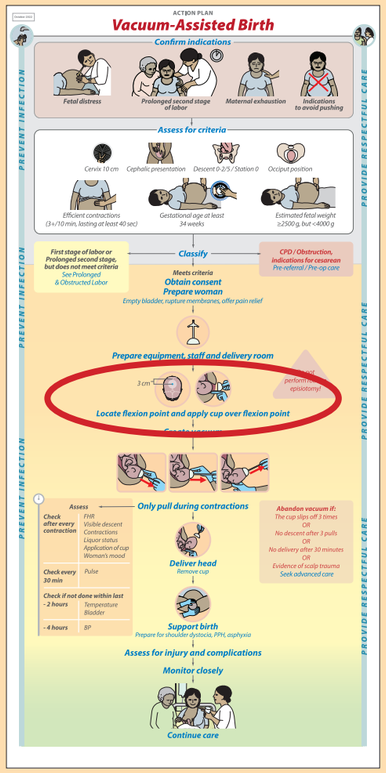
Using a newborn simulator outside the childbirth simulator, point to each of the landmarks of the fetal head: anterior and posterior fontanels, and the sagittal suture.

- *Show the location of the flexion point at 3 cm anterior to the posterior fontanelle.*
- *Place the center of the vacuum cup over the flexion point and show learners the sagittal suture in the midline. The edge of the cup should be about 1 cm anterior to the posterior fontanelle.*

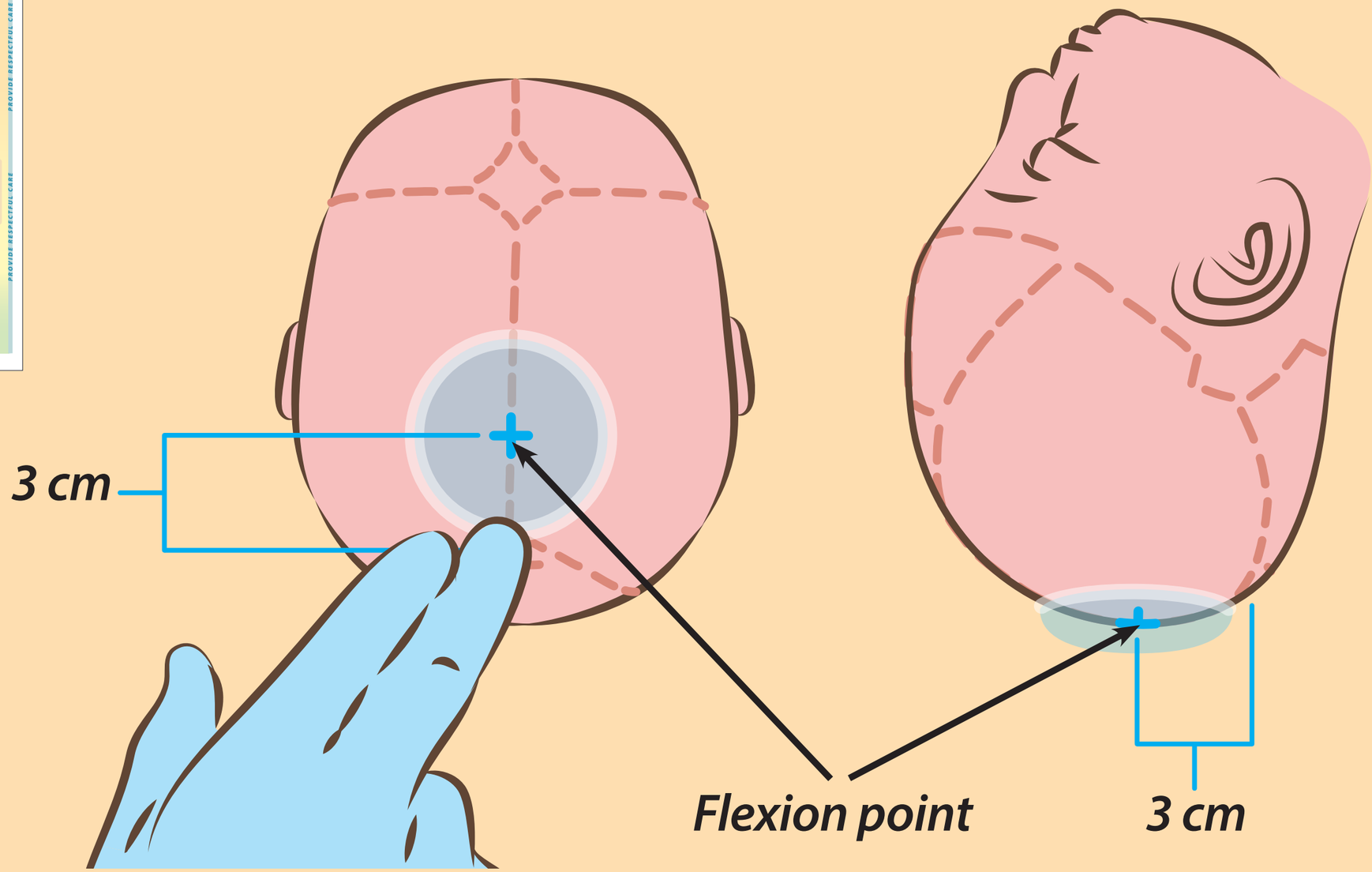
Demonstrate #2: Cup insertion distance

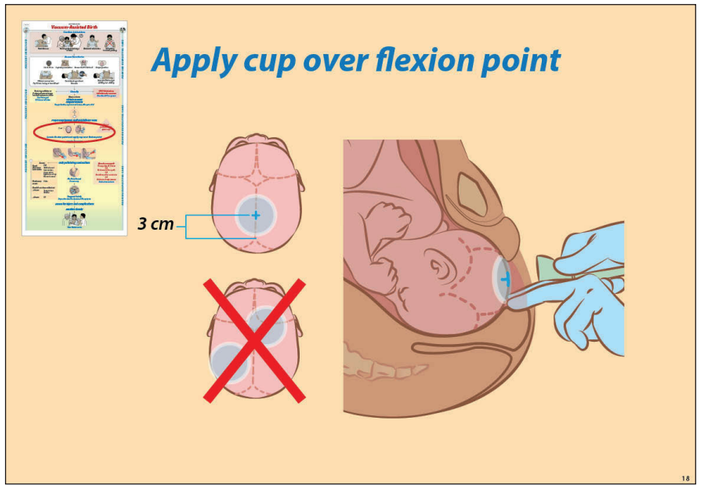
Ask a learner to wear the birth simulator with the newborn simulator in OA position and demonstrate finding the flexion point and measuring the cup insertion distance. Describe out loud what you are doing at each step:

- Tell the woman what you are about to do.
- Wash hands and put on sterile gloves.
- Clean the vulva with antiseptic solution.
- Assess the position of the fetal head by feeling the sagittal suture line and the fontanelles.
- Identify the posterior fontanelle.
- Locate the flexion point. Move your finger from the posterior fontanelle, along the sagittal suture approximately 3 cm / 1 inch.
- Calculate the cup insertion distance:
  - With the finger on the flexion point and your palm facing up, note where the back of the finger makes contact with the perineum. This will determine how far the cup must be inserted.
  - With the examining finger on the flexion point, use the opposite hand to mark where the back of the examining finger comes in contact with the perineum.
  - Hold that mark as the examining finger is removed and use the cup's distance markings to measure the cup insertion distance from perineum to flexion point.



Locate flexion point





Explain

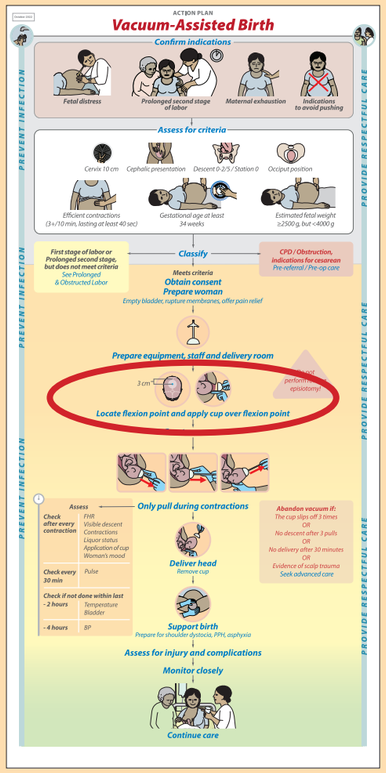
Correct placement of the vacuum cup over the flexion point is essential for success. Incorrect placement such as off to the side of the sagittal suture or closer to the anterior fontanel may cause asynclitism, deflexion and the cup to pop off. This increases the risk of trauma to the fetal head.

- **Do NOT** routinely perform an episiotomy. Consider episiotomy only if the perineum interferes with the axis of traction.
- Insert the cup to the measured distance mark and place over the flexion point.
- After placing the cup over the flexion point, sweep a finger of the other hand around the cup to **make sure no vaginal tissue is trapped between the cup and the scalp.** If vaginal tissue is trapped under the cup, it could cause trauma and may cause the cup to pop off.
- **Ensure an empty bladder and ruptured membranes** before applying a vacuum**.**

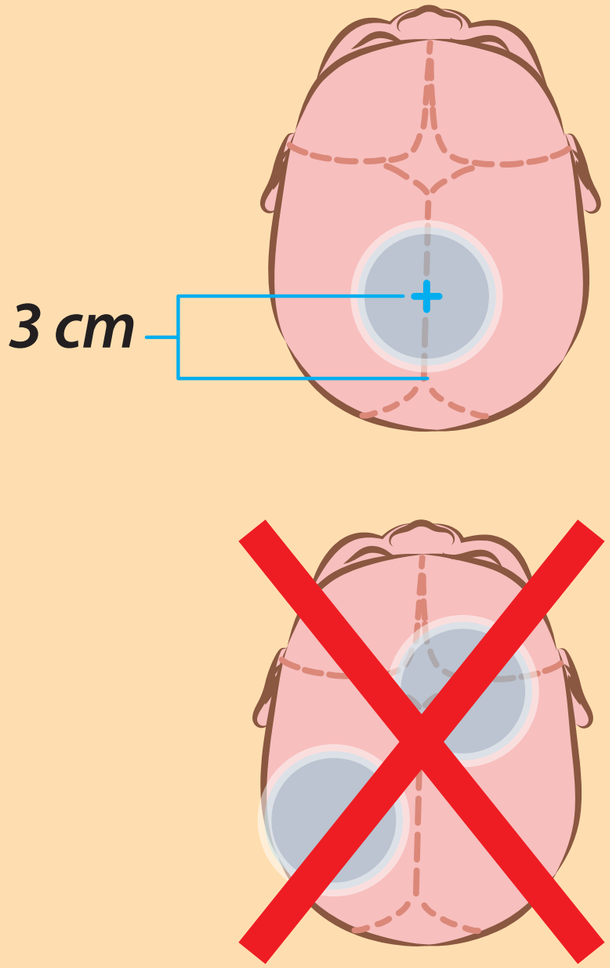
Demonstrate

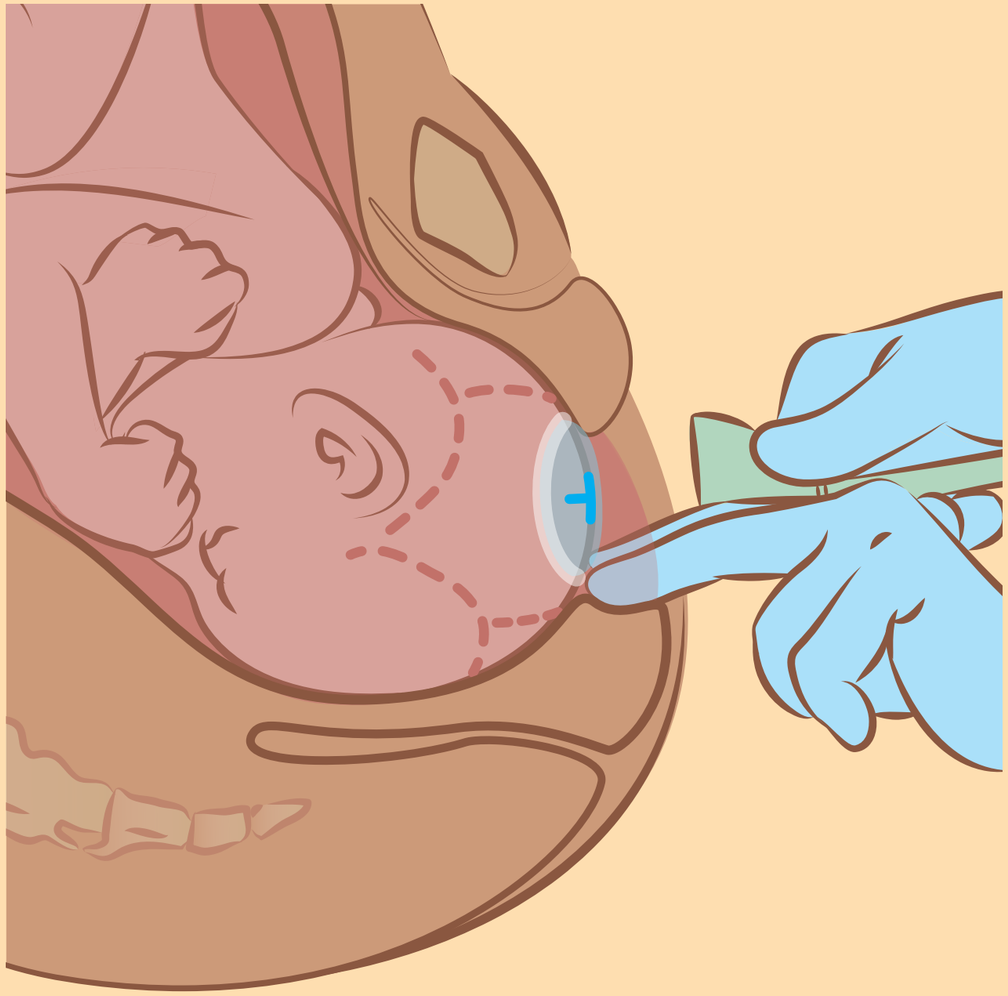
Remove the abdominal "skin" from the simulator. Place the newborn simulator in OA position in the childbirth simulator and ask a volunteer to wear the simulator. This will help you show learners how cup placement on the flexion point keeps the head flexed as you demonstrate:

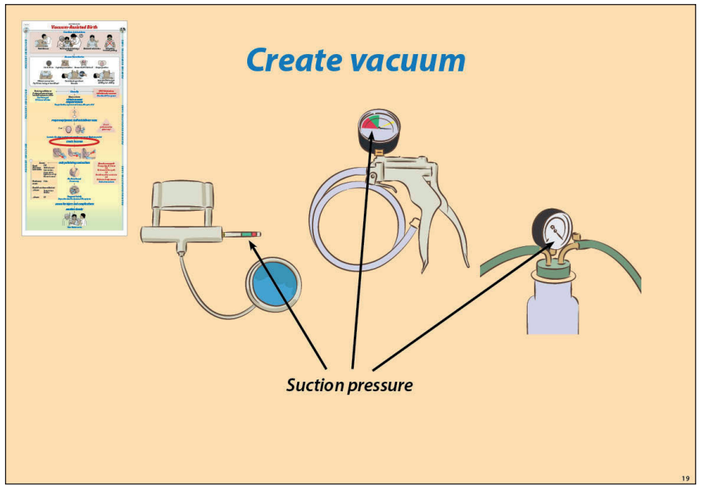
- Place the cup correctly over the flexion point, hold the cup in place and sweep a finger of the other hand around the cup to make sure no vaginal tissue is trapped between the cup and the scalp.
  Next, apply vacuum pressure *(you will explain this on the next page)*. Traction should be applied steadily and at a right angle to the plane of the cup. *Show learners how this keeps the head flexed.*
- Next, place the cup to the side of the anterior fontanelle, apply pressure, and pull towards the woman's back.
  Show learners how this can cause deflexion or asynclitism.



Apply cup over flexion point







Facilitation Note

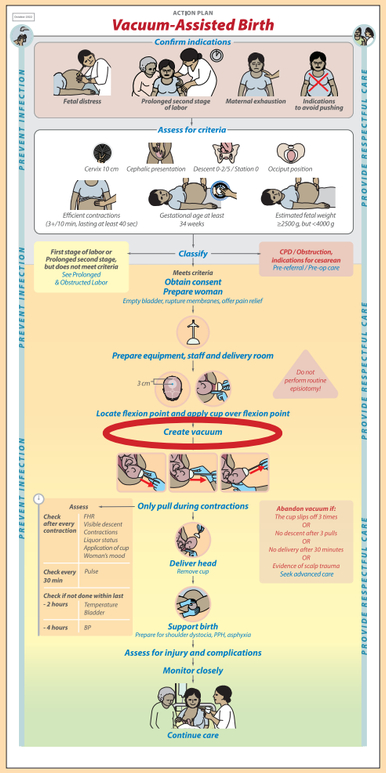
Check the vacuum pressure for the vacuum device that is available in the facility and use this vacuum pressure when explaining and demonstrating how to create a vacuum.

Vacuum pressure is measured in various units. You do not need to read these but have them handy as reference for the device you are using:

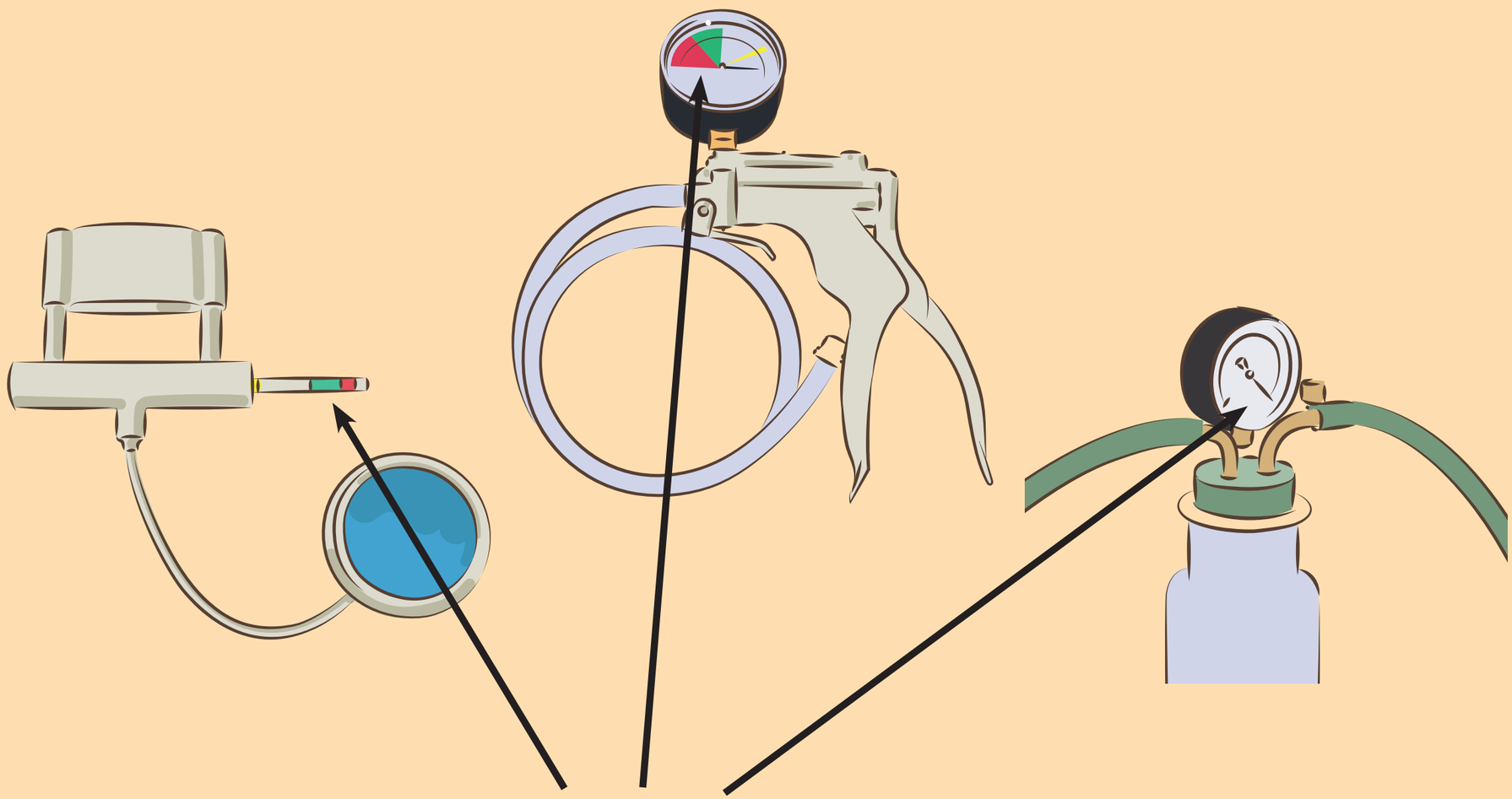
- *0.2 kg/cm² = 20kPA = 150 mmHg = 5.8 inHg = 200 cmH₂0 = 2.8 lb/in² = 0.20 bar*
- *0.8 kg/cm² = 80kPA = 600 mmHg = 23.6 inHg = 800 cmH₂0 = 11.6 lb/in² = 0.79 bar*

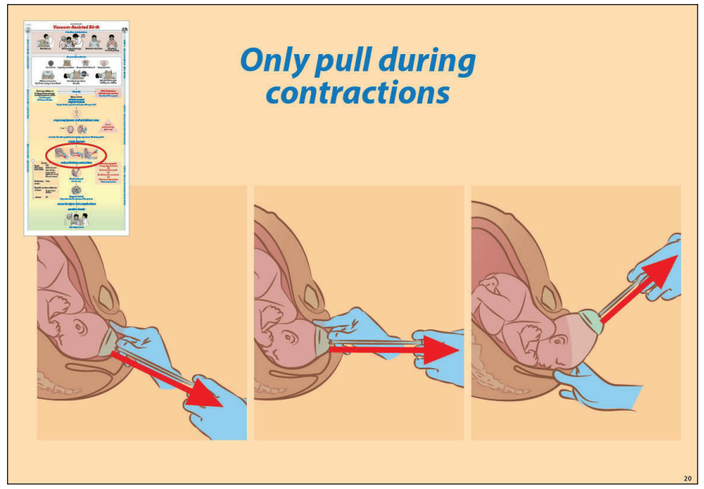
Explain

- After you confirm the cup is correctly placed, create a vacuum of 0.2 kg/cm² (150 mmHg) negative pressure. Alternatively you may ask an assistant to do this.
- Sweep the edges of the cup with a finger a second time to make sure that no maternal tissues are trapped.
- For the best results, make sure the woman's thighs are flexed toward the abdomen, especially during pushing and traction.
- Rapidly increase the vacuum to 0.8 kg/cm² (500 to 600 mmHg) and check that the cup is well applied.
- Use vacuum suction pressures of 0.8 kg/cm² during traction:
  - Pressure less than 500mmHg (0.68 kg/cm²) increases the risk of cup "pop-offs".
  - Pressure more than 600 mmHg (0.8 kg/cm²) increases the risks of trauma to the baby's scalp and cerebral, cranial and scalp hemorrhage.



Create vacuum





Explain

Facilitation note:

Demonstrate the direction of pulling and using the finger of your non-dominant hand on the scalp next to the cap to assess potential slippage and descent.

- Correct and safe use of the vacuum device will prevent injury. Incorrect use can cause harm.
- It is NOT true that the vacuum is "designed to pop-off before damage occurs". Do not consider a pop off as a safety mechanism!
- **Continuously decide if vacuum should continue**: If there is progress and if the fetus is tolerating the vacuum suction pressure and traction, continue the "guiding" pulls **for a maximum of 30 minutes.**

To prevent trauma:

- Only apply traction during a contraction. Do not jerk or use rocking motions to apply traction as this may cause a pop-off.
- Use steady traction at a right angle to the plane of the cup allowing the direction to be guided by natural rotation of the head. **Never actively twist the handle to rotate the head.**
- Continually ensure no maternal tissue is trapped under the cup.
- Look for scalp trauma after each pull.

During a contraction:

- Encourage the woman to push during contractions to assist with traction.
- Use vacuum suction pressures of 0.8 kg/cm2 during traction.
- Use the fingertips of your dominant hand to pull the device's crossbar.
- Place a finger of your non-dominant hand on the scalp next to the cup during traction to assess potential slippage and descent of the vertex. **You should see some descent with each pull. The fetal head should usually be delivered in 3-4 pulls.**
- Apply traction gradually as the contraction builds. The first pull helps to find the right direction for descent and causes flexion.
- Apply **traction along the axis of the pelvic curve**—initially toward the woman's back and finally toward the woman's abdomen, as the head emerges from the pelvis and crowns.
- Maintain traction for the duration of the contraction, in coordination with the woman's pushing efforts.
- Gradually discontinue traction as the contraction ends or the woman stops pushing.

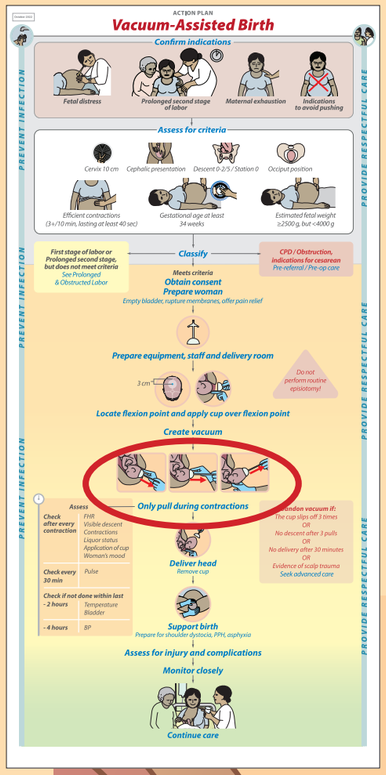
If the cup slips off:

- After one or two pop-offs, reassess carefully before reapplying
- After 3 pop-offs, do not reapply the vacuum!

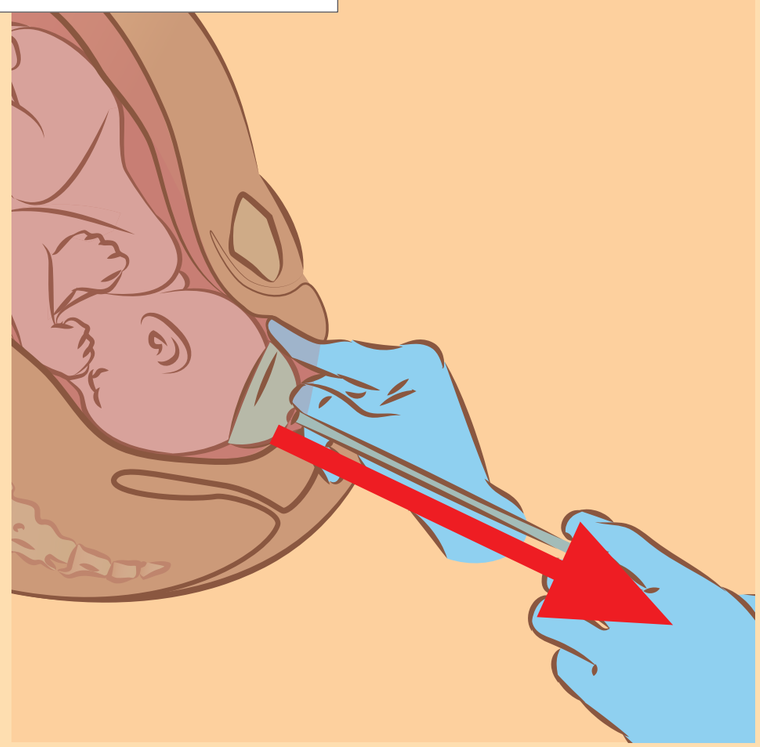
In between contractions:

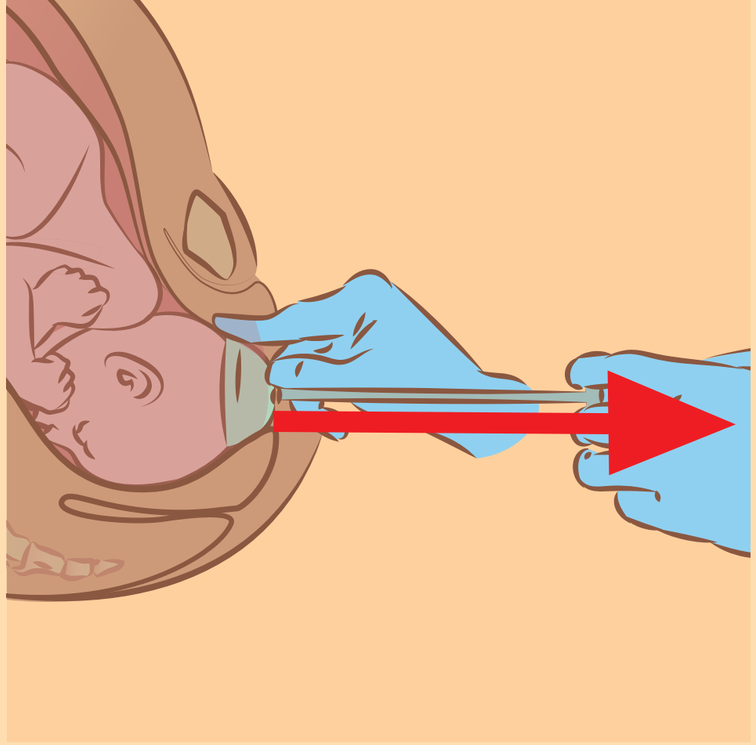
- **Do not apply traction.** Fully maintain suction pressure of 500 to 600 mmHg (0.8 kg/cm2)
- Check fetal heart rate
- Check application of the cup
- Check if there is any scalp trauma
- When the head is crowning, evaluate the need for an episiotomy. Perform an episiotomy only if necessary.

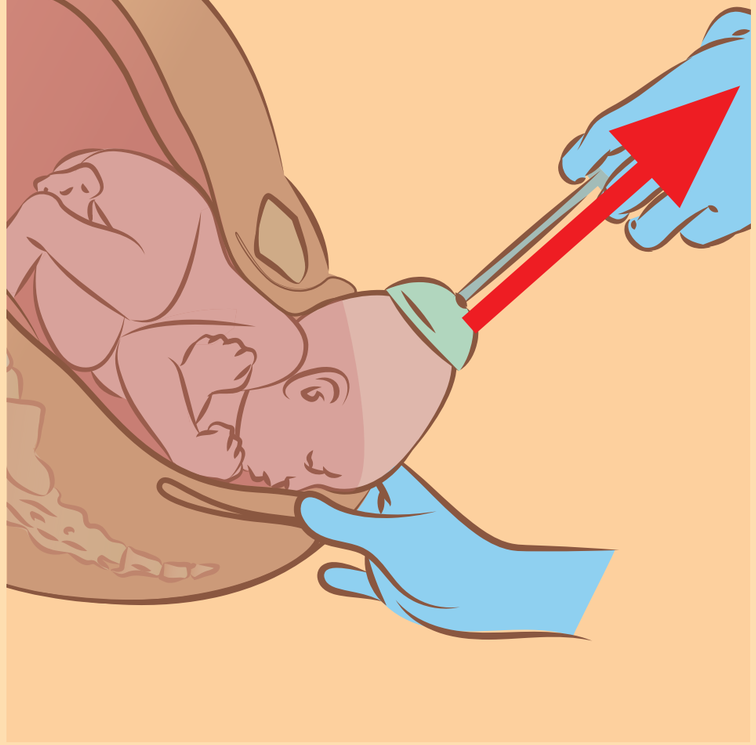
Remember: Follow local protocols for performing VAB.

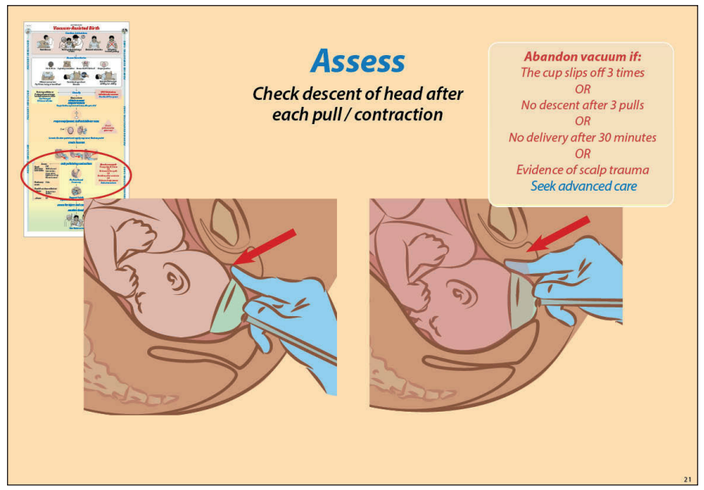


Only pull during contractions









Explain

You must be willing to stop using the vacuum and proceed to cesarean birth promptly if VAB is not successful.

After every pull:

- Evaluate progress and descent.
- Check if there is any scalp trauma.
- Decide if vacuum should continue.

Stop using vacuum if:

- The **cup slips off the head 3 times** at the proper direction of pull with maximum negative pressure OR
- There is **no descent of the baby's head after 3 pulls** OR
- There is **no delivery after 30 minutes of application** OR
- There is **evidence of scalp trauma**

Do **NOT** attempt another assisted vaginal technique, such as forceps, if a VAB fails.

Knowledge Check - True or False?

If the cup pops off once, you should stop the procedure and move to cesarean section.
False

If after 20 minutes of applying traction, there is progress and the woman and baby are stable, it is acceptable to continue with vacuum.
True

Even if there is progress, you should abandon the procedure after 30 minutes of traction.
True

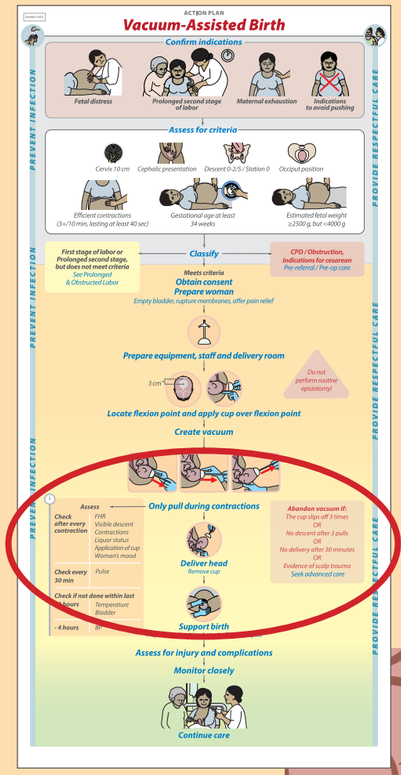
Discuss

1. In your facility, what are the conditions to stop VAB and move to cesarean?
2. What is the protocol for management of women after vacuum has been unsuccessful?

Advanced Care Note

Based on local protocols and standards, seek advanced care for a cesarean birth immediately if VAB is unsuccessful.

If learners have additional training and authorization to provide advanced care, they should act within their scope of practice..



Assess

Check descent of head after each pull / contraction

Abandon vacuum if:

The cup slips off 3 times

OR

No descent after 3 pulls

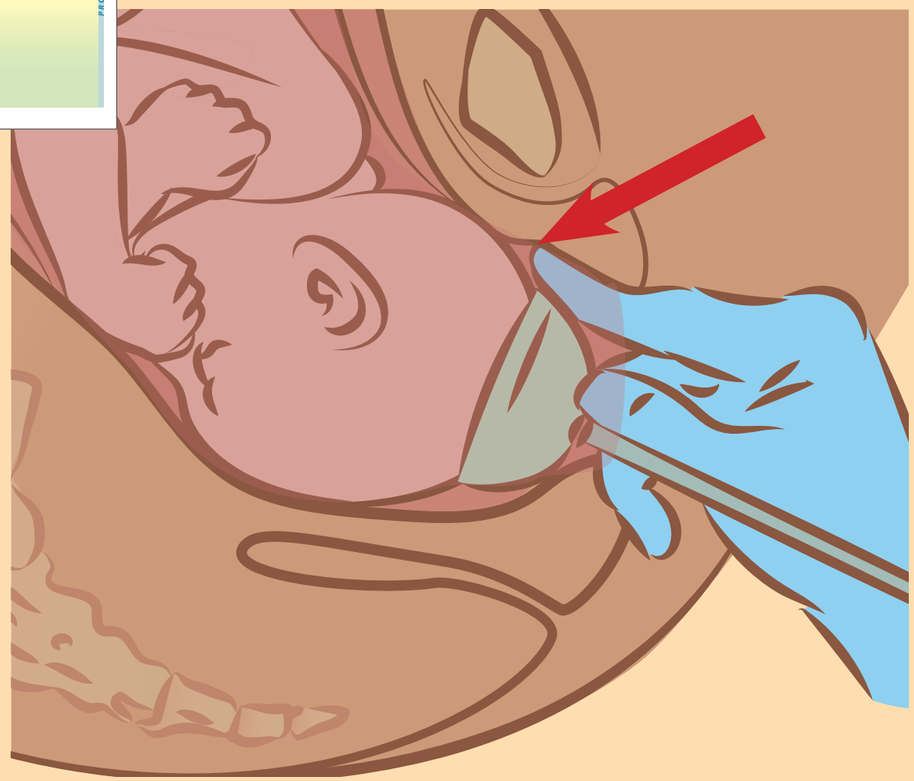
OR

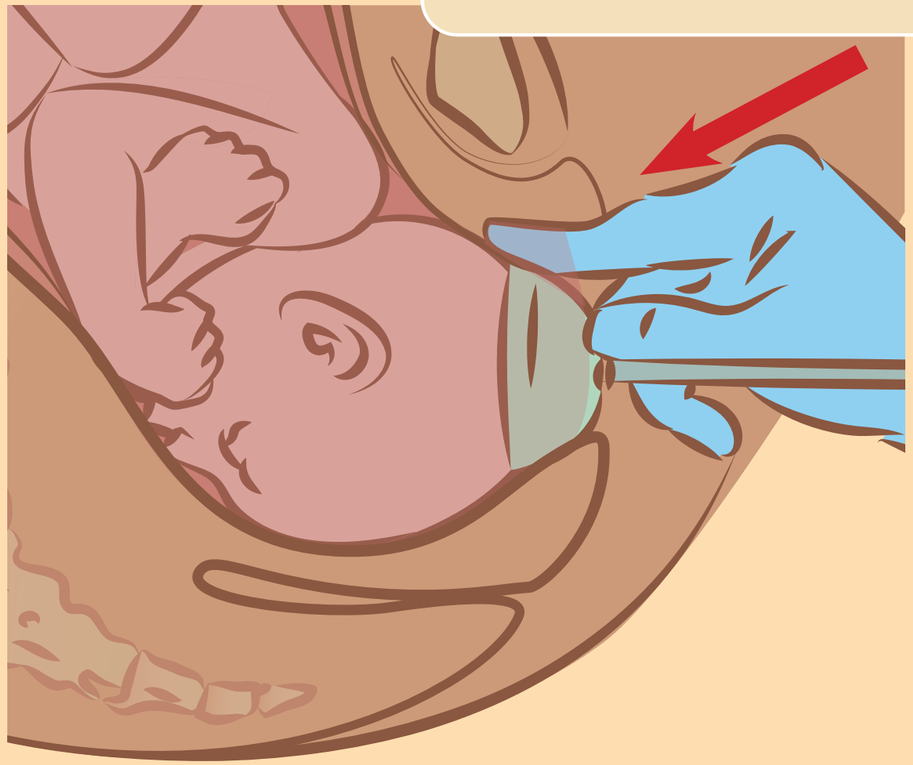
No delivery after 30 minutes

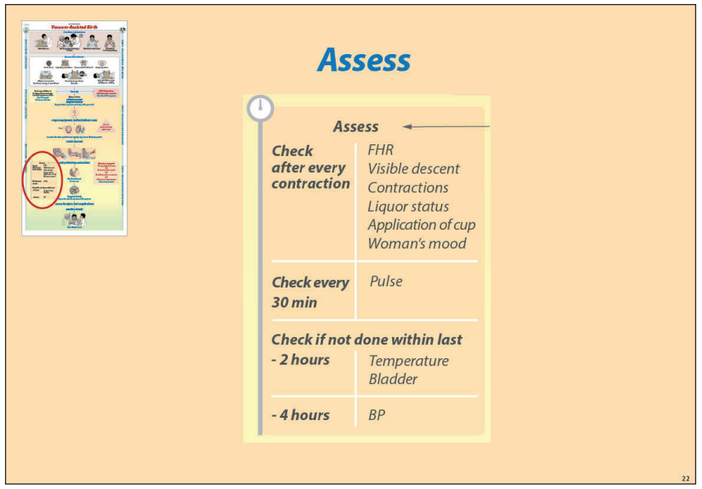
OR

Evidence of scalp trauma

Seek advanced care







Explain

Continually assess to see if the baby is descending and to be sure the woman and baby are doing well. Act fast! Begin treatment and seek advanced care if complications arise!

Remember to keep the woman and her family informed of findings using simple language and include her in decisions about her care.

Have an assistant help you check and record the assessments below on the woman's record. Items should be assessed at least as frequently:

After every contraction

- Fetal heart rate: normal is 110 - 159 bpm
- Note duration of the contraction (normal: each lasts at least 40 sec)
- Also note the number of contractions in a 10-minute period: normal is at least 3/10 minutes
- Visible descent of the fetal head during contractions
- Liquor status
- Application of the cup
- Presence/Absence of scalp trauma
- Woman's mood and behavior: how is she coping?

Every 30 minutes

- Woman's pulse: normal is 60 -100 bpm

Additional assessments to check depend on when her last measurements were made during labor:

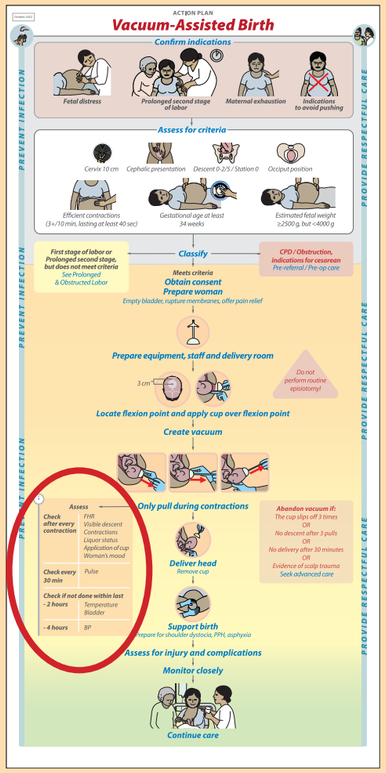
- Assess if not checked in the last 2 hours
  - Temperature (normal: <38 °C)
  - Encourage the woman to keep her bladder empty.
- Assess if not checked in the last 4 hours
  - Woman's BP (normal: systolic BP 90–139 mmHg/ diastolic BP 60–89 mmHg)

As with any assessment, checking the FHT or taking vital signs can be done more frequently based on maternal or fetal status.

If VAB is not successful, she needs continued monitoring until a cesarean is performed. Do NOT attempt forceps after a VAB has failed. Continue ongoing supportive, respectful care and emotional support.

Discuss

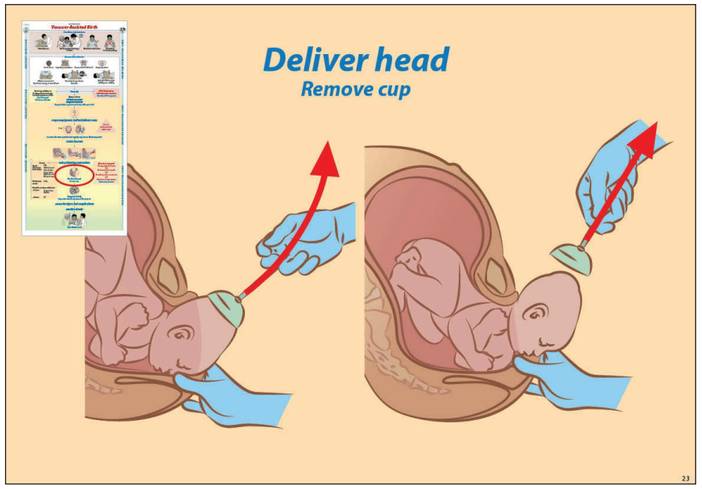
1. Are you able to monitor women as closely as is recommended? If not, why not?
2. Are there ways to improve monitoring?



Assess

Assess

Check after every contraction	*FHR* *Visible descent* *Contractions* *Liquor status* *Application of cup* *Woman's mood*
Check every 30 min	*Pulse*
Check if not done within last	
- 2 hours	*Temperature* *Bladder*
- 4 hours	*BP*



Explain

As soon as the fetal jaw is reachable, release the vacuum and remove the cup.

To protect the perineum and prevent tears:

- Ask the woman to pant or give only small pushes with contractions as the baby's head is born.
- Consider episiotomy only if the perineum interferes with descent and birth of the head.
- Place the fingers of one hand against the baby's head to keep it flexed so that the smallest diameter of the head delivers over the perineum.
- Gently support the perineum as the baby's head is born. You may ask an assistant for help.
  - To protect the perineum, support the anterior and posterior perineum with both hands. This helps maintain flexion and controls birth of the head.
  - If one provider is controlling both traction and vacuum pressure, this provider will control flexion of the head and another provider should protect the perineum.
  - Alternately, one provider can control the vacuum pressure while the other controls traction and flexion of the head and protects the perineum.
- Once the baby's head is born, ask the woman not to push.
- Release the vacuum, remove the cup, and prepare to complete the birth of the baby.

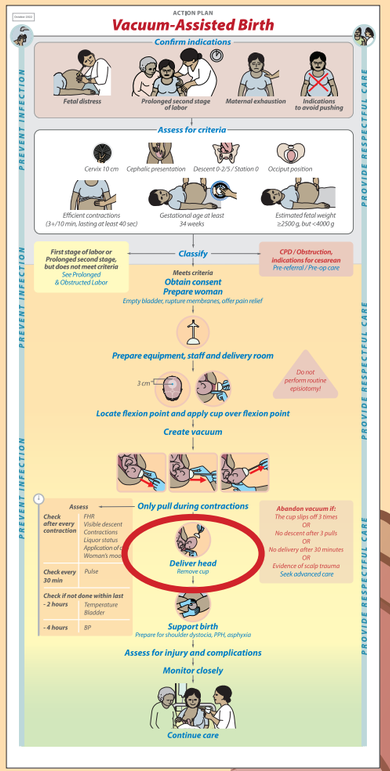
After the head is born, feel around the baby's neck for the umbilical cord:

If there is a nuchal cord, maintain an intact cord as long as possible:

- Try to avoid cutting a tight nuchal cord. This increases the risk of asphyxia, cerebral palsy and death if there is severe shoulder dystocia.
- Slip the cord over the head or down around the shoulders and slide the baby through the cord.
- Do the "Somersault Maneuver". Deliver the baby slowly and bring the baby's face as it is born towards the mother's thigh. Keep the baby low near the perineum while the body is delivered so that little traction is exerted on the cord.

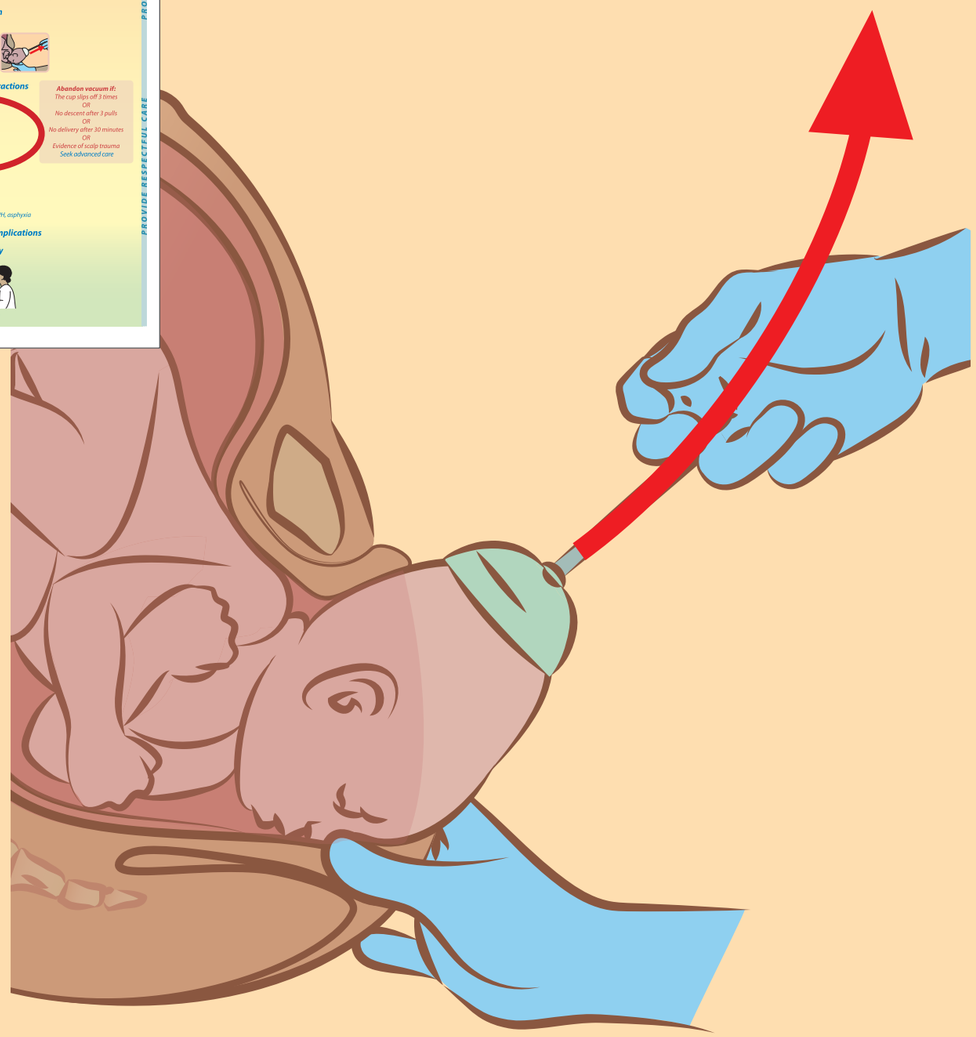
Facilitation note:

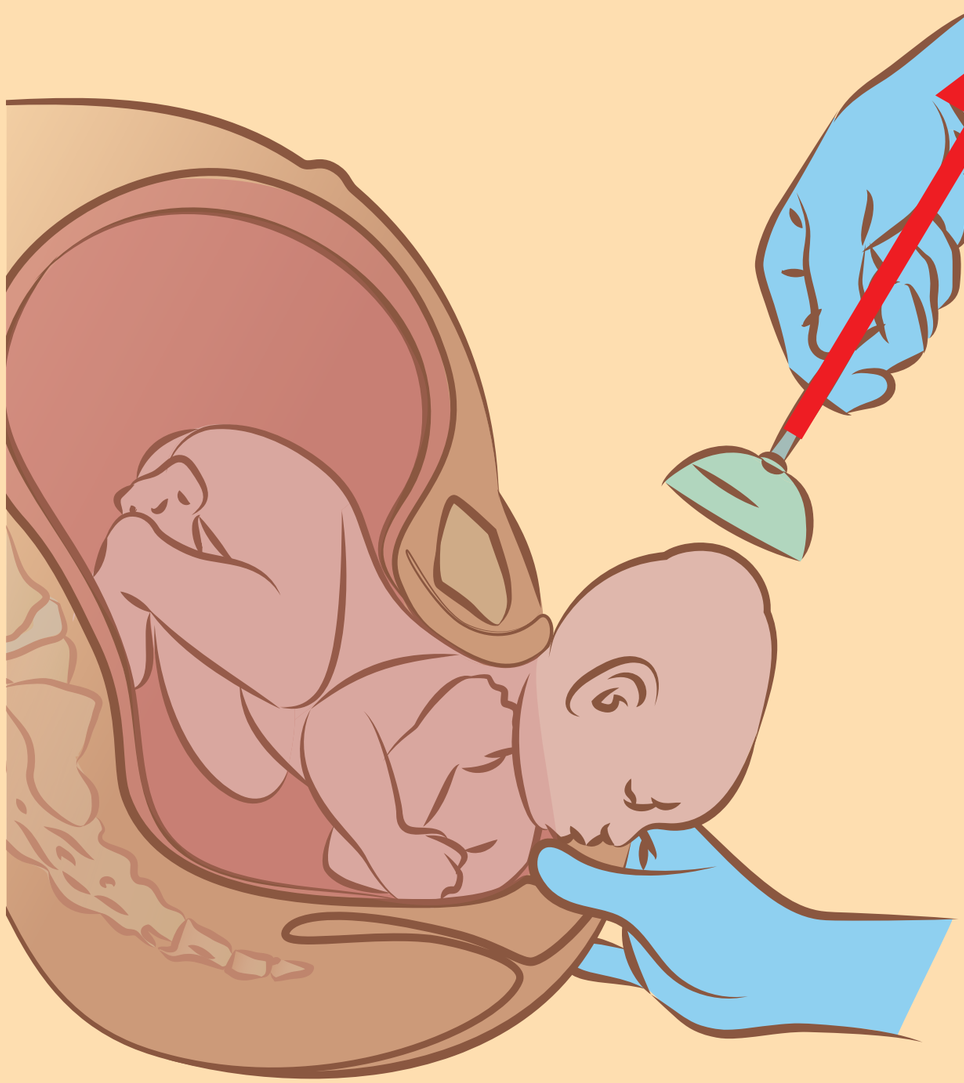
If needed, demonstrate the "Somersault Maneuver" on the childbirth simulator.

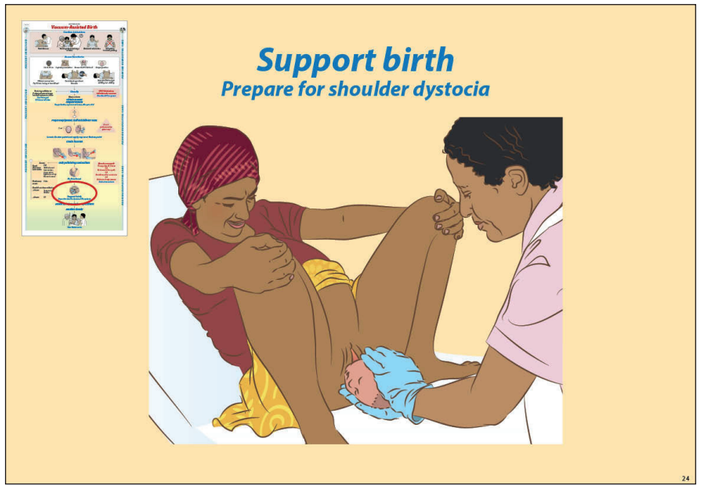


Deliver head

Remove cup







Explain

Promote normal birth and avoid additional interventions unless there are clear indications. Be sure to use active management of the third stage of labor.

Be prepared for:

- Shoulder dystocia - *Refer to* ***HMS Prolonged & Obstructed Labor.***
- A newborn who needs help to breathe - *Refer to* ***HBS Helping Babies Breathe***
- PPH - *Refer to* ***HMS Bleeding After Birth Complete***

Discuss

Ask learners:

"How can you reduce maternal tears during birth of the shoulders?"

- Allow the baby's head to turn spontaneously.
- After the head turns, place a hand on each side of the baby's head. Tell the woman to push gently with the next contraction.
- Support the birth of one shoulder at a time. Move the baby's head towards the woman's tailbone to deliver the anterior shoulder. Note: If you suspect shoulder dystocia, call for help!
- Lift the baby's head towards the woman's pubic bone to deliver the posterior shoulder.
- Support the baby's body as it slides out.

"What care will you give the baby immediately after birth?"

- Place baby on mother's abdomen.
- Cut the cord between 1-3 minutes after birth.
- Immediately dry the baby, check breathing, and cover the baby with a clean, dry cloth and a hat.
- Keep the baby dry, warm, and in skin-to-skin contact for at least one hour.

"If the baby is not breathing at birth, when should you begin resuscitation?"

- As soon as you see stimulation is not working and within the first minute.

"What will you check for before giving a uterotonic drug for AMTSL?"

- Check for a second baby.

"What uterotonic will you use for AMTSL?"

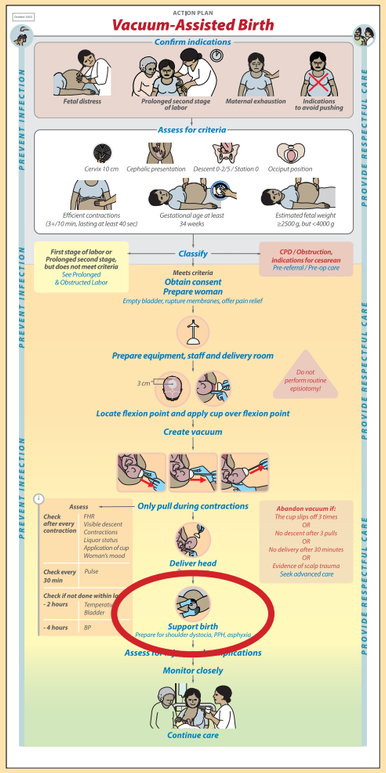
- Oxytocin 10 IU slow IV if IV is in place. If no IV, give oxytocin 10 IU IM. If oxytocin is not available or the quality cannot be assured, give: carbetocin 100 mcg IM/ IV OR misoprostol 400-600 mcg orally OR ergometrine / methylergometrine 0.2 mg IM OR the fixed drug combination of oxytocin and ergometrine IM (1 mL = 5 IU oxytocin + 0.5 mg ergometrine).

"What will you check for in the woman after delivery of the placenta?"

- Immediately after delivery of the placenta, check uterine tone and massage the uterus if soft.
- Teach the woman to check her uterus and to massage if soft. If she feels it is soft or if she feels she is bleeding, have her call you immediately.
- Check the placenta for completeness. If it is not complete, take action!
- Check for genital tears and repair as necessary.

"Which women should receive antibiotics?"

- Any woman with signs of infection;
- If the woman is not being treated for infection with antibiotics and has no signs of infection, give a single dose of prophylactic IV amoxicillin (1 g) and clavulanic acid (200 mg) or follow local protocols.



Support birth

Prepare for shoulder dystocia

EXERCISE

- *Conduct vacuum birth*
- *Provide care during the third stage of labor*

Demonstrate

As facilitator, demonstrate the procedure on a volunteer wearing a simulator. Ask learners to refer to the checklist for VAB on pages 36-39 in the Provider Guide as they follow the demonstration.

Practice

Divide learners into groups of 4 or fewer. Facilitators wear the simulator with the newborn simulator in ROA position. Ask a learner to be the provider and another to be her companion. Observers should follow along the steps in the Action Plan and checklist.

Tell providers they must do the actual assessments. ***Only give findings if the provider does the assessment.***

Say, ***"I am Mrs. B and my labor started 12 hours ago. I had one normal birth and my EDD is 2 weeks from now. I have been in second stage and pushing for 3 hours and I am exhausted. I do not have regional anesthesia. FHR: 193 bpm, 188 bpm, 184 bpm after 3 contractions. As my provider, please assess if I am a candidate for a VAB."***

- GA: 38 weeks + 0 days
- Contractions 4 /10 min, lasting 50-60 sec.
- No Bandl's ring
- Presentation and position: Cephalic, ROA
- Number of fetuses: 1
- Estimated fetal weight: 3000 g
- Descent: 1/5 and +2 station
- Cervix: 10 cm
- Liquor: Clear
- Fetal head: No caput, 1+ molding

Observe the simulation. Ensure that learners stay on track, but do not correct or interrupt.

When learners are done with the assessment, ask:
"What is your assessment and plan?"
Prolonged second stage, fetal distress, maternal exhaustion. Plan for VAB.

If they say they would do VAB ask,
"What are indications for VAB?"
Birth not completed after 3 hours in multipara without regional anesthesia, maternal exhaustion, fetal distress.

"Are there any contraindications for VAB?
No

What will you do next?"
Tell Mrs. B that her baby's heart rate is too fast. Because she been pushing for 3 hours and is exhausted, you recommend using a vacuum to help the baby be born quickly. Give informed consent.

Say,
"Ok, please proceed with a VAB through the 3rd stage of labor."
Stop the simulation after the placenta is delivered.

Debrief by asking,

- ***What did you do well?***
- ***Is there anything you forgot to do?***
- ***What was difficult to do or remember?***
- ***How can we help each other remember?***
- ***What would you do differently next time to improve your performance?***

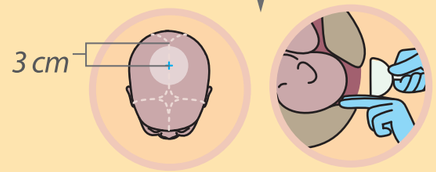
After debriefing, remain as facilitator and give remaining learners an opportunity to practice. Use cases on pages 40-42 in the Provider Guide. Be sure to debrief after each case.

EXERCISE

- *Conduct vacuum birth*
- *Provide care during the third stage of labor*

Empty bladder, rupture membranes, give pain relief

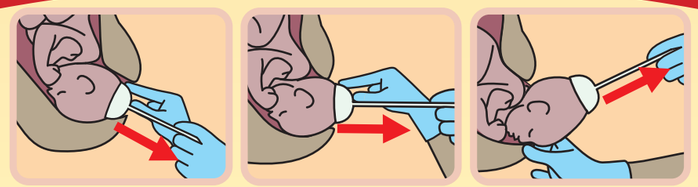
Prepare equipment, staff and delivery room



Do not perform routine episiotomy!

Locate flexion point and apply cup over flexion point

Create vacuum



Only pull during contractions

Assess

Check after every contraction	*FHR* *Visible descent* *Contractions* *Liquor status* *Application of cup* *Woman's mood*
Check every 30 min	*Pulse*
Check if not done within last	
- 2 hours	*Temperature* *Bladder*
- 4 hours	*BP*

Abandon vacuum if:
The cup slips off 3 times
OR
No descent after 3 pulls
OR
No delivery after 30 minutes
OR
Evidence of scalp trauma
Seek advanced care

Deliver head
Remove cup

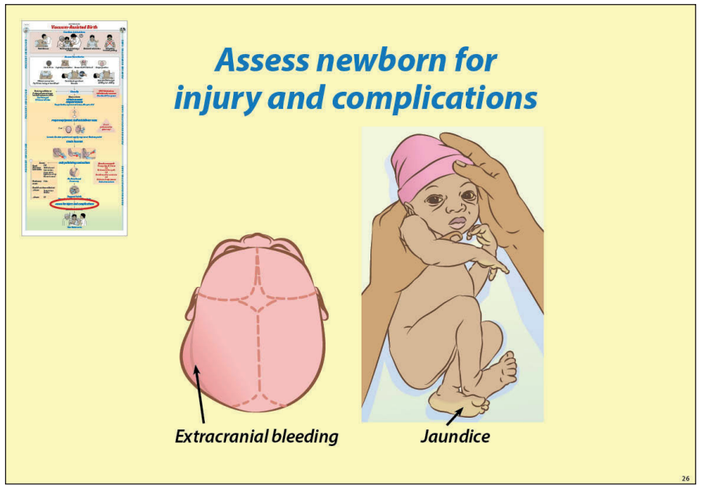
Support birth
Prepare for shoulder dystocia, PPH, asphyxia

Assess for injury and complications

Monitor closely

PREVENT INFECTION

PROVIDE RESPECTFUL CARE



Explain

Even though the risk of fetal death or severe injury from VAB is very low, injury can happen even if a VAB went well. Carefully examine the newborn, note any injuries, and provide care or refer, as needed.

- **Scalp abrasions** are common and harmless but lacerations may occur. Clean and examine lacerations to determine if sutures are necessary.
- **Localized scalp edema** such as caput succedaneum and chignon, which appears under the vacuum cup, can be seen right after birth and are harmless. Explain the reason for the swelling and that it will disappear in a few hours. Reassure parents that it is not a sign of long-term damage.
- **Retinal hemorrhage** is only seen through fundoscopic exam and is harmless. If noted, parents should be assured that it will disappear without treatment.

Discuss

Ask learners to turn to the table on pages 45-46 in the Provider Guide to answer questions about each complication or injury.

1. **Cephalohematoma** is blood clot that forms in the tissue covering of the skull bone and does not cross suture lines.
   - ***When does it appear?***
   - ***How will you diagnose it?***
   - ***What risk does it pose to the brain?***
   - ***Is it associated with jaundice?***
   - ***How will you treat it?***

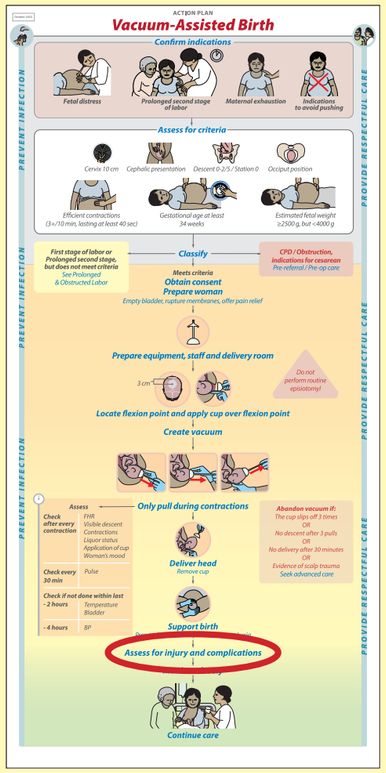
2. **Subgaleal hematoma or hemorrhage** is bleeding between the skull and scalp that crosses suture lines, leading to swelling.
   - ***How common is it?***
   - ***When does it appear?***
   - ***How will you diagnose it?***
   - ***What are risks associated with it?***
   - ***How will you manage it?***

3. **Neonatal jaundice:** Newborns delivered by VAB require careful monitoring for 2-3 days after birth to look for yellowing of the skin and conjunctiva.
   - ***Why are newborns delivered by VAB more susceptible to developing jaundice?***
   - ***What are signs of significant jaundice in newborns?***
   - ***How should newborns with significant jaundice be treated?***

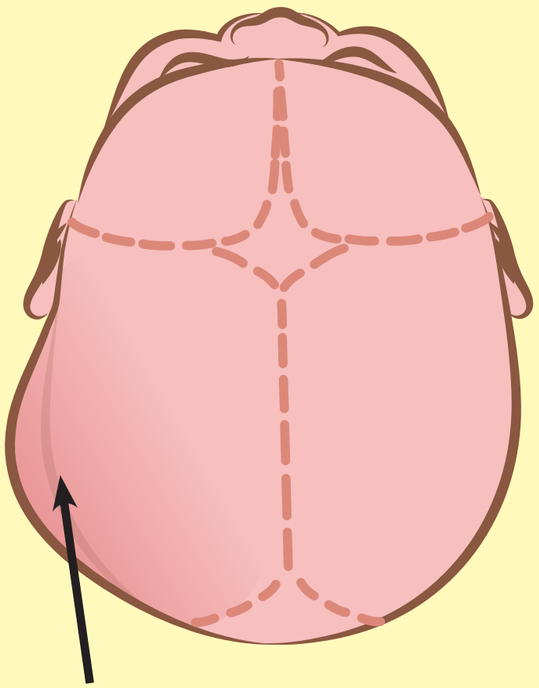
Advanced Care Note

Refer newborns for specialist care if they have a SGH or high levels of bilirubin with jaundice.
Guidance should be adapted based on local protocols and standards.

Remind learners of the importance of carefully diagnosing injuries in the newborn to ensure that they receive the care they need, particularly in the case of a subgaleal hematoma or hemorrhage.

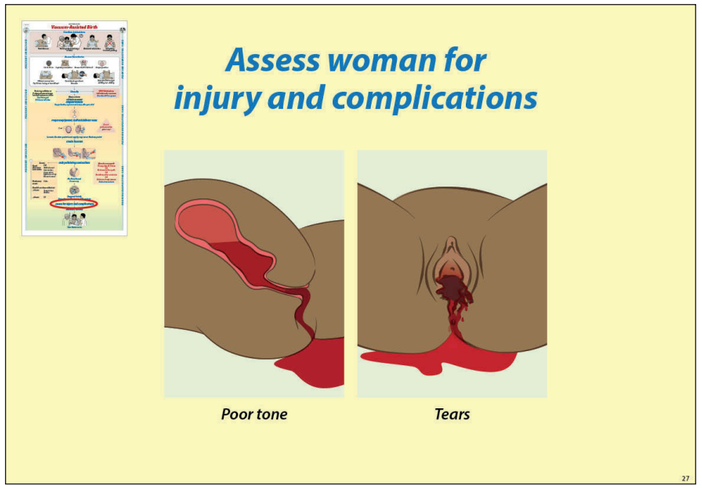


Assess newborn for injury and complications



Extracranial bleeding

Jaundice



Explain

The most common risks to the woman are cervical lacerations, severe vaginal lacerations, labial hematomas, and third- and fourth-degree tears.

To prevent genital tears:

- Ensure the cervix is fully dilated before applying a vacuum.
- Avoid trapping maternal tissue between the cup and the head.
- Only perform episiotomy if there are medical or obstetric indications.
- Guide pushing efforts and protect the perineum during birth of the head.

Women who need VAB may be at increased risk of postpartum hemorrhage and genital tears including 3rd and 4th degree lacerations because they may have had prolonged labor or the fetus might be large. See *Bleeding after Birth Complete 2.0* for reminders on how to manage PPH and lacerations.

Women who have a vacuum assisted birth are at greater risk of infection because labor may have been prolonged, an instrument was introduced into the vagina, and more vaginal examinations have likely been done to assess head position, locate the flexion point and apply the cup. See the *Prolonged & Obstructed Labor* module.

If the woman is not being treated for infection with antibiotics and has no signs of infection, make sure she has received prophylactic antibiotics -- a single dose of intravenous amoxicillin (1 g) and clavulanic acid (200 mg) administered as soon as possible after birth but before 6 hours PP.

Discuss

Ask learners:

"How will you identify complications in the woman after VAB?"

Correct answers include:

- Examine the woman's perineum, vagina, and cervix to identify tears and repair if needed.
- Monitor uterine tone and vaginal bleeding for signs of hemorrhage.
- Monitor vital signs to detect and manage fever or shock from bleeding or sepsis.

Ask learners to refer to pages 43-47 in the Provider Guide as they answer questions below.

Knowledge check

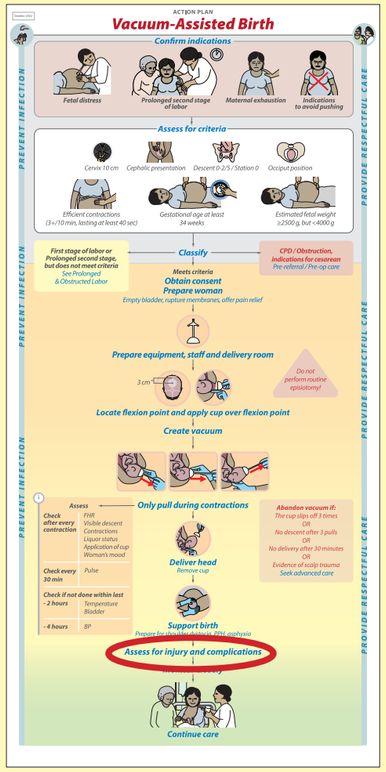
Of the three head injuries – caput succedaneum, cephalohematoma, and subgaleal hemorrhage – which one is potentially life-threatening?
Subgaleal hemorrhage

Why are newborns with injuries and bruising at risk for jaundice?
Because of the breakdown of damaged red cells.

Of the three head injuries – caput succedaneum, cephalohematoma, and subgaleal hemorrhage – which one is present at birth and will not increase in size after birth?
Caput succedaneum

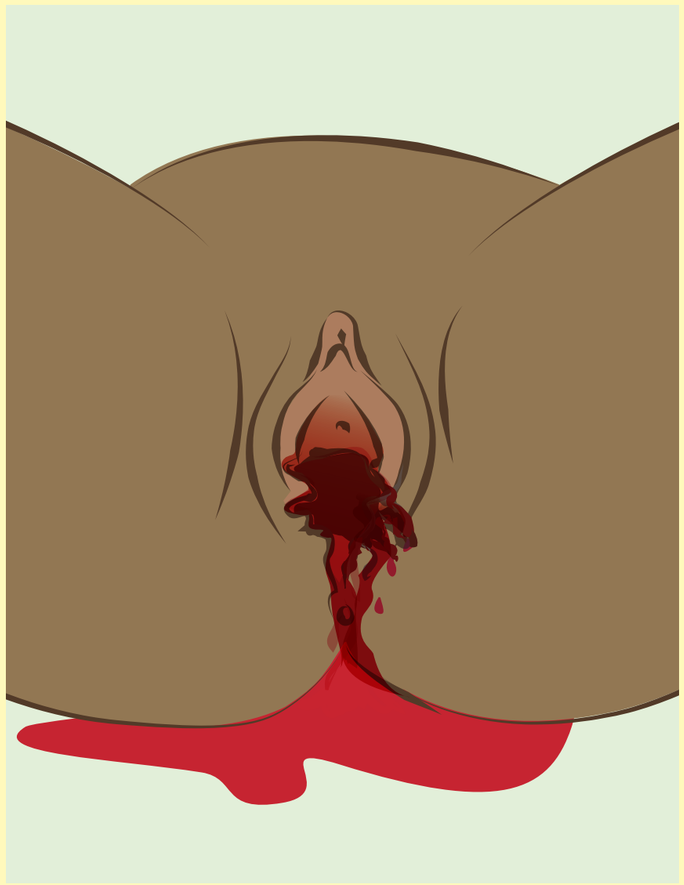
What are the major risks to the woman after a VAB?
Cervical lacerations, severe vaginal lacerations, vaginal hematomas, and third- and fourth-degree tears.

What can you do to prevent genital tears during a VAB?
Ensure complete cervical dilatation, avoid trapping maternal tissue under the cup, only perform episiotomy with medical or obstetric indications, control birth of the head, protect the perineum.



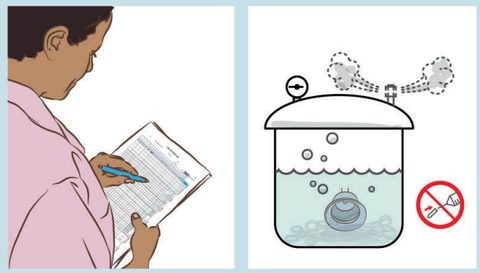
Assess woman for injury and complications

Poor tone



Tears

Post-procedure tasks



Document

Clean equipment

Explain

Facilitation note:

Be sure to use the operating instructions for the type of vacuum available at the facility.

Discuss the VAB procedure with the woman and her companion.

- After the woman has had time to bond with her baby, give her a chance to review how the birth went, any problems encountered, and how they were managed. Explain the plan of care for her and her newborn.

Document

Ask learners to refer to page 48 in the Provider Guide for documentation after a VAB.

Record on the client record:

- Indication for vacuum birth
- Criteria for VAB were met: cervix fully dilated, maternal bladder empty, membranes ruptured, no contraindications
- Fetal status when the vacuum was applied:
  - Position of the fetal head (OA, ROA, LOA; OP, ROP, LOP; LOT, ROT) and if asynclitic
  - Station
  - Estimated fetal weight
  - Interpretation of the fetal heart rate
  - GA
- Record of the discussion with the woman and the type of consent given
- Date and time the procedure was initiated
- Name of the provider performing VAB and names of assistants
- Type of vacuum cup, total time of vacuum application and whether vacuum was reduced between contractions, maximum vacuum achieved, number of pulls and contractions, number of detachments, description of progress with each pull, whether or not an episiotomy was done
- Time of birth
- Birth position (OA, ROA, LOA; OP, ROP, LOP; LOT, ROT)
- Condition of the baby at birth, color, whether breathing and any resuscitation needed as well as position of chignon and any bruising
- Details of the third stage of labor
- Medications given
- Maternal condition following birth
- Any complications affecting the woman or her baby.

Reprocess equipment

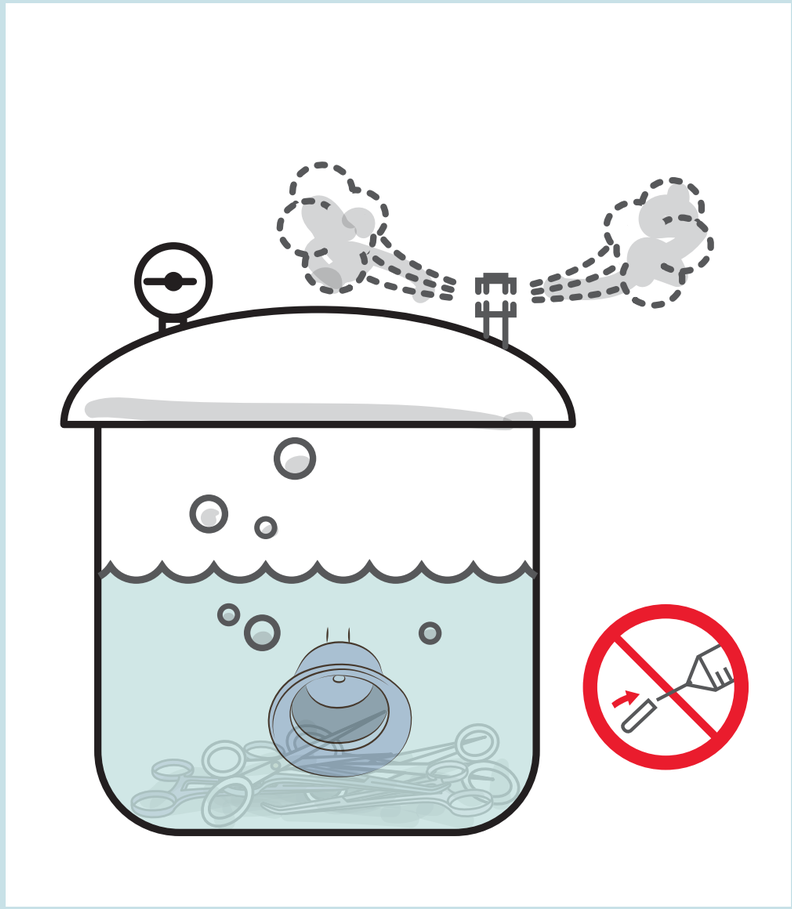
- Clean and process equipment using the operating instructions for the type of vacuum available at the facility.
- Reassemble the equipment and check the vacuum.

Practice

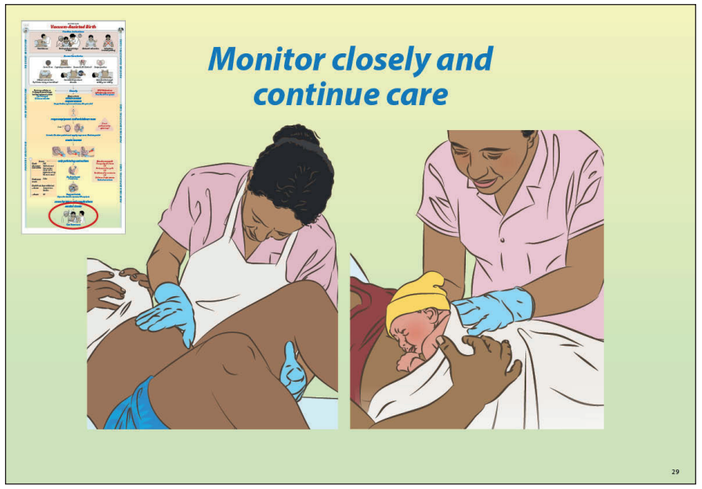
Divide the learners into groups of 4 or fewer. Have learners practice disassembling and re-assembling the equipment using the operating instructions for the type of vacuum available at the facility.

Post-procedure tasks

Document



Clean equipment



Explain

As for all women giving birth vaginally, allow the woman and the baby to rest comfortably where they can be closely monitored. During the first 6 hours postpartum:

Monitor the woman and baby:

- Every 15 minutes for the first hour after birth
- Every 30 minutes for the next two hours
- Every 60 minutes for the next three hours
- Then at least every 6-8 hours until discharge from the facility

Monitor and care for the woman:

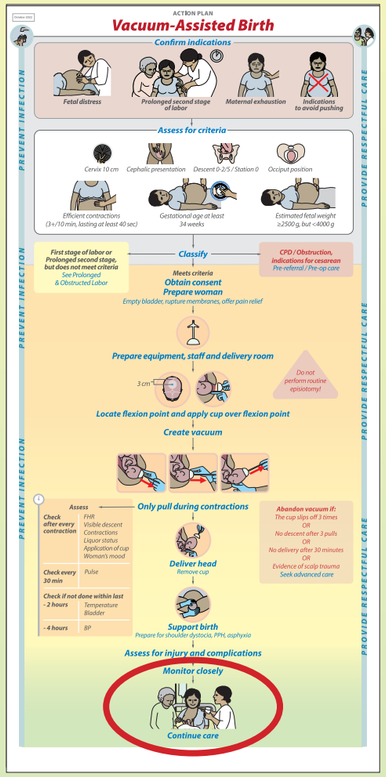
- Monitor the woman's pulse, temperature, blood pressure, uterine tone, and vaginal bleeding.
- Be extra careful about checking for and managing postpartum hemorrhage and infection.
- Provide routine care and counseling for self-care.
- Ensure plan for family planning before she goes home.

Monitor and care for the baby:

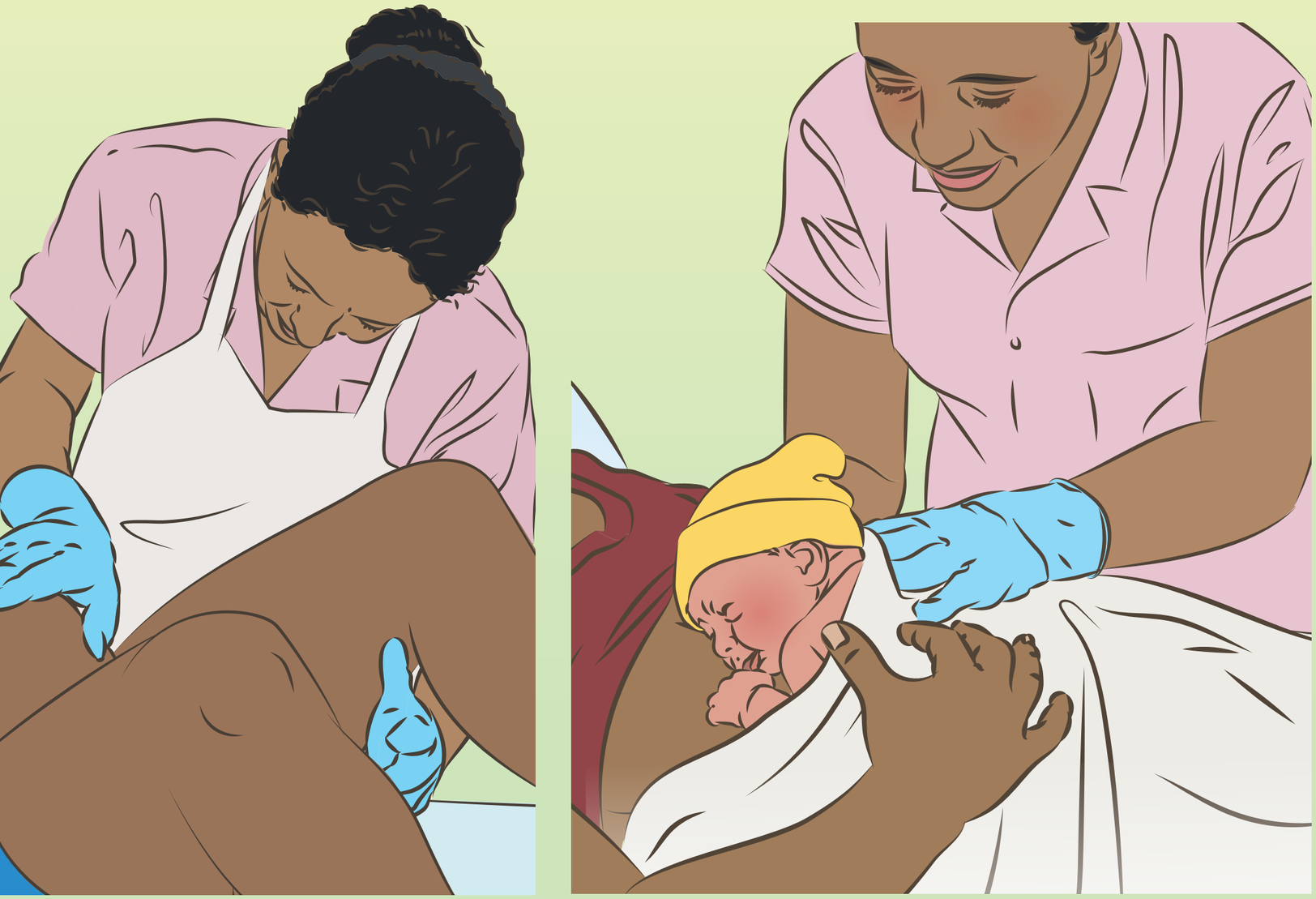
- Monitor the baby's respiration, color, temperature, body tone, breastfeeding, and cord for bleeding. Examine and palpate the head/scalp when monitoring.
- Ensure that the baby is dry and warm, that the cord is securely tied, and that she/he is put to the breast within the hour following birth.
- Keep the baby in skin-to-skin contact for at least one hour after birth.
- Check for signs of subgaleal hematoma or significant jaundice:
  - Lethargy
  - Neonatal seizures
  - Apnea
  - Feeding difficulties
  - Irritability
  - Bulging fontanelle
  - Shallow or strained breathing
  - Abnormal tone
  - Altered level of consciousness
- Provide routine essential care for the newborn.
- Counsel parents on care for the baby.

Review best practices for immediate care of the woman and newborn, ask;
"What do you need to do for all women and their babies to give continued care after birth?"

- Keep the woman and baby in the facility for at least 24 hours following birth. They can go home if their conditions are normal and the baby is feeding well.
- Keep the woman and her baby together 24 hours a day to ensure optimal breastfeeding.
- Review complication readiness plan for the woman and newborn before discharge.
- Give the first postnatal visit for the woman and newborn before discharge.



Monitor closely and continue care



EXERCISE

Preparing for "LDHF" Taking Action!!

Say, ***"Let us refresh our memory of LDHF. Can someone explain LDHF? LDHF means, "low-dose, high-frequency". It is an approach to training where we do small amounts of learning and practice at our facilities and with our colleagues to make it easier to give the best possible care."***

Have learners turn to page 56 of the Provider Guide so they can see the skills practice and quality improvement activities they will do after today. These activities will be coordinated by a peer who will be asked to help. Explain that they will work as a team and help each other do the activities.

Ask that they include all staff in these sessions even if they were not part of the training today.

Taking Action!

What will we do differently together?

Take 5-10 minutes and ask the group to share their experiences in pre-service education or during clinical practice conducting vacuum assisted birth. Ask them how they feel now about having received a refresher training.

Next, ask the volunteer to read the list of issues they wrote down during discussions today.

Ask the group,

- ***"Which of these items do we want to address?"***
- ***"How are we going to make these changes?"***

Point to the front of the Flip Chart and say,
"To help make these changes, we will create smart goals."

Using the example, remind learners what a "SMART" goal is. If the group is large, split into groups of 6 or fewer and ask them to come up with 3 - 5 SMART goals. Give them 15 minutes for this activity. If there is more than one group, have them share their goals. Point out that the first LDHF exercise is putting their plans into action!

EXERCISE

Preparing for "LDHF"
Taking Action!!

LDHF

Ongoing practice and quality improvement activities

Taking Action with S.M.A.R.T Goals

Specific	Authorized providers can perform VABs
Measurable	80% of authorized providers are competent and comfortable to perform a VAB
Achievable	We have staff that are authorized to conduct a VAB and can obtain any required resources
Relevant	VAB can reduce fresh stillbirths and maternal morbidity and mortality associated with prolonged second stage of labor
Time limited	It will take us up to 3 months for staff to gain confidence to perform VAB and obtain the equipment and supplies

Acknowledgments

Helping Mothers Survive Vacuum Assisted Birth

Facilitator Flip Chart

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Jhpiego is an international, nonprofit health organization affiliated with Johns Hopkins University. For nearly 50 years, Jhpiego has empowered frontline health workers by designing and implementing effective, low-cost, hands-on solutions to strengthen the delivery of health care services for women and their families. By putting evidenced-based health innovations into everyday practice, Jhpiego works to break down barriers to high-quality health care for the world's most vulnerable populations.

The Helping Mothers Survive Prolonged & Obstructed Labor module was conceived and co-developed by a team in the Technical Leadership Office of Jhpiego and the American College of Obstetricians and Gynecologists.

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