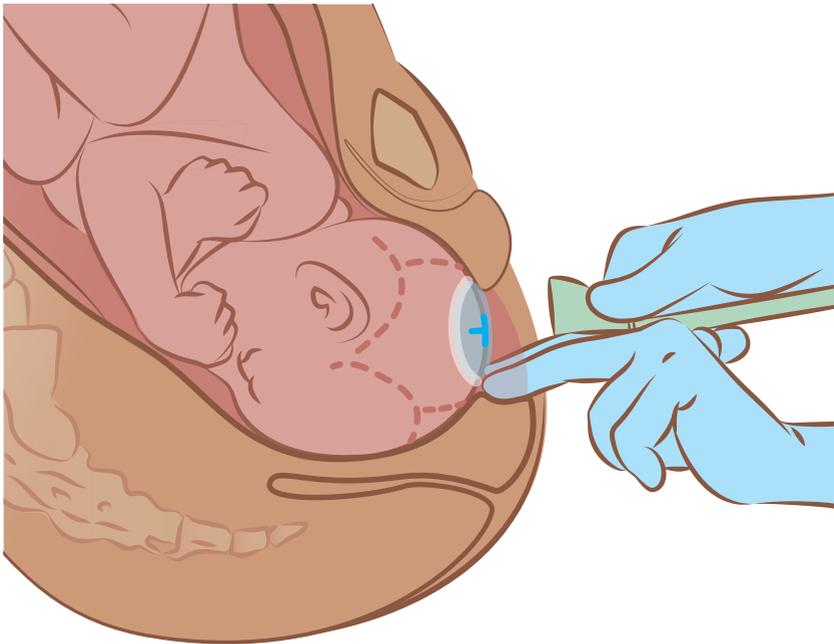


October 2022

Helping Mothers Survive **Vacuum-Assisted Birth**

Provider Guide



Acknowledgments



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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Helping Mothers Survive - Vacuum Assisted Birth

Provider Guide

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You can make a difference

This training will help you and your team to identify women who have indications for a vacuum-assisted birth (VAB), assess women to ensure they meet criteria for a VAB and have no contraindications to a VAB, perform the VAB, and manage maternal and newborn problems associated with VAB.

This module is designed as a 1-day facility training that teaches how to safe conduct a VAB.

The materials for this module include:

1. **Action Plan** - teaching tool and graphic job aid to help providers identify appropriate candidates for VAB, perform VAB safely and manage problems when they arise.
2. **Flip Chart** used for instruction and can be a reference after initial training.

3. **Provider Guide** for both facilitators and learners. It contains job aids and checklists used during training day and in clinical practice as well as more in-depth information. After training, learners will continue to practice new or refreshed skills led by onsite peer coordinators and the Provider's Guide contains instructions for this practice. Recognizing that any learner can potentially coordinate practice after initial training, this Provider's Guide contains information for everyone.

Use this Provider Guide to:

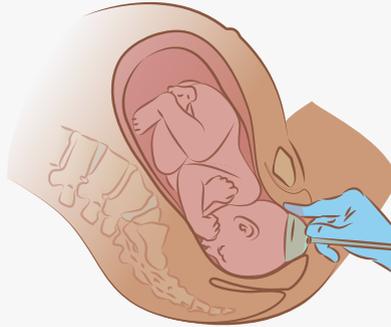
- Help you provide the best care for women who need a VAB.
- Continue weekly practice with peers at your facility after training day. Short exercises start on page 55 and last from 10 to 25 minutes once a week.
- Give you more information and resources to maintain your skills.

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Introduction



Performance Expectation

- Define key terms used in the module.
- Describe competencies required to perform VAB safely.

Key points

- A VAB can help reduce the complications of prolonged second stage of labor.
- Providers who perform VAB must be competent and confident in the required skills.

Knowledge and Skills

- **A vacuum-assisted birth (VAB) is the vaginal birth of a baby performed with the help of an obstetric vacuum device.**
- **The vacuum is designed to produce traction upon the fetal scalp in order to assist maternal pushing efforts.**

VAB can help reduce the complications of prolonged second stage of labor.

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

- identify the indications appropriate to the procedure.
 - assess a woman to ensure she meets all criteria for performing a VAB before attempting to perform a VAB.
 - identify contraindications to performing a VAB.
 - provide care for women with indications for a VAB that do not meet criteria.
 - perform the procedure.
 - manage problems and complications associated with a VAB.
- Using vacuum to assist with birth requires skill and carries risks. It should only be used when a specific obstetric or medical indication is present.
 - Vacuum should not be used to “help” vaginal birth when labor is progressing normally.

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.

Respectful care, Emotional support, Communication and Infection prevention



Performance Expectation

- Consistently provide respectful care while caring for a woman needing VAB.
- Respect the woman's right to information, informed consent, and respect her choices and preferences.

Key points

To ensure success of a VAB, it is vital to have good communication between:

- The providers and the woman and her companion.
- Providers caring for the woman.
- Providers in the delivery room and providers from other services – newborn care, operating theater, referral facilities or medical specialists in the facility.

Knowledge and Skills

A positive relationship between the woman and her care providers is vitally important for ensuring that she understands the need for VAB, gives informed consent, and can work with providers as they care for her.

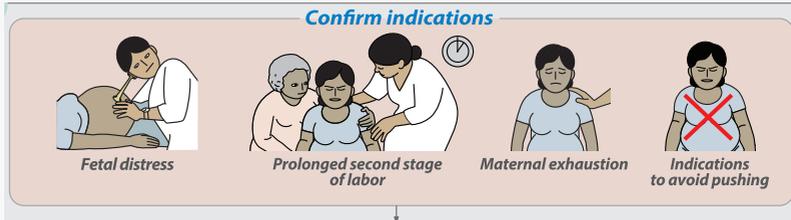
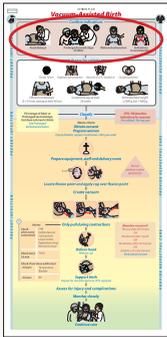
- A positive birth experience helps create a culture of confidence in birthing services at your facility even if there are complications.
- Providing emotional care is especially important when conducting a VAB because:
 - Women who require a VAB may feel they have “failed”, may be anxious, or afraid for their own or their baby’s well-being.
 - Anxiety and fear may affect the ability to follow directions and negatively affect the progress of labor.
- Women who have a VAB are at a greater risk of infection because labor is prolonged, an instrument is being introduced into the vagina, and providers will be introducing their hand into the vagina when assessing position and locating the flexion point, applying the cup, and applying traction.
- As a provider aim to create a positive birth experience to empower and comfort women rather than detract their self-

confidence or self-esteem.

- To reduce the risk of infection during VAB, ensure:
 - Clean delivery room and table
 - Clean hands
 - Sterile gloves
 - Clean perineum
 - Sterile / High-level disinfected vacuum cups, tubes, and machines

Confirm indications

for vacuum-assisted birth



Performance Expectation

- Identify women in second stage of labor who have indications for a VAB.

Key points

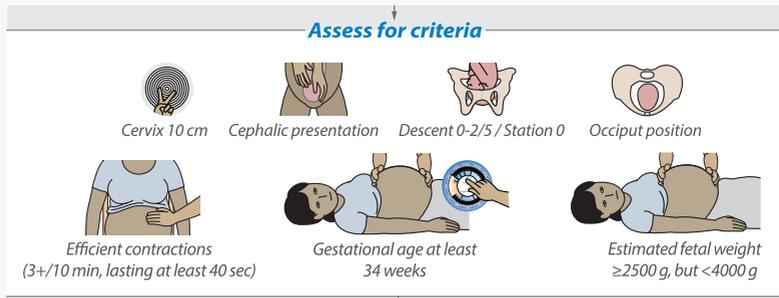
- To ensure safe use and success of a VAB, it is vital that:
 - Providers understand obstetric and medical indications for a VAB.
 - Providers only consider a VAB when there are clear indications for its use.

- ### Knowledge and Skills
- A vacuum produces traction on the fetal scalp to assist maternal pushing efforts.
 - VAB requires skill and carries risks. Only use vacuum when an obstetric or medical indication is present.
 - When the woman's condition is satisfactory, the fetus is in good condition, and there is evidence of progressive descent of the fetal head, there are no grounds for VAB.
 - Vacuum should not be used to "help" vaginal birth that is progressing normally.
 - To safely use an obstetric vacuum, providers must be able to identify indications for VAB.

- Indications for VAB are:**
- Fetal distress in second stage requiring immediate birth.** Listen to the FHR for a minimum of 1 minute. Listen during a contraction and continue for at least 30 seconds after the contraction. Signs of distress are:
 - Very slow fetal heart rate (<100 bpm) between contractions or persisting after contractions throughout at least three contractions.
 - Rapid fetal heart rate (≥ 160 bpm) between contractions or persisting after contractions throughout at least three contractions.
 - 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 going into second stage and an obstetric vacuum applied once the head is engaged **if** she meets criteria for a VAB and all contraindications for a VAB have been ruled out.

Assess for criteria for vacuum-assisted birth



Performance Expectation

- Assess a woman with indications for VAB to rule-out contraindications and confirm that she meets criteria.

Key points

- VAB has benefits and risks. To minimize risks, providers must confirm that a woman meets criteria before attempting VAB.
- Second stage of labor could be prolonged for several reasons. When the only indication for VAB is prolonged second stage, providers must carefully assess the woman to identify the cause to ensure a VAB is the correct intervention rather than routinely attempting a VAB any time prolonged second stage is suspected.

Knowledge and Skills

Successful VAB requires careful selection of the right client.

- When there is an indication for VAB, rapidly confirm that she meets all criteria and has no contraindications for a VAB.

Criteria for VAB

- CPD and obstruction are ruled-out
- The cervix is completely dilated (10 cm)
- Cephalic presentation
- Occiput position of the fetal head is confirmed
- The fetal head is engaged [0 station or lower in the birth canal – 0 to +4] - no more than 2/5 palpable above the pubic symphysis
- There are at least 3 contractions/10 minutes, each lasting at least 40 seconds
- Gestational age (GA) is at least 34 weeks
- The estimated fetal weight is at least 2500g and not more than 4000g

- If prolonged labor is the only indication for a VAB, rapidly assess the four “P”s (Patient-Passenger-Power- Passage) to identify the cause of prolonged labor and decide if VAB is the most appropriate intervention. The differential diagnosis of prolonged second stage is:

- 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 what care she needs and on the mode of childbirth.

Contraindications to VAB

Any of the following is a contraindication for VAB:

- GA < 34 weeks or unsure GA
- Baby is <2500g or >4000g or unsure
- There are signs of CPD / Obstruction
 - Vulvar / cervical edema and/or
 - Presence of Bandl's ring with empty bladder and/or
 - Secondary arrest of descent / no descent with at least 3 contractions/10 minutes, each lasting at least 40 seconds and/or
 - 3+ caput and/or 3+ molding
- There is a malpresentation / malposition that requires a cesarean birth (chin posterior position; transverse lie; shoulder, brow, footling breech, or arm presentation; complete or frank breech with a poorly flexed fetal head)
- Non-cephalic presentation
- Non-occiput position
- Head unengaged (descent 3-5/5 palpable above the upper level of the pubic symphysis / -1 to -4 station)

If a contraindication is present the woman needs advanced care.

Assessment of the 4 Ps

Patient

1. How well is she coping? Is she afraid, anxious, in distress, or not in control of her behavior?
2. If she is accompanied by a person of her choice?
3. Is she dehydrated (acetone in urine ++ or more, dry mouth and tongue, sunken eyes, extreme thirst, dark-colored urine, fatigue, dizziness, confusion)?
4. Is her bladder full?
5. Has she chosen the position she wants to push?
6. Does she have signs of a uterine infection (temperature $>38^{\circ}\text{C}$, abdominal / uterine tenderness, foul odor to vaginal discharge)?

Passenger

7. What is the gestational age?
8. What is the estimated fetal weight?
9. How is the fetus tolerating labor?
 - What is the FHR during and after contractions? Are there signs of fetal distress? FHR <110 or ≥ 160 bpm?
 - Is liquor meconium-stained?
10. What is the fetal presentation?
11. Will the presentation most likely result in a vaginal birth (i.e. cephalic or frank/complete breech)?
12. Could the presentation be associated with prolonged labor?
13. What is the fetal position?
14. Will the position most likely result in a vaginal birth (i.e. occiput, chin anterior, or frank/complete breech with well flexed head)?
15. Could the position be associated with prolonged labor?
16. Is the fetal head engaged?
17. Is the fetal head well flexed?

Power

18. Is the cervix completely dilated?
19. How long has the woman been in pushing phase of second stage?
20. How many contractions does she have in a 10-minute period? How many seconds does each contraction last?
21. Does the uterus relax between contractions?
22. Is there progressive descent of the fetal presenting part with each contraction / pushing effort?

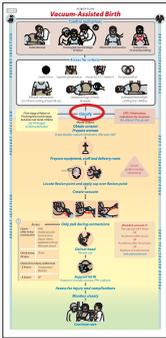
Passage

23. Does she have a cesarean scar? Was the cesarean for CPD/FPD?
24. Are there signs of obstruction or CPD/FPD?
 - Maternal and/or fetal distress and/or
 - 3+ caput and/or 3+ molding and/or
 - Bulging lower portion of uterus / presence of a constriction band or ring (Bandl's ring) and/or
 - Poor descent of the fetal presenting part with good contractions
25. Are there problems with the birth canal that may cause obstruction (e.g., narrow vagina, female genital mutilation or tumors)?
26. Is the pelvis deformed or narrow?

Make sure you consult a senior provider if you need help making decisions about:

- Gestational age
- Estimated fetal weight
- Fetal position
- Adequacy of the pelvis
- The mode of childbirth

Classify



Performance Expectation

- Accurately classify labor problems when there are indications for VAB.

Key points

Good outcomes for the woman and baby depend on:

- An accurate assessment of clinical picture.
- A well-informed diagnosis and classification of the problem.
- A good plan of care.
- Clear and effective communication with the woman, her companion, and other providers.

Knowledge and Skills

- An optimal plan of care depends on a provider's ability to accurately assess and interpret clinical findings.
- Accurately classifying labor problems based on clinical findings will lead to optimal care.

Once you have completed your assessment, the plan of care will be based on the classification.

Classifications

- The woman needs **advanced care** for ANY of the following:
 - Obstructed labor or signs of CPD.
 - Contractions cease and suspected uterine rupture.
 - Any complication that you cannot manage at your facility.
 - Malpresentation / malposition that requires a cesarean birth.
 - Maternal and/or fetal distress and pushing phase has lasted more than 2 hours (multipara)/3 hours (nulliparas) BUT she does not meet criteria for a VAB.
- The 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.
- **The woman has indications and meets criteria for VAB.**

Explain your assessment and options for care to the woman and her companion.

EXERCISE

Review of the Prolonged & Obstructed Labor module

For each problem listed in the “Problem” column, choose the appropriate action(s) from the “Action” column and then **write the letter(s) for the action(s) in the “Response” column.** Please note that there may be more than one correct response for each problem.

Problem	Response	Action
Severe headache, blurred vision, fits, right upper quadrant pain, fever/chills		A. Conduct a rapid assessment and manage the problem.
Signs of maternal distress (pulse ≥ 100 bpm, temperature $>38^{\circ}\text{C}$, sBP <90 mmHg/ dBP >90 mmHg)		B. Give her emotional support and encouragement.
The woman is anxious		C. Have her rest until the cervix is completely dilated.
The woman is struggling to cope		D. Make sure she has a companion of her choice and help the companion support and comfort her.
Cervix < 10 cm		E. Have her rest until she has the urge to push.
The woman began pushing before she had the urge to push		F. Help her get into the position of her choice or encourage her to change position.
The woman is pushing on her back		G. Give oxygen, ensure the woman is not on her back, give fluids, and assess/manage if there is a maternal cause (fever, dehydration, anxiety, medications).
The woman is not pushing in the position of her choice		H. Offer sweetened drinks for energy or IV fluids if necessary
The woman is too tired to push		I. Evaluate if the woman is a candidate for augmentation of labor with oxytocin.
There are signs of dehydration		J. Augment labor with oxytocin.
There are fewer than 3 contractions in 10 minutes, each lasting less than 40 seconds		K. Prepare the woman for a cesarean birth.
FHR <110 or ≥ 160 and/or thick meconium in non-breech presentations		L. Conduct an assessment to evaluate for signs of obstruction/CPD and other indications for cesarean birth.
Presentation/position other than occipital		M. Evaluate if the woman meets criteria for VAB.
Secondary arrest of descent / no descent		
3+ caput and/or 3+ moulding		
Bulging lower portion of uterus or presence of a constriction ring or band (Bandl's ring) with an empty bladder		

EXERCISE

Classify

You will work in groups of 3-4 with a facilitator wearing the simulator. Learners will take turns being the provider, companion, and observer. The provider makes the assessments and the facilitator or observer will give the results.

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?

Case 1

“This is Mrs. B whose labor started 16 hours ago. She has had three normal births and her EDD is 1 week from now. She has declined having a companion with her. She has been in second stage and pushing for 3 hours. FHR: 188 bpm, 192 bpm, 172 bpm after 3 contractions. Mrs. B is very tired but still able to push. Vital signs: BP 124/72 Pulse 78 bpm, Respirations 14 breaths/minute, Temperature 36.8°C. She has not received any regional anesthesia, IV fluids, or medications.

As Mrs. B’s provider, please assess if she is a candidate for a VAB.”

Contractions: 3/10 min, lasting 50-60 sec

Abdomen:

- No Bandl’s ring
- Bladder is distended
- Cephalic presentation

Position: LOT

Number of fetuses: 1

Estimated fetal weight: 2500 g

Descent: 1/5 above the symphysis pubis, +2 station

Cervix: 10 cm

Liquor: Meconium

1. *Is there an indication for VAB?*
2. *Are there any contraindications to VAB?*
3. *Does she need any other interventions instead of or in addition to VAB?*

Case 2

“This is Mrs. C 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 husband 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 148 bpm during a contraction and 152 bpm 30 seconds after the contraction. Her vital signs are: BP 112/62, pulse: 96 bpm, temperature: 37.6°C, respirations: 14 breaths/minute. She has not received any regional anesthesia, IV fluids, or medications.

As Mrs. C’s provider, please assess if she is a candidate for a VAB.”

Contractions: 4/10 min, lasting 40-60 sec

Abdomen:

- No Bandl’s ring
- Bladder is not distended
- Cephalic presentation

Position: ROP

Number of fetuses: 1

Estimated fetal weight: 3500 g

Descent: 1/5 above the symphysis pubis, +2 station

Cervix: 10 cm

Liquor: Clear

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

Case 3

“This is Mrs. D who has been receiving care at our facility. She gave birth once before and she is one week overdue. Her labor started 16 hours ago and her membranes ruptured 8 hours ago.

Her mother is with her. She has been pushing for 2.5 hours on her back. She is tired but feels she can still push. The baby’s heart rate was 112 bpm during a contraction and 156 bpm 30 seconds after the contraction. Her vital signs are: BP 102/52, pulse: 82 bpm, temperature: 37.2°C, respirations: 16 breaths/minute. She has not received any regional anesthesia, IV fluids, or medications.

As Mrs. D’s provider, please assess if she is a candidate for a VAB.”

Contractions: 2/10 min, lasting 30-40 sec

Abdomen:

- No Bandl’s ring
- Bladder is distended
- Cephalic presentation

Position: ROA

Number of fetuses: 1

Estimated fetal weight: Fundal height is 40 cm

Descent: 2/5 above the symphysis pubis, 0 station

Cervix: 10 cm

Liquor: Clear

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

Case 4

“This is Mrs. E who has been receiving care at our facility. She has given birth twice before and her EDD is 2 weeks from now. Her labor started 14 hours ago and her membranes ruptured 12 hours ago.

Her friend is with her. She has been pushing well for 30 minutes and says she is able to continue pushing. The baby’s heart rate goes down to 108 bpm during a contraction and between 168-188 bpm 30 seconds after the contraction. Her vital signs are: BP 118/82, pulse: 86 bpm, temperature: 37.8°C, respirations: 16 breaths/minute. She has not received any regional anesthesia, IV fluids, or medications.

As Mrs. E’s provider, please assess if she is a candidate for a VAB.”

Contractions: 4/10 min, lasting 50-60 sec

Abdomen:

- No Bandl’s ring
- Bladder is not distended
- Cephalic presentation

Position: ROT

Number of fetuses: 1

Estimated fetal weight: 3500 g

Descent: 0/5 above the symphysis pubis, +3 station

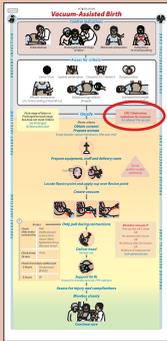
Cervix: 10 cm

Liquor: Meconium

1. *Is there an indication for VAB?*
2. *Are there any contraindications to VAB?*
3. *Does she need any other interventions instead of or in addition to VAB?*

Classify

CPD/Obstruction/Indications for cesarean



Signs of CPD / Obstruction

- ✓ Malpresentation / malposition that requires a cesarean birth
- ✓ Contractions cease (suspected uterine rupture)
- ✓ Maternal and/or fetal distress and the woman has contraindications for VAB

Performance Expectation

Share key and concise medical information with other providers and build trust between patients and their healthcare team.

Ensure a patient has safe, coordinated transitions between different healthcare facilities and providers.

Key points

- Continuity of care is a process that must involve the patient and all members of the healthcare team.
- Patients may be cared for by many people in different locations when referral or transfer is needed. This can increase the risk for incomplete or incorrect care.

Knowledge and Skills

- When a woman has a complication, she will need advanced care. If you cannot provide this, transfer her care to someone who can. This may mean referring to another facility or calling a provider with the right competency in your facility.

- To ensure continuity of care during the transfer:
 - Communicate with the receiving provider using the SBAR communication tool.
 - Carefully and sensitively communicate with the woman and her companion about your findings and the need for referral.

SBAR

S	Situation. Give your name and unit; the patient's name; a short description of the problem.
B	Background. Briefly give key information related to the problem. This could be date of admission; diagnosis, pertinent history, allergies, medications; vital signs, signs and symptoms, findings from physical assessment, changes from previous assessments; brief review of treatment to date.
A	Assessment. Say what you think the problem is based on your findings.
R	Recommendation. Tell the provider what you think she needs including additional tests and ask them what they want you to do until she reaches care.

EXERCISE

CPD/Obstruction/Indications for cesarean

Review the information below for Ms. X., then prepare the SBAR communication and communicate with your partner.

Information on Ms. X:

- Pushing at home for 2+ hours
- G3P2, age 24 years
- EDD: 5 weeks from today's date (35 weeks + 0 days).
- Vital signs: BP 132/78, R 20, P 88, T 37
- FHR: 188 bpm, 192 bpm, 184 bpm.

Abdominal examination:

- Contractions 4 /10 minutes, 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

Vaginal examination:

- Cervix: 10 cm
- Liquor: Clear
- -3 station
- Position: ROA
- Fetal head: 3+ caput, 2+ molding

Treatment:

- IV with normal saline at 125 mL/hour and blood for hemoglobin.
- Positioned on her left side.
- Oxygen given at 4 L/min.

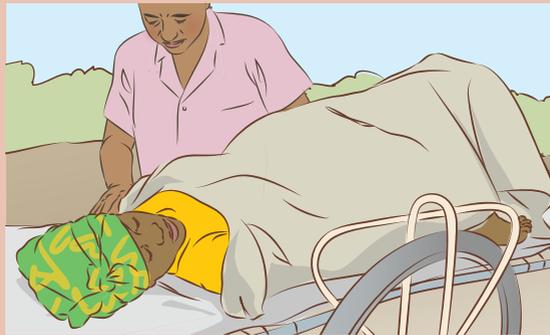
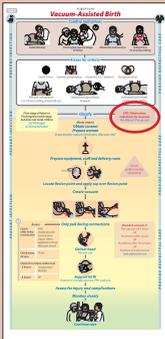
S:

B:

A:

R:

Pre-referral / Pre-op care



Performance Expectation

- Provide pre-referral or pre-operative care to women who will be transferred or referred for a complication and/or a cesarean birth.

Key points

- To improve outcomes for the woman and baby, provide continuous quality care until an advanced care provider assumes care.

Knowledge and Skills

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

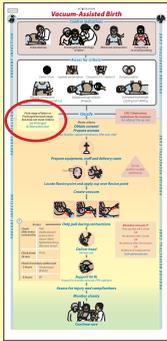
- Keep woman and family informed about what is happening, what you are doing and why.
- Continue to monitor the progress of labor and the condition of the woman and her fetus closely. Never leave her alone.
- Act quickly, ensure urgent things are done first.
- If you are transporting to another facility, begin your transport plan.
- Inform the surgical team to prepare for a likely cesarean section.
- Notify pediatric team to receive distressed baby.
- Explain all procedures, get her consent, discuss test results, listen and be sensitive to her feelings.
- Place woman in left lateral position to improve

blood flow to uterus and other vital organs.

- Start an IV of Ringer's Lactate or normal saline.
- Collect blood for hemoglobin, cross-match and bedside clotting test right before infusion of fluids:
 - If signs/symptoms of shock: Rapidly infuse IV fluids initially at the rate of 1 L in 15–20 minutes. Give at least 2 L of these fluids in the first hour. Once the condition improves (increased BP, lowered pulse rate), adjust the rate of infusion to 1 L in six hours.
 - If dehydrated: Give 500 mL over 30 minutes. If condition has not improved, give an additional 500 mL over 30 minutes. Once the condition improves, adjust infusion rate to 1 L in 6-8 hours.
 - Maintenance IV: Infuse IV fluids at a rate of 1 L in 6-8 hours.
- If in shock, has severe PE/E and/or will have a cesarean birth, place an indwelling foley catheter and record output.
 - Record all fluid input (IV and oral), and all urine output. NOTE: Do not give oral fluids to a woman in shock!
- Give antibiotics if signs of infection (temperature $>38^{\circ}\text{C}$, foul-smelling vaginal discharge, uterine tenderness)
 - ampicillin 2 g IV every six hours; – PLUS
 - gentamicin 5 mg/kg body weight IV every 24 hours.
- Provide pain management as needed.
- Complete the referral note and communicate with the receiving providers/facility.

Classify

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



Performance Expectation

- Identify and manage causes of prolonged second stage that do not meet criteria for a VAB or cesarean birth.
- Identify and manage misdiagnosed second stage of labor.

Key points

- A correct diagnosis is needed to ensure that a woman receives the correct care.
- A misdiagnosis and a missed diagnosis can result in a condition worsening during the extra time it takes to correctly diagnose the problem.

Knowledge and Skills

- Your plan of care should be based on clinical findings.

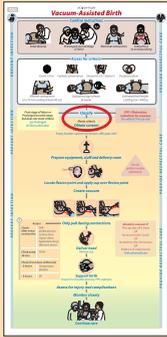
Refer to *HMS Prolonged & Obstructed Labor*.

- **If your assessment of the woman shows that the cervix is not fully dilated and there are no signs of CPD/obstruction:**
 - Assess for and manage the cause.
 - Ensure she has a companion of her choice
 - Help her companion provide care and comfort to help her cope.
 - 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.

- **If second stage is prolonged, but she does not meet criteria for a VAB and there are no signs of CPD/obstruction, assess for and 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 flat on her back or not in the position of her choice, help her get into the position of her choice or encourage her to change position;
 - If present, treat dehydration or infection;
 - If her bladder is full, help her empty her bladder; catheterize only if she is unable to pass urine;
 - Provide other interventions, as needed.
- **In all cases:**
 - Provide emotional care and support.
 - Continue to monitor the well-being of the woman and newborn and labor progress and respond immediately to problems.

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

Performance Expectation

- Obtain informed consent for VAB.

Key points

- For consent to be informed, a patient must understand the risks and benefits of the treatment being offered. It is essential for patients to understand fully so they can make an informed choice.

Knowledge and Skills

- Use of vacuum in the right cases can save lives, but can also cause trauma. It is therefore essential that a woman gives her informed consent for the procedure.
- Informed consent **requires that the patient demonstrates that she has knowledge of all relevant facts and understands the risks and benefits.**

- If a woman has indications for a VAB, meets criteria for a VAB and has no contraindications, rapidly:
 - Inform the woman and her companion of findings and her options for care.
 - Provide counseling to gain informed consent for VAB.
- Inform the woman and her companion about:
 - Indications: **ONLY** include indications that apply to this birth/woman.
 - Benefits of VAB.
 - Potential risks to the woman and baby.
 - Risks are low and most are preventable when the operator is experienced and the woman meets criteria for VAB.
 - Alternatives to VAB.
 - What to expect during VAB.

After providing information, ask if the woman and/or her companion has any questions and respond to them.

Use the form on the next page and confirm that the woman gives her oral consent.

CONSENT FORM

Vacuum- assisted birth

Indications

Check and explain to the woman the reason(s) why VAB is indicated. Include only those which are relevant:

- You are pushing, but the baby is not coming down.
- Labor is not progressing.
- You are too exhausted to push the baby out.
- Your baby's heartbeat suggests a problem and needs to be born more quickly.
- You have a health concern and you should limit the amount of time you push.

Inform the woman about:

Benefits of VAB

- Speeds up birth of a baby who may be in distress.
- May help avoid cesarean birth.
- May shorten the pushing stage.

Potential risks

- Trauma to the woman and baby is lower with vacuum using soft cups and a smaller instrument.
- VAB is not always successful. If this happens, a cesarean birth will be recommended.

Potential risks to the baby:

- The baby will probably have a small swelling on the head where the vacuum is placed. This is normal and usually goes away within 24 hours.
- Scalp wounds.
- A higher risk of getting the baby's shoulder stuck after the head has been delivered (shoulder dystocia).
- Skull fracture (very rare).
- Bleeding within the skull (very rare).

Potential risks to the woman:

- Tears of the genital tract including anal sphincter.
- Postpartum hemorrhage due to prolonged labor or genital tears.
- Postpartum infection or sepsis can occur due to increase in exams and an instrument in the vagina and because labor may have been prolonged.

Alternatives to VAB

Forceps or cesarean birth. Continuing to attempt an unassisted vaginal birth may be risky for you and the baby.

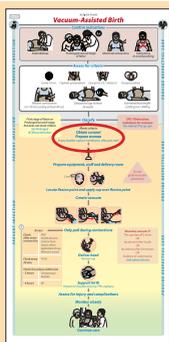
What to expect during VAB

- During a VAB, you can still choose the position you want to give birth in and have a companion to support you.
- Your health care provider will insert the vacuum cup into your vagina and apply it to the top of the baby's head.
- During contractions, the provider will use gentle, well-controlled traction to help guide the baby out of the birth canal while you keep pushing.
- After the head is born, you will push the baby the rest of the way out.
- If needed, the provider may make a small cut, an episiotomy, to enlarge the birth canal.

Obtain oral consent

- Ask if the woman and/or her companion has any questions and respond to them
- Confirming that the woman gives her oral consent.

If consent is given **Prepare the woman**



Performance Expectation

- Prepare the woman physically and mentally for a VAB.
- Manage fetal distress, dehydration, and infection if present when preparing for VAB.

Key points

- To avoid trauma, the bladder should be empty before attempting VAB.
- When the woman is well prepared, she can better assist pushing efforts.
- When the companion understands what to expect, s/he can better support the woman.

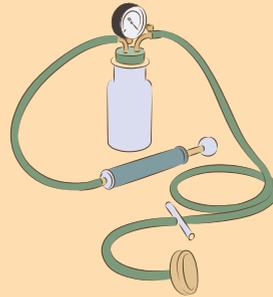
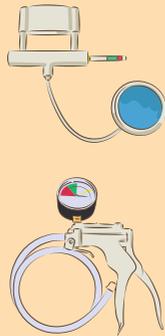
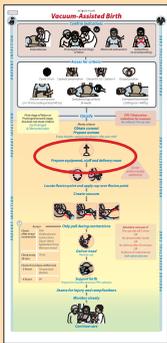
Knowledge and Skills

- If birth is assisted with a vacuum, the fetus or the woman might need other care at the same time.
- The woman and her companion may be anxious and will need emotional support, therefore ensure good communication.
- Explain to the woman and her companion about how a vacuum works, what to expect and prepare her for birth. Explain to the companion how to support the woman.
- Ensure her bladder is empty to decrease

risk of trauma. Only catheterize 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 ask her:
 - To push with each contraction while you help with 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.
- Manage fetal distress if present.
- Treat dehydration if present.
- Give antibiotics if there are signs of infection: temperature $>38^{\circ}\text{C}$, foul-smelling vaginal discharge, uterine tenderness.
- Provide supportive care to prepare for VAB:
 - Provide ongoing support and keep the woman informed of progress.
 - Continue monitoring the woman, fetus, and labor progress.
 - Keep the woman well-hydrated.
 - Provide pain management as needed.
 - Help the woman to get into the birth position of her choice. VAB is often done 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.

Prepare equipment, staff, and delivery room



Performance Expectation

Prepare and check the equipment for VAB using the operating instructions for the type of vacuum you will use.

Key points

- Operating instructions vary by the type of vacuum. It is important to carefully read and follow the operating instructions for the vacuum available at your facility.
- Be prepared for PPH, shoulder dystocia, and newborn resuscitation.

Knowledge and Skills

- Potential risks of VAB to prepare for include shoulder dystocia, PPH, newborn resuscitation, genital lacerations, and newborn injuries.
- Wash hands and put on apron, face shield / goggles, mask, and other delivery gear, as appropriate.

Once the decision for VAB has been made, you must:

- Prepare and check the equipment for VAB **using operating instructions for the type of vacuum you will use.**

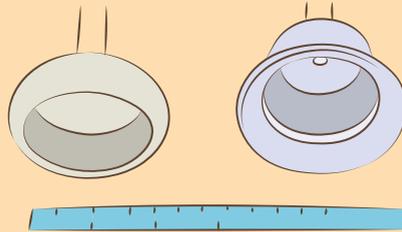
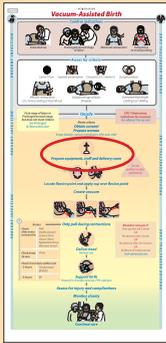
- Prepare and check the equipment for newborn resuscitation.
- Check that the PPH kit is available and is complete.
- Prepare a single dose of intravenous amoxicillin (1 g) and clavulanic acid (200 mg) **to be administered as soon as possible after birth and no more than 6 hours after birth.** Where this combination is not available, providers should use an alternative regimen. Follow local guidelines.
- Call for assistants to:
 - Assist with monitoring and caring for the woman during VAB→ and in case of shoulder dystocia or other maternal problems.
 - 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, ensure your transport plan is ready.
- Assign roles to all assistants by name.

VAB Safety Checklist

Before the procedure	Before applying the vacuum	After the procedure
<p>Confirm the indications for VAB</p> <ul style="list-style-type: none"> <input type="checkbox"/> Fetal distress <input type="checkbox"/> Prolonged second stage <input type="checkbox"/> Maternal exhaustion <input type="checkbox"/> Maternal medical indications <p>Confirm the woman meets criteria for VAB</p> <ul style="list-style-type: none"> <input type="checkbox"/> GA at least 34 weeks <input type="checkbox"/> Cervix 10 cm <input type="checkbox"/> Cephalic presentation <input type="checkbox"/> Occiput position <input type="checkbox"/> Baby is $\geq 2500\text{g}$ or $\leq 4000\text{g}$ <input type="checkbox"/> Engaged head <input type="checkbox"/> Efficient contractions (3+/10 minutes, at least 40 seconds) <p>Confirm the woman is prepared</p> <ul style="list-style-type: none"> <input type="checkbox"/> Consent obtained <input type="checkbox"/> Companion present <input type="checkbox"/> Bladder empty <input type="checkbox"/> Membranes ruptured <p>Confirm the equipment is ready</p> <ul style="list-style-type: none"> <input type="checkbox"/> NB resuscitation equipment ready and checked <input type="checkbox"/> PPH kit ready and checked <input type="checkbox"/> VAB equipment ready and checked <p>Confirm assistants and theatre have been called</p> <ul style="list-style-type: none"> <input type="checkbox"/> Pediatric and obstetric assistant called <input type="checkbox"/> Theater advised 	<ul style="list-style-type: none"> <input type="checkbox"/> Confirm all team members have introduced themselves by name and role <input type="checkbox"/> Obstetric assistant - Monitor and support the woman, assist during birth of the head or in case of maternal complications <input type="checkbox"/> Pediatric assistant <input type="checkbox"/> Confirm the woman's name and procedure <p>Anticipated Critical Events To the vacuum operator:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Are there any patient-specific concerns? <input type="checkbox"/> What are the critical steps? <input type="checkbox"/> How will you decide if an episiotomy is necessary? <input type="checkbox"/> What are indications that VAB has not been successful? <p>To the assistants:</p> <ul style="list-style-type: none"> <input type="checkbox"/> How often will you monitor the woman and fetus? <input type="checkbox"/> How will you respond if there are signs of shoulder dystocia? <input type="checkbox"/> How will you respond if VAB is unsuccessful? 	<p>Provider verbally confirms:</p> <ul style="list-style-type: none"> <input type="checkbox"/> The name of the procedure <input type="checkbox"/> Whether there are any equipment problems to be addressed <input type="checkbox"/> Newborn complication <input type="checkbox"/> Maternal complications <input type="checkbox"/> Key concerns for recovery and management of this woman and baby <input type="checkbox"/> If VAB was unsuccessful, potential causes and potential solutions

This checklist is not intended to be comprehensive. Additions and modifications to fit local practice are encouraged.
Revised 10 / 2020

Choose the right cup and cup size



Performance Expectation

- Choose the right cup based on the position of the baby's head.

Key points

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

Knowledge and Skills

- There is no single best cup. In most cases, you are restricted to the type of cups available in the facility.
- **Soft cups** are pliable and usually bell shaped. They are best for cases where the baby is in a simple OA position where 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 difficult OA positions. All rigid cups are more likely to cause injury

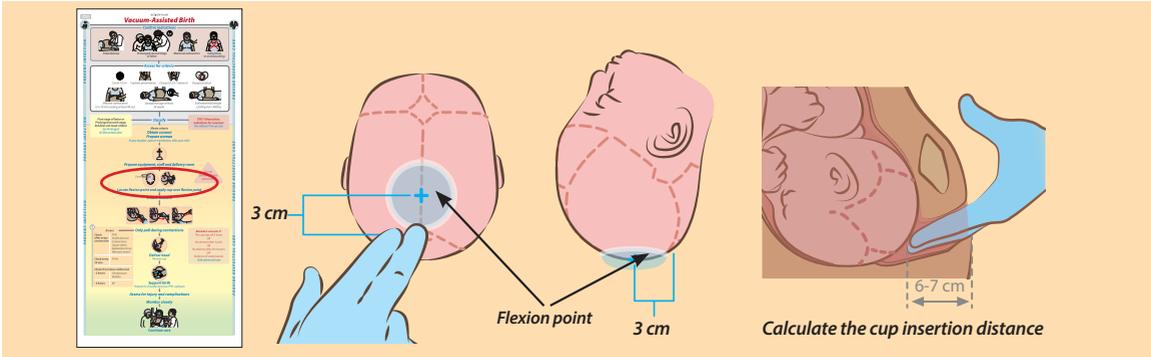
to the scalp but are less likely to fail; this is particularly true for metal cups.

- Use the largest cup that will fit. Sizes vary somewhat by manufacturer but any standard cup size can be used for if criteria for vacuum assisted birth have been met.
- Cup size affects the overall force applied since: $\text{Force} = (\text{area under the cup}) \times (\text{suction})$.

If more than one cup type is available at your facility, choose the type of cup you will use based on the position of the baby's head:

- Occiput Anterior (OA): Soft
- Rotation $>45^\circ$ from OA: Rigid
- Occiput Transverse (OT): Rigid
- Occiput Posterior (OP): Rigid

Locate flexion point



Performance Expectation

- Locate the flexion point and calculate the cup insertion distance.

Key points

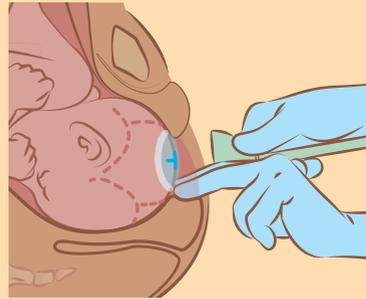
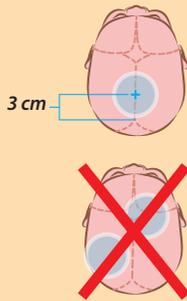
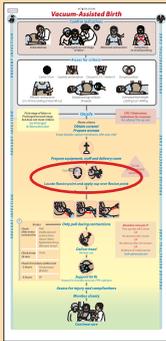
- The flexion point is a place on the fetal head that, when traction is applied, helps keep the chin on the chest and the head flexed.
- Placing the cup on the flexion point helps the fetal head stay in the smallest diameter to fit through the pelvis.

Knowledge and Skills

- To allow the widest diameter of the fetal head to fit through the pelvis, the head must flex and rotate.
- The flexion point is a place on the fetal head that, when traction is applied, helps keep the chin on the chest and the head flexed. Placing the center of the vacuum cup over that point promotes flexion, descent and auto-rotation with traction.
- The flexion point is 3 cm anterior to the posterior fontanelle.
- The cup insertion distance is the distance that the cup needs to be inserted.

- Tell the woman and her companion what you will do, listen, and respond to any questions.
- Provide ongoing emotional support and reassurance.
- Have the woman's companion or a provider stand by the woman's side to give support and encouragement.
- Place the woman in semi-fowler's position or the position of her choice.
- Wash hands and put on sterile gloves.
- Clean the vulva with an antiseptic solution.
- Assess position of the fetal head by feeling the sagittal suture line and the fontanelles.
- Identify the posterior fontanelle.
- Locate the flexion point. By moving your finger from the posterior fontanelle, along the sagittal suture approximately 3 cm or 1 inch.
- Calculate the cup insertion distance.
 - With the finger on the flexion point and your palm facing up, 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 the perineum to flexion point.

Apply cup over flexion point



Performance Expectation

- Correctly apply the cup over the flexion point.

Key points

- Correct placement of the vacuum cup over the flexion point is essential for success.
- Incorrect vacuum placement increases the risk of trauma.
- Routine antibiotic prophylaxis is recommended for women who have a VAB.

Knowledge and Skills

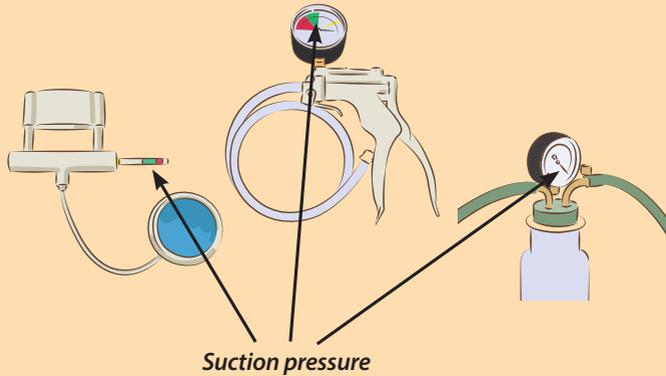
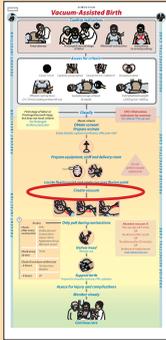
The amount of flexion will alter the diameter of the baby's head as it moves through the pelvis.

- Apply the cup over the flexion point
- When the head is well flexed, the baby's chin is tucked to chest, and the very back of the head, the smallest diameter, presents first.
- Correct placement of the vacuum cup will ensure maximum flexion of the head.
- Correct placement of the cup over the flexion point will place the edge of the cup about 1 cm anterior to the posterior fontanelle.
- Incorrect placement such as off to the side of the sagittal suture or closer to the anterior

fontanel promotes asynclitism, deflexion and the cup will likely pop off.

- Ensure an empty bladder and ruptured membranes before applying a vacuum.
- Continue explaining to the woman and her companion what will happen and provide support and reassurance.
- Attach the end of the cup tubing to the vacuum pump.
- Moisten the cup with clean water or lubricant jelly if the vagina is dry.
- Holding the cup, retract the perineum with two fingers.
- Insert the cup through the introitus.
- Insert the cup to the measured distance mark to facilitate placement of the cup over the flexion point.
- Move the cup over the flexion point.
- Do NOT routinely perform an episiotomy. Consider episiotomy only if the perineum interferes with the axis of traction.
- Apply the largest cup that will fit, with the center of the cup over the flexion point. The edge of the cup should be about 1 cm in front of the posterior fontanelle.
- Check the application. 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.

Create vacuum



Performance Expectation

- Create a vacuum without entrapping any maternal tissue.

Key points

- Suction pressure is measured in various units, depending on the device. Use the vacuum pressure units for the device in your facility.
- First create a vacuum of 0.2 kg/cm², make sure no maternal tissues are trapped, then increase the pressure to 0.8 kg/cm².

Knowledge and Skills

- Use vacuum suction pressures of 500 to 600 mmHg (0.8 kg/cm²) during traction:
 - Pressure < 500mmHg (0.68 kg/cm²) increases the risk of cup “pop-offs”.
 - Pressure > 600 mmHg (0.8 kg/cm²) increases the risks of trauma to the baby’s scalp and cerebral, cranial and scalp hemorrhage.
- Provide ongoing support to the woman and keep her informed of progress.
- After you confirm the cup is placed in the right position, create a vacuum of 0.2 kg/cm² negative pressure (or you may ask an assistant to do this).
- Sweep the edges of the cup again with a finger to make sure no maternal tissues are trapped.
- Rapidly increase the vacuum to 0.8 kg/cm² and check that the cup is well applied. Use vacuum suction pressures of 0.8 kg/cm² during traction.
- For the best results, make sure the woman’s thighs are flexed toward the abdomen, especially during pushing and traction.

Vacuum suction pressures

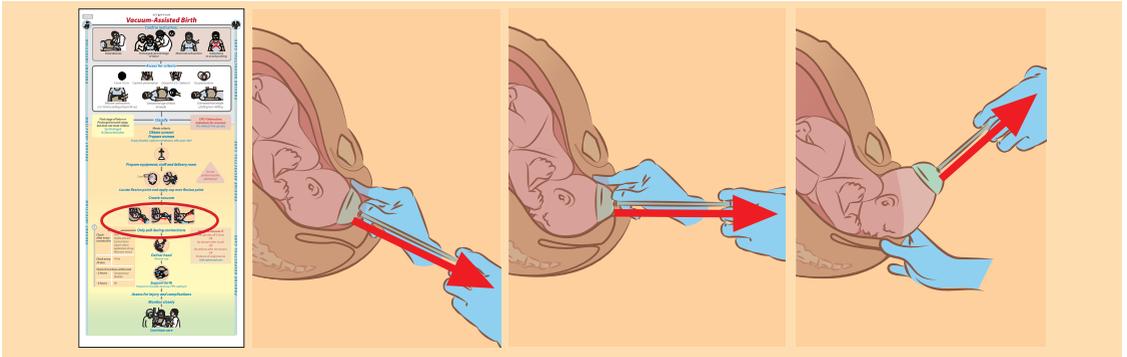
Suction pressure is measured in various units: Use the vacuum pressure for the device in your facility:

Kg/cm2	kPa	mmHg	InchesHg	cmH2O	lb/in2	bar
0.13	13	100	3.9	134	1.9	0.13
0.27	27	200	7.9	268	3.9	0.26
0.41	40	300	11.8	402	5.8	0.39
0.54	53	400	15.7	536	7.7	0.53
0.68	67	500	19.7	670	9.7	0.66
0.82	80	600	23.6	804	11.6	0.79
0.95	93	700	27.0	938	13.5	0.92
1.03	101	760	29.9	1018	14.7	1.00

Use vacuum suction pressures of 500 to 600 mmHg (0.8 kg/cm²) during traction:

- Pressure < 500mmHg (0.68 kg/cm²) increases the risk of cup "pop-offs".
- Pressure > 600 mmHg (0.8 kg/cm²) increase the risks of trauma to the baby's scalp and cerebral, cranial and scalp hemorrhage.

Only pull during contractions



Performance Expectation

- Correctly apply traction during a contraction. Evaluate progress with each contraction.

Key points

- Only apply traction during a contraction.
- Maintain vacuum pressure at 500 to 600 mmHg (0.8 kg/cm²), even when not applying traction.
- You should see some descent with each pull. The fetal head should be delivered in 3-4 pulls.

Knowledge and Skills

- 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.
 - Let the handle of the device passively turn as the head naturally rotates as it descends. Never actively twist the handle to rotate the head.
 - Make sure no maternal tissue is trapped under the cup.
 - Check 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 head.

NOTE: 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:

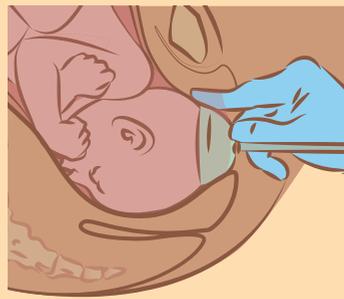
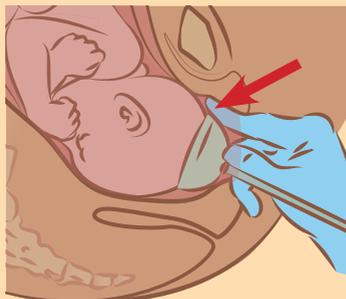
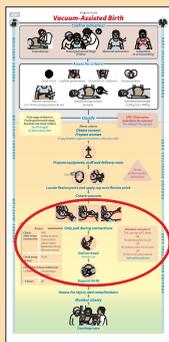
- After one or two pop-offs, reassess carefully before reapplying
- After 3 pop-offs, do not reapply the vacuum!

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, and perform only if necessary.

Assess

Check descent of the head after each pull / contraction



Performance Expectation

- Evaluate progress made with each pull.
- Safely decide to abandon the procedure when indicated.

Key points

- Progress should be made with each pull.
- VAB should be abandoned if there are any indications of failure.
- Do NOT attempt another assisted vaginal technique, i.e. forceps, if a VAB fails.

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

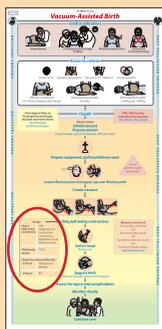
Knowledge and Skills

- Evaluate progress with each pull and decide to continue or abandon the procedure.
- You must be willing and able to stop using the vacuum and proceed to cesarean birth promptly if VAB is not successful.
- Do NOT attempt another assisted vaginal technique, such as forceps, if a VAB fails.

Evaluate progress and descent every time you apply traction.

- Check for progress
- Check if there is any scalp trauma
- Decide if vacuum should continue

Continue close monitoring



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

Performance Expectation

Asses maternal and fetal well-being during the procedure. Respond immediately if there are signs of fetal or maternal distress.

Key points

- Keep the woman and her companion informed of findings using simple language.
- Continuously monitor maternal and fetal well-being and labor progress during the procedure.

Knowledge and Skills

- Continually assess to see if the baby is descending and if the woman and baby are doing well. Act fast! Begin treatment or refer if complications arise!

Assess and record the following on the woman's record:

- After every contraction
 - FHR: normal is 110-159 beats per minute
 - Visible descent of the fetal head
 - Note number and duration of the contraction (normal: at least 3/10

minutes; each lasts at least 40 sec)

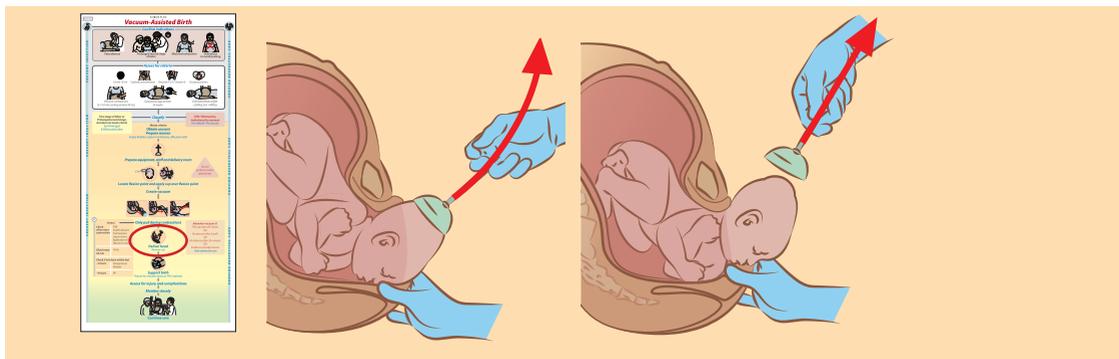
- Liquor status
- Application of the cup
- Presence/Absence of scalp trauma
- Woman's mood and behavior: how is she coping?
- Every 30 minutes
 - Woman's pulse: normal is 60-119 beats per minute

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)
 - Bladder should be empty at start of the procedure.
- Assess if not checked in the last 4 hours
 - Woman's BP (normal: systolic BP 90–139 mmHg/ diastolic BP 60–89 mmHg)

If VAB is not successful, the woman and fetus need continued monitoring until a cesarean is performed. Continue ongoing supportive, respectful care and emotional support.

Deliver head and remove cup



Performance Expectation

Decide if episiotomy is necessary
Safely deliver the head and release the vacuum.

Key points

- Supporting the perineum during birth of the head.
- Do not routinely cut the episiotomy. Consider episiotomy only if the perineum interferes with descent and birth of the head.
- Maintain intact cord as long as possible.

Knowledge and Skills

- Deliver the head slowly and protect the perineum to prevent tears.
- As soon as the baby's jaw is reachable, release the vacuum and remove the cup.
- Provide ongoing support to the woman and let her know her progress.
- Ask her to pant or give only small pushes 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. If you are unable to do this, ask an assistant to gently support the perineum.
 - Protect the perineum by supporting both the anterior and posterior perineum with both hands. This protects the woman's tissues, maintains flexion of the head, and helps control delivery 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.

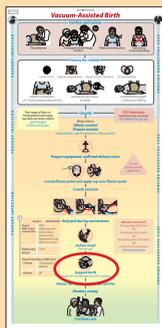
- Alternately, one provider can control the vacuum pressure while the other controls traction and flexion of the head and protects the perineum.
- Once the baby's head is born, ask the woman not to push.
- Release the vacuum, remove the cup, and prepare to complete the birth of the baby.
- After the head is born, feel around the baby's neck for the umbilical cord.

If there is a nuchal cord:

- Try to avoid cutting a tight nuchal cord. This increases the risk of asphyxia, cerebral palsy and death during severe shoulder dystocia.
- Slip the cord over the head or down around the shoulders and slide the baby through the cord.
- Initiate the "Somersault Maneuver". Deliver the baby slowly and bring the 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.
- Maintain an intact cord as long as possible.
- After use, put all instruments in a closed, leak- and puncture-proof container.

Support birth

Prepare for shoulder dystocia



Performance Expectation

- Support birth of the baby.
- Provide immediate care for the newborn, AMTSL, and immediate care for the woman.

Key points

- Women who have VAB may be at higher risk of shoulder dystocia. Be prepared to respond!
- Be prepared for a newborn who needs help to breathe.
- Be prepared for PPH. Be sure to use active management for the third stage of labor.

Knowledge

- 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 facilitate birth of the first shoulder.
 - Note: If you suspect shoulder dystocia, call for help!
 - Lift the baby's head towards the woman's pubic bone to deliver the second shoulder.
- Support the baby's body as it slides out. Place the baby on the mother's abdomen.
- Immediately dry the baby, assess for breathing, and cover the baby with a clean, dry cloth and a cap.
- If the baby is not breathing at birth, begin resuscitation within the first minute after birth.
- Keep the baby dry, warm, and in skin-to-skin contact for at least one hour.
- If the woman and baby are doing well, delay cutting the cord until 1-3 minutes after birth.

- Check for a second baby.
- Administer a uterotonic within one minute after birth of the last baby:
 - Oxytocin 10 IU IM/IV.
 - If oxytocin is not available or the quality of the oxytocin 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).
- Deliver the placenta with controlled cord traction.
- Immediately after delivery of the placenta:
 - Check uterine tone and massage 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.
- 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) as soon as possible and not more than 6 hours after birth.
- Keep the woman and her baby in the delivery room for at least one hour after birth. Never leave them alone!

VAB checklist

NOTE: Some of the following steps/tasks should be performed simultaneously by multiple providers

Task
Getting ready
1. Prepare and check the necessary equipment: <ul style="list-style-type: none"> • Equipment for VAB. • Equipment for newborn resuscitation. • PPH kit
2. Ensure companion of the woman's choice.
3. Review to confirm that the following criteria for vacuum extraction are met: <ul style="list-style-type: none"> <input type="checkbox"/> Confident GA \geq 34 weeks <input type="checkbox"/> Cervix 10 cm <input type="checkbox"/> Cephalic presentation <input type="checkbox"/> Occiput position <input type="checkbox"/> Head engaged (descent no more than 2/5 / at least 0 station) <input type="checkbox"/> Efficient contractions (3+/10 minutes, at least 40 seconds) <input type="checkbox"/> Estimated fetal weight between 2500g and 4000g
4. Provide information for informed consent: <ul style="list-style-type: none"> • Indication • Benefits of VAB • Potential risks to the baby • Potential risks to the woman • Alternatives to VAB • What to expect
5. Obtain oral consent
6. Make sure assistants are available and assign roles to each assistant. <ul style="list-style-type: none"> • Assistant to help monitor and care for the woman during the procedure and in case of shoulder dystocia or other problems. • An assistant to care for and resuscitate the baby if needed.
7. Call the theater and tell them to prepare in case the procedure is unsuccessful.
Pre-procedure tasks
1. Tell the woman and her companion what is going to be done, listen carefully, and respond attentively to any questions and concerns.
2. Provide continual emotional support and reassurance, as feasible, and keep the woman and her companion updated on progress.
3. Manage fetal distress if present.
4. Give antibiotics if there are signs of infection: temperature $>38^{\circ}\text{C}$, foul-smelling vaginal discharge, uterine tenderness.
5. Provide pain management as needed.

Task
6. Help the woman into the position of her choice for birth.
7. Wash hands thoroughly with soap and water and dry.
8. Put on apron and other delivery gear, as appropriate.
9. Put sterile surgical gloves on both hands.
10. Clean the vulva with antiseptic solution and place a drape under the woman's buttocks and over her abdomen.
11. Catheterize the bladder, if necessary.
12. Rupture the membranes, if necessary.
Locate the flexion point
1. Assess position of fetal head by feeling the sagittal suture line and fontanelles.
2. Identify the posterior fontanelle.
3. Locate the flexion point. Move your finger from the posterior fontanelle, along the sagittal suture approximately 3 cm / 1 inch.
4. Calculate the cup insertion distance: <ul style="list-style-type: none"> • With the finger on the flexion point and your palm facing up, note where the back of the finger makes contact with the perineum. • 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.
Apply the cup over the flexion point
1. Choose the largest cup that will fit.
2. Attach the cup tubing to the vacuum pump.
3. Moisten the cup with clean water or lubricant jelly if the vagina is dry.
4. Holding the cup, retract the perineum with two fingers.
5. Insert the cup through the introitus.
6. Insert the cup to the measured distance mark and place it over the flexion point. The edge of the cup should be about 1 cm anterior to the posterior fontanelle.
7. Check the application. 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.
Create a vacuum
1. Create / Have the assistant create a vacuum of 0.2 kg/cm ² negative pressure with the pump
2. Check the application of the cup (i.e. there is no maternal soft tissue [cervix or vagina] within the rim of the cup). If necessary, release pressure and reapply cup.
3. Increase vacuum to 0.8 kg/cm ² negative pressure, check that the cup is well-applied, and wait 2 minutes for the fetal scalp chignon to form in the cup (i.e. wait for the next contraction) so that the cup will not slip forward on the fetal head when you commence traction.

Task
Apply traction
1. Remind the woman that you will ask her to push with each contraction to help with your pulling efforts.
2. Provide ongoing support to the woman and keep her informed of progress.
3. With the next contraction, start traction towards the woman's back, use the two-finger grip to monitor cup lift and fetal head descent (thumb pressing on the cup and forefinger in front of the cup on the fetal scalp). Only pull with contractions. <ul style="list-style-type: none"> • Let the handle of the device passively turn as the head naturally rotates as it descends. • Never actively twist the handle to rotate the head. • If the fetal head is tilted to one side or not flexed well, traction towards the woman's back will correct the tilt or deflexion of the head.
4. Maintain traction for the duration of the contraction, in coordination with the woman's pushing efforts.
5. When the head is crowning, evaluate the need for an episiotomy, and perform if necessary.
6. Gradually discontinue traction as the contraction ends or the woman stops pushing.
7. In between contractions: <ul style="list-style-type: none"> • 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 • note duration and frequency of contractions
8. There needs to be progress with each pull. If there is no progress at any time, cease the procedure and consult a senior colleague or refer the woman to a higher-level facility. The fetal head should be delivered in 3-4 pulls.
9. Stop using vacuum if: <ul style="list-style-type: none"> • 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

Task
Deliver the baby
1. When the head has been delivered, release the vacuum, remove the cup, and complete the delivery.
2. After use, put all instruments in a closed, leak and puncture-proof containers.
3. Dry the baby, assess respiration, perform newborn resuscitation if needed, delay cord clamping for 1-3 minutes, keep the baby skin-to-skin contact with the mother, and facilitate early and exclusive breastfeeding.
4. Perform active management of the third stage of labor
5. Check uterine tone, and massage if soft. Teach the woman to monitor and massage her uterus if soft.
6. Carefully check the placenta for completeness, and respond immediately if incomplete.
7. Carefully check the birth canal for tears following birth and repair if necessary.
8. Repair episiotomy, if done.
9. Carefully check the baby for any injuries and respond, as needed.
10. Remove and dispose of gloves. Wash hands with soap and water and dry.
11. If the woman is not being treated for infection with antibiotics and has no signs of infection, give a single dose of intravenous amoxicillin (1 g) and clavulanic acid (200 mg).
12. Provide immediate postpartum and newborn care.
13. Discuss the procedure, any problems encountered, and plan of care with the woman and her companion
POST-PROCEDURE TASKS
1. Document the procedure
2. Clean and process equipment using the operating instructions for the type of vacuum used.
3. Reassemble the equipment and check the vacuum

EXERCISE

Conduct VAB and provide care during the third stage of labor

You will work in groups of 3-4 and take turns being the “provider”, the “woman”, the “companion”, and the “observer”. The “woman” will wear the simulator and place the baby in the position for the case. The “provider” should carry out the assessments. The “observer” should give the result for the assessment, if done. If there are only 3 learners in the group, the “companion” should give the results of the assessments.

Your facilitator will give you 4 folded pieces of paper. Each paper has a number on it from 1-5. The “provider” randomly chooses a piece of paper and carry out the assessment for the case that corresponding with the number. If the woman in the case is not eligible for a VAB, the “provider” chooses another piece of paper. If she is eligible, the “provider”

attempts VAB, starting from locating the flexion point to delivering the baby.

After each demonstration, you 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?

Facilitators will 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?

Case 1

“This is Mrs. Q whose labor started 16 hours ago. She has had three normal births and her EDD is 1 week from now. She has declined having a companion with her. She has been in second stage and pushing for 3 hours. FHR: 188 bpm, 192 bpm, 172 bpm after 3 contractions. Mrs. Q is very tired but still able to push. Vital signs: BP 124/72 Pulse 78 bpm, Respirations 14 breaths/minute, Temperature 36.8°C. She has not received any regional anesthesia, IV fluids, or medications.

As Mrs. Q’s provider, please assess if she is a candidate for a VAB.”

Contractions: 3/10 min, lasting 50-60 sec

Abdomen:

- No Bandl’s ring
- Bladder is distended
- Cephalic presentation

Position: LOT

Number of fetuses: 1

Estimated fetal weight: 2500 g

Descent: 1/5 above the symphysis pubis, +2 station

Cervix: 10 cm

Liquor: Meconium

1. ***Is there an indication for VAB?***
2. ***Are there any contraindications to VAB?***
3. ***Does she need any other interventions instead of or in addition to VAB?***

Case 2

“This is Mrs. R 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 husband 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 148 bpm during a contraction and 152 bpm 30 seconds after the contraction. Her vital signs are: BP 112/62, pulse: 96 bpm, temperature: 37.6°C, respirations: 14 breaths/minute. She has not received any regional anesthesia, IV fluids, or medications.

As Mrs. R’s provider, please assess if she is a candidate for a VAB.”

Contractions: 4/10 min, lasting 40-60 sec

Abdomen:

- No Bandl’s ring
- Bladder is not distended
- Cephalic presentation

Position: ROP

Number of fetuses: 1

Estimated fetal weight: 3500 g

Descent: 0/5 above the symphysis pubis, +2 station

Cervix: 10 cm

Liquor: Clear

1. *Is there an indication for VAB?*
2. *Are there any contraindications to VAB?*
3. *Does she need any other interventions instead of or in addition to VAB?*

Case 3

“This is Mrs. S who has been receiving care at our facility. She gave birth once before and she is one week overdue. Her labor started 16 hours ago and her membranes ruptured 8 hours ago.

Her mother is with her. She has been pushing for 2.5 hours on her back. She is tired but feels she can still push. The baby’s heart rate was 112 bpm during a contraction and 156 bpm 30 seconds after the contraction. Her vital signs are: BP 102/52, pulse: 82 bpm, temperature: 37.2°C, respirations: 16 breaths/minute. She has not received any regional anesthesia, IV fluids, or medications.

As Mrs. S’s provider, please assess if she is a candidate for a VAB.”

Contractions: 2/10 min, lasting 30-40 sec

Abdomen:

- No Bandl’s ring
- Bladder is distended
- Cephalic presentation

Position: ROA

Number of fetuses: 1

Estimated fetal weight: 3500 g

Descent: 2/5 above the symphysis pubis, 0 station

Cervix: 10 cm

Liquor: Clear

1. *Is there an indication for VAB?*
2. *Are there any contraindications to VAB?*
3. *Does she need any other interventions instead of or in addition to VAB?*

Case 4

"This is Mrs. T who has been receiving care at our facility. She has given birth twice before and her EDD is 2 weeks from now. Her labor started 14 hours ago and her membranes ruptured 12 hours ago.

Her friend is with her. She has been pushing well for 30 minutes and says she is able to continue pushing. The baby's heart rate goes down to 108 bpm during a contraction and between 168-188 bpm 30 seconds after the contraction. Her vital signs are: BP 118/82, pulse: 86 bpm, temperature: 37.8°C, respirations: 16 breaths/minute. She has not received any regional anesthesia, IV fluids, or medications.

As Mrs. T's provider, please assess if she is a candidate for a VAB."

Contractions: 4/10 min, lasting 50-60 sec

Abdomen:

- No Bandl's ring
- Bladder is not distended
- Cephalic presentation

Position: ROT

Number of fetuses: 1

Estimated fetal weight: 3500 g

Descent: 0/5 above the symphysis pubis, +3 station

Cervix: 10 cm

Liquor: Meconium

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

Case 5

"This is Mrs. U who has been receiving care at our facility. She has never given birth before and her EDD is 3 weeks from now. Her labor started 13 hours ago and her membranes ruptured 2 hours ago.

Her aunt is with her. She has severe anemia with congestive heart failure and a severe heart murmur. She does not yet have the urge to push. The baby's heart rate goes down to 122 bpm during a contraction and between 124-146 bpm 30 seconds after the contraction. Her vital signs are: BP 138/88, pulse: 98 bpm, temperature: 36.8°C, respirations: 22 breaths/minute. She has not received any regional anesthesia, IV fluids, or medications.

As Mrs. U's provider, please assess if she is a candidate for a VAB."

Contractions: 4/10 min, lasting 40-50 sec

Abdomen:

- No Bandl's ring
- Bladder is not distended
- Cephalic presentation

Position: ROA

Number of fetuses: 1

Estimated fetal weight: 2500 g

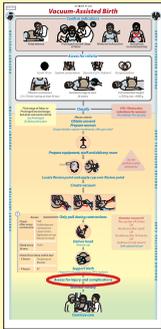
Descent: 2/5 above the symphysis pubis, 0 station

Cervix: 10 cm

Liquor: Clear

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

Assess newborn for injury and complications



Extracranial bleeding



Jaundice

Performance Expectation

- Examine the baby for injuries after VAB. Identify any injuries and manage these.
- Explain the injury and care needed to the mother and her companion.

Key points

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

Knowledge and Skills

- Nearly all babies born with VAB have some soft tissue damage to the scalp (see pages 44-46). These are usually minor, but can cause anxiety for parents. Clearly explain your findings.
- Scalp abrasions, lacerations, and localized scalp edema (caput succedaneum) are common and usually harmless.
- A hematoma is the formation of blood under the skin due to blood seeping out of an injured blood vessel into the surrounding tissues.

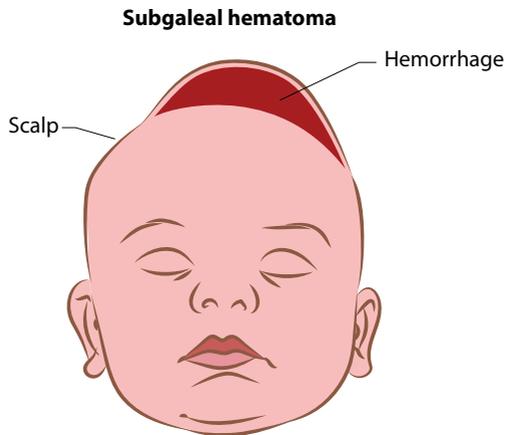
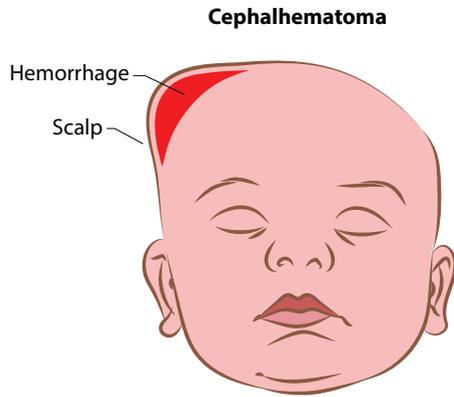
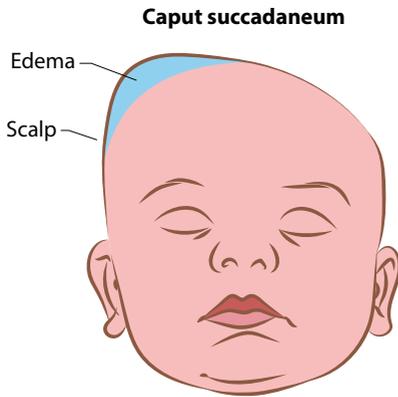
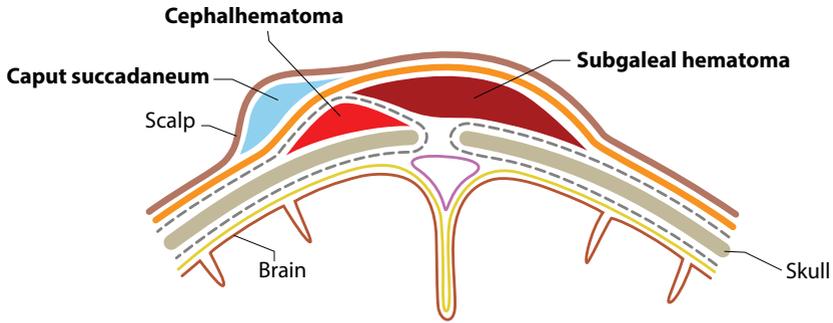
VAB can cause two types of hematoma:

- **Cephalohematoma:** bleeding confined to the space under the fibrous covering

of the skull bone. This type rarely leads to complications.

- **Subgaleal hematoma (SGH):** blood accumulates just under the scalp. The subgaleal space is large, and a significant amount of blood can seep into this area.
- All babies delivered by VAB should have vitamin K IM immediately after birth.
- Start assessment of the baby soon after birth, as most SGH will show in the early postnatal period.
- In addition to the normal newborn examination and monitoring, begin scalp observations immediately after birth:
 - Inspect the scalp for abrasions and lacerations.
 - Inspect and palpate the scalp to assess for presence / resolution of the caput succedaneum.
 - Inspect and palpate the scalp for any ballotable mass or movement of fluid (gravity dependent), note color and head shape including displacement of ears or pitting edema.
 - If there are any concerns about the presence of an SGH, check heart rate, respiratory rate, color (pallor) and activity. Call for medical assistance if needed!
- Repeat observation and palpation of the newborn's scalp every time the baby is monitored or examined until discharge.

Identifying newborn injuries



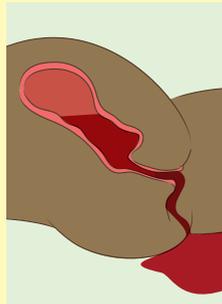
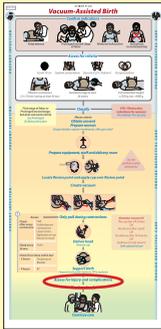
Newborn injuries after VAB

Diagnosis	Characteristics	Duration	Prognosis	Management
Scalp abrasion	<ul style="list-style-type: none"> • Abrasions on the scalp where the vacuum cup was placed 	<ul style="list-style-type: none"> • May take 2-3 days to resolve 	<ul style="list-style-type: none"> • Excellent 	<ul style="list-style-type: none"> • Clean and examine lacerations to determine if sutures are necessary.
Molding	<ul style="list-style-type: none"> • Overlapping bones along suture lines 	<ul style="list-style-type: none"> • Present at birth • Resolves in first few days to weeks of life 	<ul style="list-style-type: none"> • Excellent 	<ul style="list-style-type: none"> • Explain that pressure on the head caused by the tight birth canal may "mold" the head into an oblong rather than round shape. • No treatment necessary
Caput succedaneum	<ul style="list-style-type: none"> • Soft, pitting, superficial edema • Swelling crosses suture lines • Irregular borders • «Ecchymosis, petechial, or purpura 	<ul style="list-style-type: none"> • Maximum size at birth • Resolves in the first few days of life • Blood loss minimal 	<ul style="list-style-type: none"> • Excellent 	<ul style="list-style-type: none"> • 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. • No treatment necessary.
Retinal hemorrhage	<ul style="list-style-type: none"> • Only seen through fundoscopic exam. 		<ul style="list-style-type: none"> • Excellent 	<ul style="list-style-type: none"> • If noted parents should be assured that it will disappear without treatment.
Cephalohematoma	<ul style="list-style-type: none"> • Subperiosteal hemorrhage • Swelling does not cross suture lines • Tense swelling • Usually located over parietal bone • No discoloration of scalp • Distinct border 	<ul style="list-style-type: none"> • Develops incrementally during the first 12-24 hours of life • May take 2-3 months to resolve 	<ul style="list-style-type: none"> • Rarely associated with severe blood loss, intracranial hemorrhage, and infection • The clot itself does not pose any risk to the brain. • It can cause jaundice as the blood clot resolves over time. 	<ul style="list-style-type: none"> • Observation - usually will go away in three to four weeks.

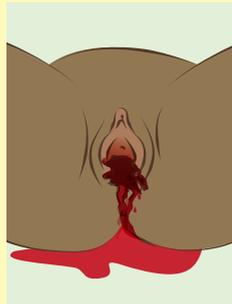
Diagnosis	Characteristics	Duration	Prognosis	Management
Subgaleal hematoma	<ul style="list-style-type: none"> • Fluctuant to tense scalp swelling, which may shift with movement and get larger from continued bleeding • Crosses suture lines • Diffuse swelling progressively spreading from base of neck to orbits to ears • Possible periorbital swelling (may not appear initially) • Possible crepitus 	<ul style="list-style-type: none"> • Develops gradually 12–72 hours after delivery • May be noted immediately after birth in severe cases • May last weeks • Could progress 	<ul style="list-style-type: none"> • 25% mortality rate • Possible to bleed profusely from ruptured blood vessels below the scalp • Associated with falling hematocrit, tachycardia, decreasing BP, hypotonia, pallor, hypovolemic shock, seizures, respiratory distress, and skull fracture 	<ul style="list-style-type: none"> • Requires immediate neonatal intensive care

Neonatal jaundice	<ul style="list-style-type: none"> • Signs of high levels of bilirubin in newborns with jaundice (extreme sleepiness, seizures, muscle rigidity) 	<ul style="list-style-type: none"> • Newborns delivered by VAB require careful monitoring for 2-3 days after birth to look for yellowing of the skin and conjunctiva. 	<ul style="list-style-type: none"> • Any newborn with injuries and bruising is at risk for jaundice from the breakdown of damaged red cells 	<ul style="list-style-type: none"> • Signs of significant jaundice in newborns include extreme sleepiness, seizures, and muscle rigidity. These newborns need advanced care or must be referred
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Assess woman for injury and complications



Poor tone



Tears

Performance Expectation

- Assess for and manage any injuries or complications related to VAB.

Key points

- Most common risks are cervical, vaginal and perineal lacerations and postpartum hemorrhage.
- Women who need a VAB may be at increased risk of infection, postpartum hemorrhage, and genital tears.

Knowledge and Skills

To prevent genital tears:

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

Women who need a VAB may be at increased risk of infection, postpartum hemorrhage, and genital tears because:

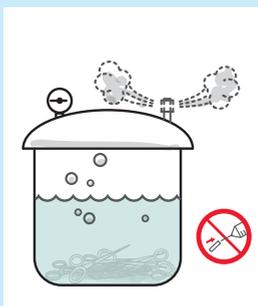
- They may have had prolonged first and/or second stage.

- An instrument is being introduced into the vagina, and providers will be introducing their hand into the vagina when assessing position and locating the flexion point, applying the cup, and applying traction.
- The fetus might be large.
- VAB was performed because of maternal medical problems.
- To identify potential complications
 - Carefully examine the woman's perineum, vagina, and cervix for tears.
 - If they are present, *Refer to HMS Bleeding after Birth Complete*, repair and provide instructions on care of tears and personal hygiene.
- Carefully monitor the uterine tone and vaginal bleeding and respond quickly if uterine atony or bleeding too much.
 - If the uterus is not well contracted or bleeding is excessive, *refer to HMS Bleeding after Birth Complete* to identify and manage the cause.
- Carefully monitor the woman's vital signs and respond quickly if she has a fever or signs of shock from bleeding.
 - If she has a fever (temperature $>38^{\circ}\text{C}$), evaluate and manage based on cause.
 - If she is in shock, *refer to HMS Bleeding after Birth Complete* to manage.

Post-procedure tasks



Document



Clean equipment

Performance Expectation

- Communicate findings with the woman and her companion.
- Document findings.
- Process the equipment after birth and prepare for future use.

Key points

- Clear communication with the woman and her companion is important for continuity of care and reassurance.
- Missing, incomplete, or illegible documentation can harm patient care.
- Ensure correct processing and preparation of equipment so it is ready for the next VAB.

Knowledge

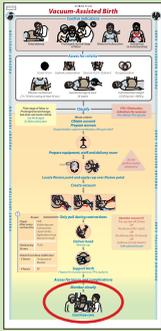
- Review the birth, any problems encountered, and develop plan of care with the woman and her companion.
- Thorough, clear documentation is a primary mechanism for ensuring continuity of care and communication among all providers involved in a patient's care.

Document:

- Indication for VAB
- Criteria for VAB cervix fully dilated, maternal bladder empty, membranes ruptured, no contraindications

- Fetal status at start of VAB:
 - Position of the fetal head (OA, ROA, LOA; OP, ROP, LOP; LOT, ROT) and if asynclitic
 - Station
 - Estimated fetal weight
 - Interpretation of the FHR
 - GA
 - Record of the discussion/consent with the woman
 - Date and time the procedure was started
 - Name of provider performing VAB and assistants
 - Type of vacuum cup, total time of vacuum application and if 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
 - Condition of the baby at birth, color, breathing, resuscitation needed, position of caput succedaneum and any bruising
 - Details of the third stage of labor
 - Details of medications used
 - Maternal condition post procedure
 - Any complications affecting the woman or baby.
- Clean and process equipment **using the operating instructions for the type of vacuum available at the facility.**
 - Reassemble the equipment and check the vacuum.

Monitor closely and continue care



Performance Expectation

- Monitor and care for the woman and newborn until discharge.
- Identify and respond to complications in the woman and newborn.

Key points

- If the newborn has a SGH, it will be apparent in the early postnatal period.
- Monitor closely for PPH.

Knowledge and Skills

During the first 6 hours postpartum, the woman and the baby should rest comfortably where they can be closely monitored.

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

Monitor and care for the woman:

- Monitor the woman's pulse, temperature, blood pressure, uterine tone, and vaginal bleeding.
- Be extra careful about evaluating for and managing postpartum hemorrhage.
- Provide routine care and counseling for self-care.

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.
- Encourage and promote breastfeeding.
- Provide routine essential care for the newborn.
- Check for signs of SGH or significant jaundice:
 - Lethargy
 - Neonatal seizures
 - Apnea
 - Feeding difficulties
 - Irritability
 - Bulging fontanelle
 - Shallow or strained breathing
 - Abnormal tone
 - Altered level of consciousness
- Counsel parents on infant care.

Care for the woman and newborn while in the facility;

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

EXERCISE

Review of the Prolonged & Obstructed Labor module

Response key

Problem	Response
Severe headache, blurred vision, fits, right upper quadrant pain, fever/chills	A
Signs of maternal distress (pulse ≥ 100 bpm, temperature $>38^{\circ}\text{C}$, sBP <90 mmHg / dBP >90 mmHg)	A
The woman is anxious	B, D
The woman is struggling to cope	B, D
Cervix < 10 cm	C
The woman is not pushing in the position of her choice	E
The woman is pushing on her back	F
The woman is not pushing in the position of her choice	F
The woman is too tired to push	M
There are signs of dehydration	H
There are fewer than 3 contractions in 10 minutes, each lasting less than 40 seconds	I
FHR <110 or ≥ 160 and/or thick meconium in non-breech presentations	G
Presentation/position other than occipital	L
Secondary arrest of descent / no descent	K
3+ caput and/or 3+ molding	K
Bulging lower portion of uterus or presence of a constriction ring or band (Bandl's ring) with an empty bladder	K

Action

- A. Conduct a rapid assessment and manage the problem.
- B. Give her emotional support and encouragement.
- C. Have her rest until the cervix is completely dilated.
- D. Make sure she has a companion of her choice and help the companion support and comfort her.
- E. Have her rest until she has the urge to push.
- F. Help her get into the position of her choice or encourage her to change position.
- G. Give oxygen, ensure the woman is not on her back, give fluids, and assess/manage if there is a maternal cause (fever, dehydration, anxiety, medications).
- H. Offer sweetened drinks for energy or IV fluids if necessary.
- I. Evaluate if the woman is a candidate for augmentation of labor with oxytocin.
- J. Augment labor with oxytocin.
- K. Prepare the woman for a cesarean birth.
- L. Conduct an assessment to evaluate for signs of obstruction/CPD and other indications for cesarean birth.
- M. Evaluate if the woman meets criteria for VAB.

EXERCISE

Classify
Response key

Case 1

1. *Is there an indication for VAB?*
Prolonged second stage, fetal distress, distended bladder
2. *Are there any contraindications to VAB?*
No
3. *Does she need any other interventions instead of or in addition to VAB?*
Help the woman empty her bladder, proceed to VAB if she gives consent.

Case 2

1. *Is there an indication for VAB?*
Prolonged second stage, maternal exhaustion
2. *Are there any contraindications to VAB?*
No
3. *Does she need any other interventions instead of or in addition to VAB?*
No, proceed to VAB if she gives consent.

Case 3

1. *Is there an indication for VAB?*
Prolonged second stage, distended bladder
2. *Are there any contraindications to VAB?*
Yes, ineffective contractions
3. *Does she need any other interventions instead of or in addition to VAB?*
Augmentation of labor, help the woman empty her bladder, change of maternal position.

Case 4

1. *Is there an indication for VAB?*
Fetal distress
2. *Are there any contraindications to VAB?*
No
3. *Does she need any other interventions instead of or in addition to VAB?*
No, proceed to VAB if she gives consent.

EXERCISE

Conduct VAB and provide care during the third stage of labor

Response key

Case 1

1. *Is there an indication for VAB?*
Prolonged second stage, fetal distress, distended bladder
2. *Are there any contraindications to VAB?*
No
3. *Does she need any other interventions instead of or in addition to VAB?*
Help the woman empty her bladder, proceed to VAB if she gives consent.

Case 2

1. *Is there an indication for VAB?*
Prolonged second stage, maternal exhaustion
2. *Are there any contraindications to VAB?*
No
3. *Does she need any other interventions instead of or in addition to VAB?*
Proceed to VAB if she gives consent.

Case 3

1. *Is there an indication for VAB?*
Prolonged second stage, distended bladder
2. *Are there any contraindications to VAB?*
Yes, ineffective contractions
3. *Does she need any other interventions instead of or in addition to VAB?*
Augmentation of labor, help the woman empty her bladder, change of maternal position.

Case 4

1. *Is there an indication for VAB?*
Fetal distress
2. *Are there any contraindications to VAB?*
No
3. *Does she need any other interventions instead of or in addition to VAB?*
Proceed to VAB if she gives consent.

Case 5

1. *Is there an indication for VAB?*
Maternal condition that requires shortening the second stage of labor to reduce maternal effort
2. *Are there any contraindications to VAB?* *No*
3. *Does she need any other interventions instead of or in addition to VAB?*
Careful monitoring of her cardiac condition.

Team Action Plan – to improve care for labor and birth

To do/Action	S.M.A.R.T Goals	Person responsible	Timeframe
	S M A R T
	S M A R T
	S M A R T

PEER PRACTICE

Instructions for practice and quality improvement activities after training

What is “continued practice” and why is it important?

Training alone is not enough to improve care. We need to add regular practice and other activities to reinforce new knowledge and skills. Practice also develops skills and improves teamwork and clinical decision-making.

Who helps you practice?

One or two people from your facility will be asked to coordinate practice sessions. The coordinator will remind you to practice and will guide the sessions. She/he is a colleague who has learned how to support these activities.

Remember though, you and your peers can practice without a coordinator if you don't have one or they are not available.

Skills practice objectives

The objectives of each session link to key learning objectives. Skills practice will help you refine your skills, especially for skills that are not used often. During all sessions, demonstrate respectful care, good teamwork, and communication.

Session preparation

Each session plan includes preparation and a list of items needed. Please review the session plans and answer section in advance. The answer section includes additional important facilitation guidance. Practice coordinators are responsible for ensuring that everything is ready. Session plans also include instruction about how to run the session. You will need at least two Provider's

Guides (PG) for reference and the Action Plans. Coordinators will coach as needed in a friendly, helpful manner.

Simulating care with skills practice, role plays, and drills

To help practice skills and clinical decision making, skills practice, role plays and drills are used. When conducting these activities, coordinators will:

- Establish a safe learning environment
- Run the activity
- Conduct organized debrief
- Support discussion to improve learning
- Identify and explore gaps
- Help providers transfer what they learned into clinical practice

Debrief

During debrief, coordinators guide providers to analyze how they performed individually and as a team. This gives everyone the chance to learn by carefully reviewing what happened.

Coordinators and providers should be constructive and avoid embarrassing each other. The goal is self-reflection and team improvement.

LDHF ACTIVITIES

Session 1: Revisiting Taking Action! 45 minutes.

Read objectives aloud:

- Review personal commitments and team SMART goals made at the end of the training activities.
- Update commitments and goals.

Preparation:

- Review the team's Taking Action! goals.
- Invite all staff who are on duty the day of the session to participate, even if they did not join the original training.

Materials:

- Marker/pens/paper
- Taking Action! Plan

Activity:

20 minutes

Begin by asking staff who were there for training to recall the closing activity.

Ask providers, *“Do you remember which SMART goals we agreed to work together to improve?”*

Share the completed Taking Action! Plan and ask a volunteer to review it with the group.

Say, *“Please turn to page 54 in your Provider's Guides and write each SMART goal as we review it.”*

Pause after each objective and ask:

- *“Do we need any additional resources or support to achieve this objective?”*
- *“If so, how can we get these resources?”*
- *“What activities or tasks do we need to do to reach this objective?”*
- *“Who will be responsible for moving it forward?”*
- *“Do we need to adjust this objective?”*

Update the action plan as needed and be sure everyone has a role. Tell providers that you will come together again in 6 weeks to review progress.

Part II: Delivery room walk through 25 minutes

After updating the action plan say, *“Now we are going to walk through our delivery room together. We want to learn if there are barriers for women during second stage that may lead to prolonged second stage of labor.”*

Ask a volunteer to serve as the group's note-taker during the walk-through.

Discuss the following questions and how, if not provided, the different aspects of care could affect progress of second stage of labor.

- Can we maintain privacy and confidentiality for women here?
- Can we accommodate companions here?
- Can women choose the position in which they give birth?
- Are women given fluids during second stage?
- Are women given adequate emotional support during second stage of labor?

Then ask:

- What improvements can we make ourselves, such as moving furniture or adding curtains, to improve privacy, encourage the presence of a companion, and allow women to give birth in the position they choose?
- How can we make sure women are adequately hydrated during second stage?
- What can we do to make sure women receive emotional support?

Update the Taking Action! plan with any additional interventions to improve clients' experience of care.

Session 2:

Checking the obstetric vacuum

15 minutes per learner – group or individual

Read objectives aloud:

- Prepare the equipment for VAB using the operating instructions for the type of vacuum available at the facility.
- Clean and disinfect the equipment for VAB.

Preparation:

- Review the operating instructions for the type of vacuum available at the facility.
- Assemble VAB equipment.
- Invite all staff who are on duty the day of the session to participate.

Materials:

- Operating instructions for the type of vacuum available at the facility
- Vacuum extractor, traction device, and cups

Activity:

Ask participants to:

- Identify the different parts of the vacuum.
- Assemble the equipment.
- Check the vacuum against the palm of the hand.
- Disassemble the equipment.

Session 3:

Identifying women who meet criteria for VAB

30 minutes – group or individual

Read objectives aloud:

- Assess and classify women who have indications for a VAB.
- Make a plan of care based on the assessment.

Preparation:

- Review the assessment and classification of a woman with indications for a VAB.
- Invite all staff who are on duty.

Materials:

- Simulator
- BP measuring device, stethoscope, fetoscope, gloves, clock with a second hand

Activity:

Ask volunteers to play the role of the woman and the provider. As the practice coordinator, wear the simulator with the baby in OP position, 1/5 above the symphysis pubis. Ask the provider to assess a woman with an indication for VAB to make sure there are no contraindications.

Say, *“I am Mrs. A and I have been receiving care at this facility. I’ve had one previous vaginal birth and my EDD is 1 week from now. My labor started 16 hours ago and my membranes ruptured 3 hours ago when second stage began. My mother is with me. I have been pushing for 2.5 hours and am exhausted. I cannot push any more. The baby’s heart rate was 112 bpm during a contraction and 182 bpm 30 seconds after the contraction. My vital signs are: BP 122/72, pulse: 82 bpm, temperature: 37.8°C, respirations: 16 breaths/minute.”*

Provide the following information if the provider assesses it:

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

Debrief:

When all groups are done, ask learners:

- *"Is there an indication for VAB?"*
- *"Are there any contraindications to VAB?"*
- *"What is your plan of care?"*

Ask the "provider":

- *"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?"*

Session 4:

Conducting VAB

20 minutes per learner

Read objectives aloud:

- Obtain informed consent for VAB.
- Conduct VAB.

Preparation:

- Review the checklist for VAB on page 33.
- Review the consent form.
- Invite all staff who are on duty.

Materials:

- Consent form
- Childbirth simulator
- BP measuring device, stethoscope, fetoscope, gloves, clock with a second hand
- Vacuum extractor, traction device, and cups

Activity:

Ask volunteers to play the role of the woman and the provider. As the practice coordinator, wear the simulator with the baby in OP position, 1/5 above the symphysis pubis.

Indications for VAB are fetal distress (FHR >160 bpm with meconium) and maternal exhaustion. She has no contraindications to VAB.

Ask the provider to obtain consent and then conduct the VAB, following the checklist.

After the demonstration is complete, ask the "provider":

- *"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?"*

Give others a chance to practice obtaining consent and performing VAB.

Session 5:
Strengthening documentation
30 minutes

Read objectives aloud:

- Accurately document VAB.
- Identify gaps in documentation.

Preparation:

- Review documentation after a woman's birth has been assisted with an obstetric vacuum.
- Invite all staff who are on duty.

Materials:

- Pen and paper

Activity:

Mrs. A had a successful VAB and gave birth to a baby girl weighing 2800 g. When you check documentation, you find the following:

"Mrs. A. gave birth vaginally at 10:15 am with the assistance of an obstetric vacuum for maternal exhaustion and fetal distress. The baby girl breathed at birth and weighed 2800g. The placenta delivered 3 minutes after birth of the baby after administering 10 IU of oxytocin by IM injection and performing CCT. The placenta was complete. Mother and baby are doing well."

Give learners 5 minutes to note any missing information on a piece of paper.

Then, ask the group:

- *"What documentation is missing?"*
- *"What can you do to improve documentation?"*

Session 6:
Identifying newborn complications
30 minutes

Read objectives aloud:

- Accurately assess newborns for complications after VAB.
- Identify and manage newborn complications due to VAB.

Preparation:

- Review newborn assessment for injury and complications
- Invite all staff who are on duty. Note this activity can be done individually as it suits the unit.

Materials:

- Newborn simulator, stethoscope, clock with a second hand

Activity:

Read the cases and ask learners to turn to page 43-46 and respond to the questions and perform any assessments on the newborn simulator to reach a diagnosis.

Case 1:

A 3891g female was born at 41 weeks' gestation to a primigravid mother. Labor was spontaneous and the presentation was occiput posterior. After rotation of the head, vacuum extraction was attempted 3 or 4 times. A tight nuchal cord was cut approximately 50 seconds prior to delivery. There was mild shoulder dystocia. Apgar scores were 3, 4 and 7 at 1, 5 and 10 minutes respectively. The baby required bag and mask ventilation for a short time. The baby was initially described as flaccid and "shocked" looking. When the baby was 1.5 hours of age, you note the baby was paler and unresponsive.

- *"What will you examine to determine the problem?"*
- *"What is the most likely diagnosis?"*
- *"How will you care for the baby?"*
- *"How could this have been prevented?"*

Case 2:

A 2800g male was born at 39 weeks' gestation to a multigravid mother. Labor was spontaneous and the presentation was occiput anterior. Vacuum extraction was attempted 2 times. Apgar scores were 9 and 10 at 1 and 5 minutes respectively. The baby breathed spontaneously after birth. At birth, you note soft, pitting, superficial edema that crosses suture lines.

- *“What will you examine to determine the problem?”*
- *“What is the most likely diagnosis?”*
- *“How will you care for the baby?”*

Session 7:**Care when there are contraindications to VAB**

30 minutes

Read objectives aloud:

- Accurately identify women who require advanced care.
- Provide pre-referral / pre-operative care.

Preparation:

- Review pre-referral / pre-operative care.
- Invite all staff who are on duty.

Materials:

- Simulator
- BP measuring device, stethoscope, fetoscope, gloves, clock with a second hand
- IV giving set and IV fluids
- Mock antibiotics

Activity:

As facilitator, wear the simulator with the fetus in ROA position. Say, *“I am going to give you the details of my case and then ask you to provide care for me.”* Present the following:

- Pushing for 3 hours
- G3P2, age 26 years

- EDD: 2 weeks from today's date (38 weeks + 0 days).
- BP 112/68 mmHg; pulse 98 bpm; respirations 16 breaths/minute; temperature 38.9°C
- FHR: 188 bpm, 192 bpm, 184 bpm
- Contractions: 4/10 min, lasting 50-60 sec.
- Uterus tender
- Presentation & position: Cephalic (ROA)
- Number of fetuses: 1
- Estimated fetal weight: 3000 g
- Bandl's ring
- Bladder not distended
- Descent: 4/5 above the symphysis pubis, -3 station
- Cervix: 10 cm
- Liquor: Meconium
- Fetal head: 3+ caput, 2+ molding

Ask learners:

- *“Is the woman a candidate for VAB? Why or why not?”*
- *“Demonstrate how you will care for me”*
- *“Use SBAR to communicate with the provider you will transfer her care.”*

SESSION ANSWERS

Session 3:

Identifying women who meet criteria for VAB

“Is there an indication for VAB?” Yes,

indications for VAB are fetal distress (FHR >160 bpm with meconium) and maternal exhaustion.

“Are there any contraindications to VAB?” No

“What is your plan of care?” Prepare her for a VAB and obtain consent. Choose a rigid cup if there is a choice.

Session 5:

Strengthening documentation

“What documentation is missing?”

- 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 (OP), station, estimated fetal weight, GA
- Record of the discussion with the woman
- 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 performed
- Birth position
- Position of “chignon” and any bruising
- Any complications affecting the woman or baby.

“What can you do to improve documentation?”

Use a “cheat sheet” when documenting, develop a form to complete when VAB was performed.

Session 6:

Identifying newborn complications

Case 1:

“What will you examine to determine the problem?”

Inspect and palpate scalp and assess the following:

- Note color and head shape including displacement of ears or pitting edema
- Note any injuries
- Palpate to assess for resolution of the chignon.
- Palpate to note any ballotable mass or movement of fluid (gravity dependent) in scalp or tense swelling
- Note location of swelling
- Palpate if swelling does / does not cross suture lines
- Check heart rate, respiratory rate, color (pallor) and activity. If available, apply a pulse oximeter may prove useful to detect progressive tachycardia and poor perfusion.

“What is the most likely diagnosis?”

- Subgaleal hematoma

“How will you care for the baby?”

- Neonatal medical staff should be informed and requested to attend

“How could this have been prevented?”

- Close monitoring and examination of the newborn and early response before the baby’s condition deteriorated so much.

Case 2:

“What will you examine to determine the problem?”

- Inspect and palpate scalp and assess the following:
 - Note color and head shape including displacement of ears or pitting edema
 - Note any injuries
 - Palpate to assess for resolution of the chignon.
 - Palpate to note any ballotable mass or

movement of fluid (gravity dependent) in scalp or tense swelling

- Note location of swelling
- Palpate if swelling does / does not cross suture lines
- Check heart rate, respiratory rate, color (pallor) and activity. If available, apply a pulse oximeter may prove useful to detect progressive tachycardia and poor perfusion.

“What is the most likely diagnosis?”

- Caput succedaneum

“How will you care for the baby?”

- Explain the reason for the swelling to the parents and that it will disappear in a few hours.
- Reassure parents that it is not a sign of long-term damage.
- No treatment necessary.

Session 7:

Care when there are contraindications to VAB

“Is the woman a candidate for VAB?”

Why or why not?”

No. Fetal distress with signs of obstruction – Bandl’s ring, 3+ caput

“Demonstrate how you will care for me”

Providers should:

- Show RMC by continuously communicating with the woman and her family about what is happening, what you are doing and why.
- If transporting to another facility, begin transport plan OR
- Call the surgical team so they can prepare.
- Notify the pediatric team to receive a distressed baby.
- Explain to the woman and her companion what is happening and why cesarean birth or referral is needed.
- Give supportive care and labor support.
 - Explain all procedures, get her consent, discuss any test results with her, listen and be sensitive.
 - Place the woman in left lateral position.
 - Start an IV (Ringer’s Lactate or normal saline). Collect blood for hemoglobin,

cross- match and bedside clotting test right before infusion of fluids. Infuse IV fluids at a rate of 1 L in 6-8 hours.

- Give antibiotics - ampicillin 2 g IV every six hours PLUS gentamicin 5 mg/kg body weight IV every 24 hours.
- Provide pain management as needed.
- Continue to monitor the progress of labor and the condition of the woman and her fetus closely. Never leave her alone.
- Complete the referral note.

“How will you communicate with the provider/facility who will assume her care?”

S = Situation. “I am (name) from the labor ward of (facility) caring for Ms. X who is in the delivery room. She has been pushing for 3 hours and there is fetal distress and signs of obstructed labor.”

B = Background: “Ms. X. is a 26 yo G3P2. Her gestational age is 38 weeks by LMP. BP 112/68 mmHg; pulse 98 bpm; respirations 16 breaths/minute; temperature 38.9°C FHR: 188 bpm, 192 bpm, 184 bpm. Her cervix is completely dilated. There is Bandl’s ring and her uterus is tender on abdominal assessment. 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 meconium stained. Position is ROA. We noted 3+ caput and 2+ molding. 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. She has received a first dose of IV ampicillin and gentamycin.”

A = Assessment: “I think her labor is obstructed and there is fetal distress. She also probably has chorioamnionitis.”

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

Vacuum-Assisted Birth

PREVENT INFECTION

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PREVENT INFECTION

PREVENT INFECTION



PROVIDE RESPECTFUL CARE

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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

Meets criteria
Obtain consent
Prepare woman
Empty bladder, rupture membranes, offer pain relief

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

Prepare equipment, staff and delivery room

3 cm

Do not perform routine episiotomy!

Locate flexion point and apply cup over flexion point

Create vacuum

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

Deliver head
Remove cup

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

Support birth

Prepare for shoulder dystocia, PPH, asphyxia

Assess for injury and complications

Monitor closely

Continue care