Helping Babies Breathe

Learner Workbook

Helping Babies Breathe®
THE GOLDEN MINUTE®

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

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To those who care for babies at birth

Helping Babies Breathe® teaches birth attendants how to care for the newborn at birth.
- All babies need to be kept clean, warm, and encouraged to breastfeed.
- A baby who does not breathe needs extra help in the first minute after birth.

Helping Babies Breathe focuses on The Golden Minute® when stimulation to breathe and ventilation with bag and mask can save a life. At least one person skilled in helping a baby breathe should be present at every birth.

Helping Babies Breathe is designed to be part of a program for Essential Newborn Care, which covers important aspects of care in the first days after birth, such as warmth and breastfeeding, in more depth.

Use this Learner Workbook before, during, and after a training course.

Before
- Read the workbook.
- Answer the *Check yourself* questions.
- Follow the Action Plan.
- Think about the *Group discussion* questions.

During
- Share your experiences and ask questions.
- Master the Action Plan and the skills of bag and mask ventilation.
- Help others learn.

After
- Practice the Action Plan.
- Practice the skills of bag and mask ventilation.

Planning for birth begins in the family and the community. The pregnant woman prepares a birth and emergency plan. Health workers and community leaders urge women to have a skilled attendant at birth. Health units maintain enough skilled people and equipment. With planning and the skills of Helping Babies Breathe, you can make sure every baby has a chance to breathe at birth.

What you will learn

Preparation for birth

As a skilled birth attendant, you make the difference 6

Exercise: Preparation for a birth *8*

Skills:

Identifying a helper and reviewing the emergency plan
Preparing the area for delivery
Hand washing
Preparing an area for ventilation and checking equipment

Routine care

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Skills:

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Keeping warm
Evaluating crying
Checking breathing
Clamping or tying and cutting the cord

The Golden Minute®

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Positioning the head
Clearing the airway
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Ventilating with bag and mask

Continued ventilation with normal or slow heart rate

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Evaluating heart rate
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Supporting the family

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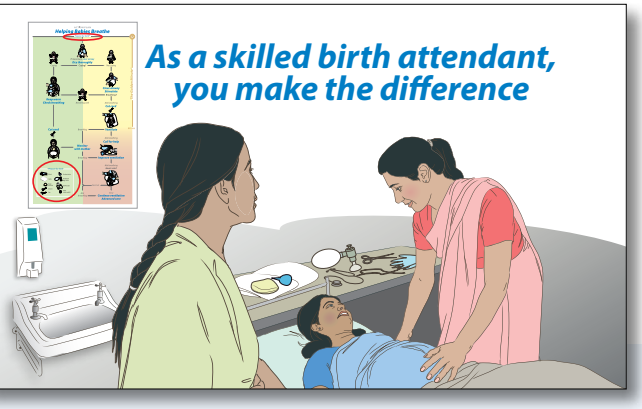

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As a birth attendant skilled in Helping Babies Breathe®, you can save the lives of babies. You must be present at birth and prepared to take immediate action. By one minute after birth - the Golden Minute® - a baby should be breathing well or you should be providing ventilation.

A skilled birth attendant
- ***Can help a baby who does not breathe***
- ***Promotes warmth, cleanliness, and breastfeeding for all babies***

Prepare for a birth

Identify a helper and review the emergency plan.
Prepare the birth companion or another skilled helper to assist if the baby does not breathe.
- A birth companion can help the mother and call for another helper.
- A second skilled helper can assist in caring for the baby.

The emergency plan should include communication and transportation to advanced care.

Prepare the area for delivery.
The area where a baby is born should be

Clean	- Help mother wash her hands and chest to prepare for skin-to-skin care.
Warm	- Close windows and doors to stop drafts. Supply heat if needed.
Well-lighted	- Use a portable lamp if needed to assess the baby.

Wash hands.
Good hand washing helps prevent the spread of infection. Wash hands thoroughly with soap and clean water or use an alcohol-based cleaner before and after caring for a mother or a baby (see page 39). Gloves protect you from infections carried by blood and body fluids.

Prepare an area for ventilation and check equipment.
Prepare a dry, flat, and safe space for the baby to receive ventilation if needed. In addition to a safe delivery kit, have equipment to help a baby breathe. Equipment should be disinfected after use and kept clean (see page 40). Check that all equipment and supplies are ready for use in the area for ventilation. Test the function of the ventilation bag and mask (see page 40).

Notes

Check yourself

Mark the box beside the best answer.

When should a skilled person be present at a birth?

- ☐ *If problems occur*
- ☐ *At every birth*

When should you wash your hands?

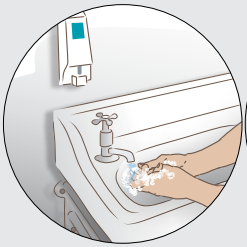
- ☐ *When they look dirty*
- ☐ *Before and after caring for a mother or a baby*

Follow the Action Plan (page 8).
The Action Plan acts as a guide to the questions you ask, the decisions you make, and the actions you take to help a baby breathe. Find the action step Prepare for birth. What equipment and supplies are needed to help babies breathe?

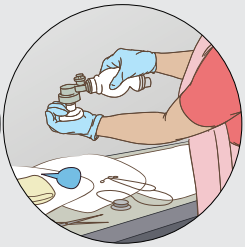
Exercise: Preparation for a birth

Identify helper and review emergency plan

Prepare the area for delivery



Wash hands

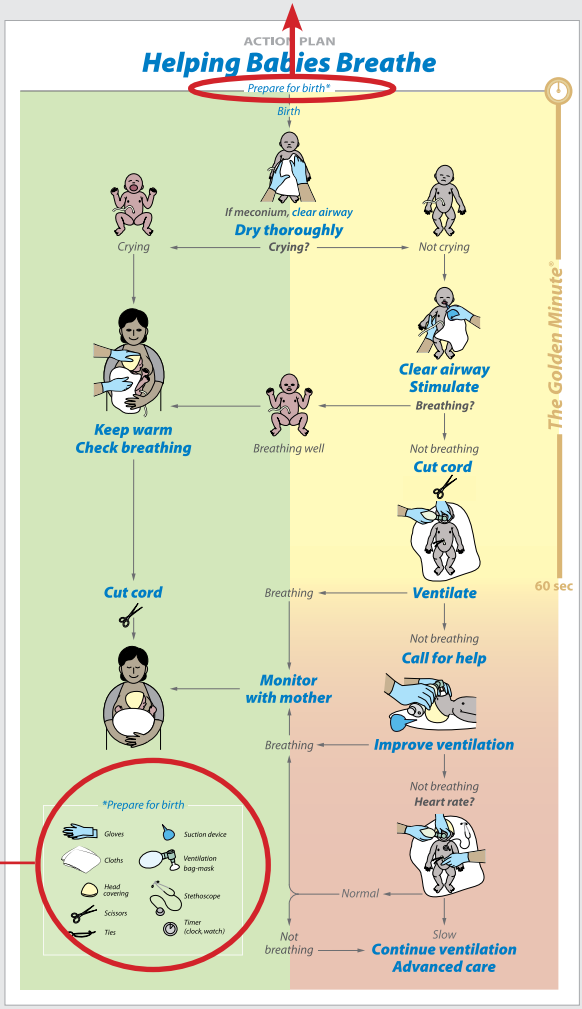


Prepare an area for ventilation and check equipment

The facilitators will demonstrate how to prepare for a birth.

Learners will work in pairs to prepare for a birth. One person takes the role of the skilled birth attendant. The other person takes the role of the helper. Learners switch roles and repeat the exercise.

Begin by introducing yourself to the mother. Then carry out the steps of the checklist.



Checklist

☐ *Identify a helper and review the emergency plan*

.....

☐ *Prepare the area for delivery*

.....

☐ *Wash hands*

.....

☐ *Prepare an area for ventilation*

.....

☐ *Assemble all supplies and equipment*

.....

☐ *Check the bag and mask for ventilation*

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Group discussion

Discuss with a small group of other learners how you will put the skills you have learned into practice. Identify possible problems and solutions where you work.

1. What is the emergency plan where you work?

2. What could a helper do during a delivery? How do you prepare the helper?

3. How will you prepare the area for delivery and the area for ventilation where you work?

4. Is there a source of clean water? If not, how can you prepare clean water?

5. How will you have clean, working equipment and supplies ready for use at every birth?

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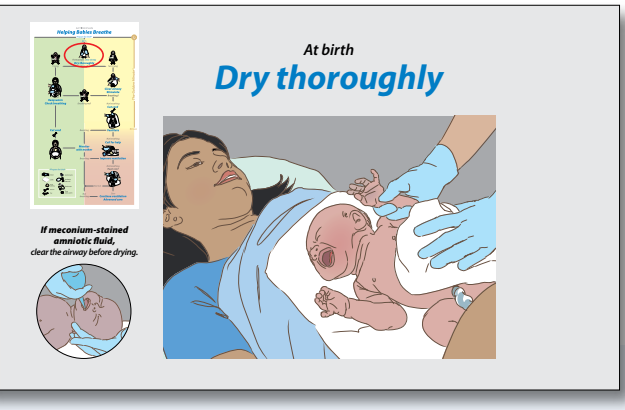

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Dry the baby thoroughly at birth. Drying helps keep the baby warm and stimulates breathing. A newly born baby wet with amniotic fluid can become cold even in a warm room. Dry the body, arms, legs, and head by gently rubbing with a cloth. Wipe the face clean of blood and maternal feces. Remove the wet cloth. Note the time of birth.

If there is meconium in the amniotic fluid, clear the airway before drying.
If the baby has passed stool before birth, there is meconium in the amniotic fluid. Clear the airway before drying when there is meconium in the amniotic fluid. Meconium inhaled into the lungs can cause breathing problems. Suction the mouth and nose immediately after delivery. Use a bulb suction device, a tube and reservoir suction device, or a cloth to remove fluid. Dry the baby thoroughly after clearing the airway.

Check yourself

Mark the box beside the best answer.

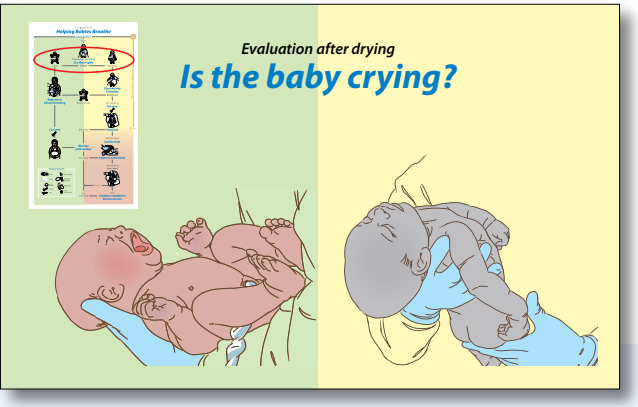
A baby is not dried, but she is placed on a cloth beside the mother. What happens?

- ☐ *The baby can become cold.*
- ☐ *The baby will stay warm.*

What can happen when a baby inhales meconium?

- ☐ *The baby can have breathing problems.*
- ☐ *Meconium rarely causes a breathing problem.*

Follow the Action Plan.
What is the first action step for a baby with clear amniotic fluid? For a baby with meconium-stained amniotic fluid?



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About 1 in 10 babies needs help to breathe. Rapid assessment at the moment of birth is the best way to know if a baby needs help to breathe.

Ask this question immediately after drying:
Is the baby crying?

Decide what care the baby needs.
The baby who is crying needs routine care. Most babies cry at birth. Crying means a baby is breathing well. Crying is possible when large amounts of air move in and out of the lungs. The crying baby usually moves his or her arms and legs and has good muscle tone. After crying for some seconds, a baby may stop crying and begin to breathe quietly and regularly. A baby also may continue to cry for some time.

A baby who does not cry needs help to breathe. Babies who do not cry may not be breathing at birth. A baby who is not breathing is limp and does not move. The skin may be pale or bluish. A baby who is breathing shallowly, gasping, or not breathing at all needs help to breathe. Prompt attention will increase the chance of a good response. If no help is given to a baby who is not breathing, that baby may die or experience serious brain damage.

Check yourself

Mark the box beside the best answer.

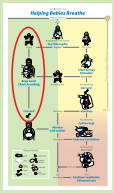
A baby cries after birth and then breathes quietly and regularly. What should you do?

☐ *Give routine care.*
☐ *Provide help to breathe.*

A baby is not crying at birth. He is not breathing or moving and he is limp. What should you do?

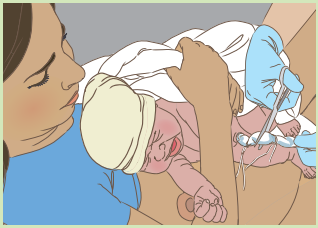
☐ *Give routine care.*
☐ *Provide help to breathe.*

Follow the Action Plan.
Identify the baby who is crying and the baby who is not crying.



If the baby is crying

Keep warm, check breathing, cut cord



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The baby who is crying can receive routine care.

Keep warm.
Position the baby skin-to-skin on the mother's abdomen. The warmth from the mother's body is one of the best ways to keep a baby warm. Cover the baby with a warm, dry cloth and a cap or other head covering. Otherwise, cover the baby with part of the mother's clothing. Postpone bathing and weighing and keep the area warm.

Check breathing.
Continue to assess the baby's breathing. Listen to the sounds of breathing and watch the movement of the chest. Check that the baby is breathing quietly and easily or crying. Make sure that air can pass freely through the baby's nose.

Cut cord.
The baby receives needed blood from the placenta in the first minutes after birth. Wait at least 1 minute, and up to 3 minutes, to clamp or tie and cut the cord if the baby is receiving routine care.

Encourage breastfeeding after routine care.
Encourage breastfeeding while monitoring mother and baby after birth. Breastfeeding provides nutrition and helps prevent infection in the baby. Avoid any other feeding besides breast milk. Encourage mother to breastfeed in the first hour after delivery. Be sure that mother and baby are not alone during the first hours after birth. Keep mother and baby together. Skin-to-skin contact helps a newborn baby breathe well and stay warm. Small babies can benefit from special, extended skin-to-skin care (Kangaroo Mother Care - see page 42).

Check yourself

Mark the box beside the best answer.

What can you do to encourage breast-feeding?

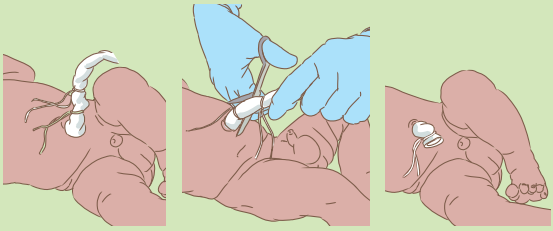
- ☐ *Keep mother and baby together.*
- ☐ *Give warm tea to both mother and baby.*

How long should you wait to clamp or tie and cut the umbilical cord of a crying baby?

- ☐ *Clamp or tie and cut the cord immediately.*
- ☐ *Wait 1 to 3 minutes to clamp or tie and cut the cord.*

Follow the Action Plan.
Trace with your finger the action steps in routine care (green zone).

How to clamp or tie and cut the umbilical cord



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Place two clamps or ties around the cord.
Place the first clamp or tie around the cord about 2 fingerbreadths from the baby's abdomen. Place another clamp or tie about 5 fingerbreadths from the abdomen.

Cut between the clamps or ties with a clean scissors or blade.
Look for any bleeding or oozing of blood. If bleeding occurs, place a second clamp or tie between the first one and the baby's skin.

Leave the cut end of the cord open to the air to dry.
Everything that touches the umbilical cord should be clean to avoid infection. Wear clean gloves when clamping or tying and cutting the cord.

Check yourself

Mark the box beside the best answer.

You notice bleeding from the umbilical cord even though a tie is in place. What should you do?

- ☐ *Place another tie between the first one and the baby's skin.*
- ☐ *Wait to see if the bleeding will stop on its own.*

What actions help prevent infection of the umbilical cord?

- ☐ *Good hand washing, wearing clean gloves, cutting with sterile scissors*
- ☐ *Covering the cord to keep it moist*

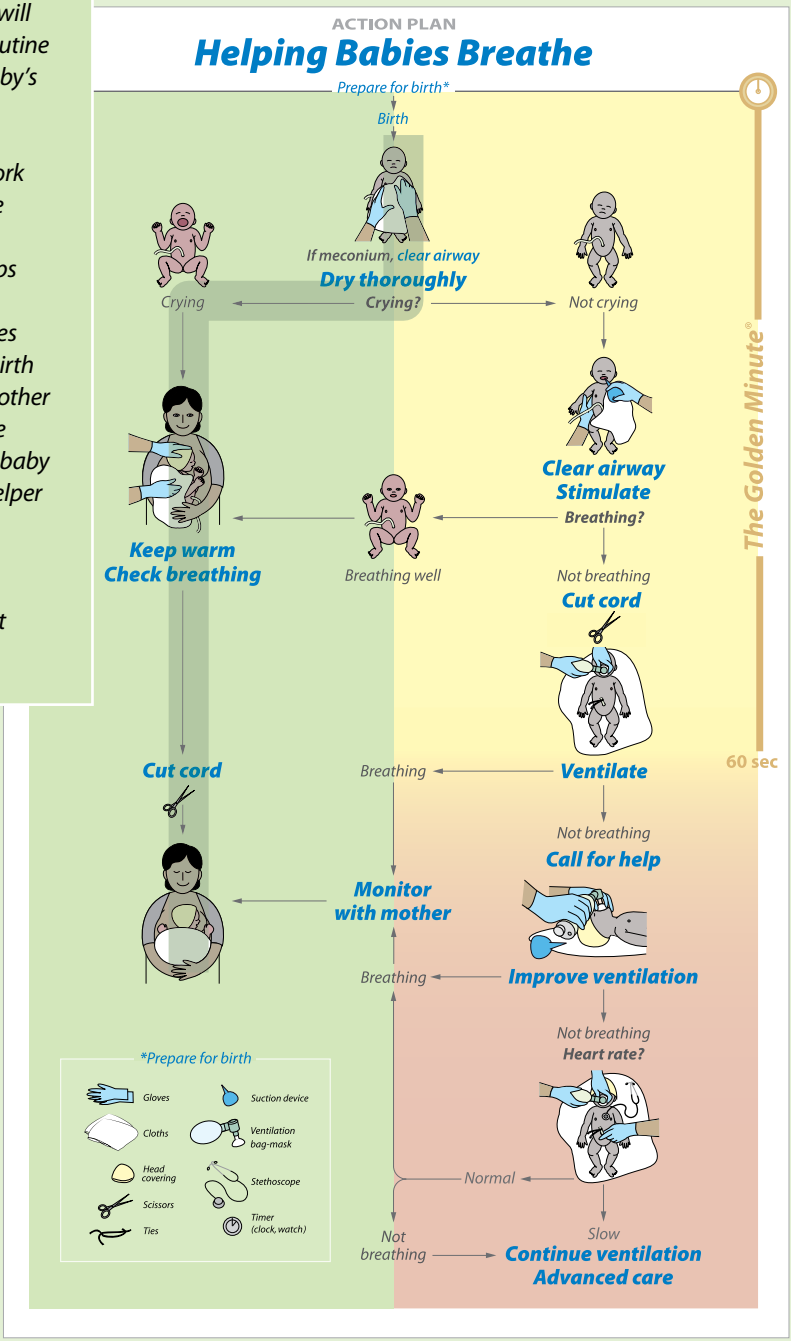
Follow the Action Plan.
Point out the action step Cut cord and describe when it occurs during routine care.

Exercise: Routine care

The facilitators will demonstrate routine care and the baby's responses.

Learners will work in pairs with the mannequin to practice the steps in routine care. One person takes the role of the birth attendant. The other person gives the response of the baby and acts as a helper when needed.

Learners switch roles and repeat the exercise.



Checklist

☐ *If meconium, clear airway*

.....

☐ *Dry thoroughly*

.....

☐ *Recognize crying*

.....

☐ *Keep warm*

.....

☐ *Check breathing*

.....

☐ *Clamp or tie and cut the umbilical cord*

.....

☐ *Place on mother's chest to encourage breastfeeding*

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Group discussion

Discuss with a small group of other learners how you will use the action and evaluation steps. Identify possible problems and solutions where you work.

1. How do you recognize a healthy baby?

2. Where will you place a healthy baby immediately after birth?
In your experience, do mothers routinely practice skin-to-skin care?

3. How can you protect mother and baby from infection during and after delivery?

4. What cord care is used locally? Is this care useful or harmful or neither?

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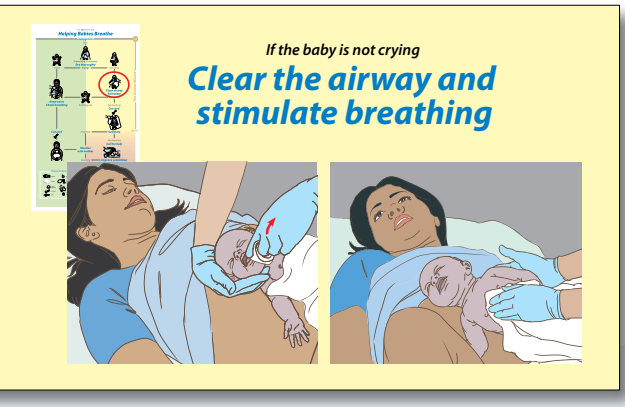

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If the baby is not crying or breathing well after drying, you will need to help the baby breathe in The Golden Minute®.

Keep warm.
Place the baby skin-to-skin on the mother's chest/abdomen. If that is not possible, place the baby on a warm, dry blanket beside mother. Ask your helper to cover the head.

Position the head.
Position the baby with the neck slightly extended to help keep the airway open. When the baby's head is in the correct position, the nose will be as far forward as possible. If the neck is flexed or extended too far, air may not enter freely.

Clear the airway.
Clear the mouth and then the nose with a clean suction device or wipe. Clear the mouth first to remove the largest amount of secretions before the baby gasps or cries. Suctioning the nose first may cause gasping and inhaling of secretions.

When using a bulb suction, squeeze the bulb before inserting the tip in the mouth or nose and release before withdrawing the bulb. Stop suctioning when secretions are cleared, even if the baby does not breathe. Suctioning too long, too vigorously, or too deeply can cause injury, slow heart rate, and prevent breathing.

When using a suction device with a tube and reservoir, insert the tube into the side of the baby's mouth no more than 5 cm beyond the lips. Apply suction while withdrawing the tube. Insert the suction tube 1 to 2 cm into each nostril and apply suction while withdrawing the tube.

Stimulate breathing.
Gently rub the back once or twice. Do not delay or stimulate longer. Move quickly to evaluate breathing and decide if ventilation is needed. Drying, clearing the airway, and stimulating breathing should take less than 1 minute. Your actions in The Golden Minute can help many babies begin to breathe.

Check yourself

Mark the box beside the best answer.

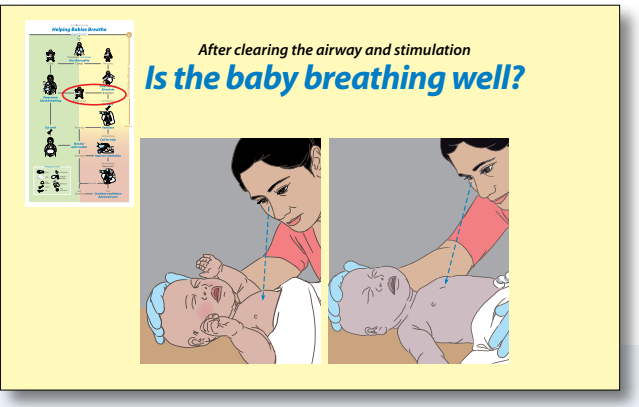
How long should it take to dry the baby, clear the airway, stimulate breathing?

☐ *Less than 1 minute - The Golden Minute*
☐ *Two minutes*

Suctioning for a long time or suctioning deeply can

☐ *Make a baby breathe*
☐ *Keep a baby from breathing*

Follow the Action Plan.
Trace the action and evaluation steps in The Golden Minute (yellow zone).



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Evaluate the baby after clearing the airway and stimulation by asking the following question: *Is the baby breathing well?*

A baby who is breathing well will be

- Crying
  or
- Breathing quietly and regularly

A baby who is not breathing well will be

- Gasping - taking a single deep breath followed by a long pause or several deep, irregular breaths followed by a pause
  or
- Not breathing at all

Some babies will have shallow, irregular, slow, or noisy breathing immediately after birth. Others may have chest indrawing (retractions). These babies will require close monitoring of their breathing, heart rate, and color to decide if they need more help to breathe.

Decide what care the baby needs after clearing the airway and stimulation.
If the baby is breathing well, no further intervention is required. Continue to check the breathing. Clamp or tie and cut the umbilical cord. Encourage breastfeeding in the first hour.

If the baby is not breathing well (gasping or not breathing at all), begin ventilation with bag and mask. Quickly clamp or tie and cut the umbilical cord before moving the baby to the area for ventilation. Delay in ventilation may result in preventable death or brain damage.

Check yourself

Mark the box beside the best answer.

If a baby is not breathing well after drying, clearing the airway and rubbing the back once or twice, you should give

☐ *More stimulation*
☐ *Ventilation with bag and mask*

Which baby is breathing well?

☐ *A baby who is breathing quietly and regularly*
☐ *A baby who takes one deep breath followed by a long pause*

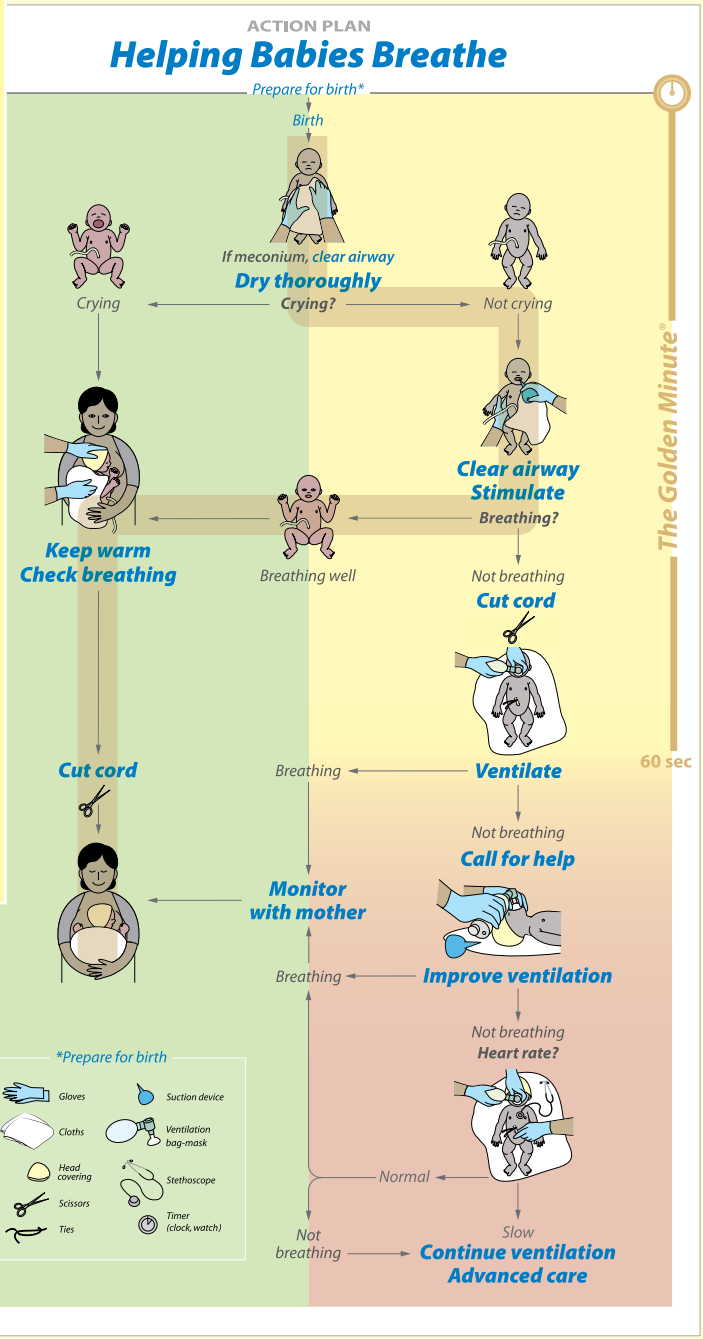
Follow the Action Plan.
What is the evaluation question after clearing the airway and stimulating breathing?

Exercise: The Golden Minute® – clear the airway and stimulate breathing

The facilitators will demonstrate clearing the airway and stimulating breathing during The Golden Minute and the baby's responses.

Learners will work in pairs with the mannequin to practice clearing the airway and stimulating breathing. One person takes the role of the skilled birth attendant. The other person gives the response of the baby and acts as a helper when needed.

Learners switch roles and repeat the exercise.



Checklist

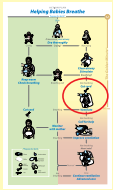
- ☐ *If meconium, clear airway*
- ☐ *Dry thoroughly*
- ☐ *Recognize not crying*
- ☐ *Keep warm*
- ☐ *Position head*
- ☐ *Clear airway*
- ☐ *Stimulate breathing*
- ☐ *Recognize breathing well*
- ☐ *Keep warm*
- ☐ *Check breathing*
- ☐ *Clamp or tie and cut the umbilical cord*
- ☐ *Position skin-to-skin on mother's chest to encourage breastfeeding*

Group discussion

Discuss with a small group of other learners how you will use the action and evaluation steps. Identify possible problems and solutions where you work.

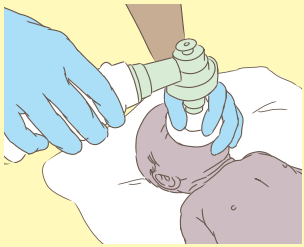
1. *How do you clear the baby's airway when there is meconium in the amniotic fluid? What are the advantages and disadvantages of this method?*
2. *How do you recognize a baby who is breathing well? Not breathing well?*
3. *Drying and rubbing the back are methods to stimulate breathing. Are there other methods used in your region? Are these useful or harmful for babies, or neither?*

Notes



If the baby is not breathing well, cut cord and

Ventilate with bag and mask



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Ventilation with bag and mask is the most important and effective way to help the baby who is not breathing or is gasping. Ventilation opens the lungs with air.

Initiate ventilation

Place the baby on a clean, warm, and dry area with good light to assess the baby.
You should have prepared this area prior to the birth.

Stand at the baby's head.
You will need to control the position of the head and look for movement of the chest.

Select the correct mask.
The mask should cover the chin, mouth, and nose, but not the eyes. The mask should make a tight seal on the face so air will enter the baby's lungs.

A mask that is too large will not seal well on the face. Air will escape under the mask.
A mask that is too small will not cover both the mouth and nose and may block the nose. Air will not enter the lungs freely.

Check yourself

Mark the box beside the best answer.

How do you select the correct mask?

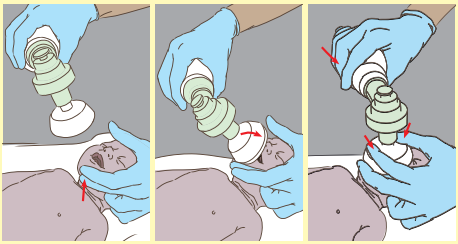
- ☐ *Select the mask that covers the chin, mouth, and nose, but not the eyes.*
- ☐ *Select the mask that covers the chin, mouth, nose, and the eyes.*

Which cloth will keep a baby warmer during ventilation?

- ☐ *A cloth soaked in warm water*
- ☐ *A warm, dry cloth*

Follow the Action Plan.
What action step includes initiating ventilation?

How to ventilate with bag and mask



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Position the head slightly extended.
Help keep the baby's airway open by positioning the head slightly extended and supporting the chin.

Position the mask on the face.
Position the rim of the mask to rest on the tip of the chin, then place the mask over mouth and nose.

Make a firm seal between the mask and the face while squeezing the bag to produce a gentle movement of the chest.
Hold the mask on the face with the thumb and index finger on top of the mask. Use the middle finger to hold the chin up toward the mask. Use the 4th and 5th fingers along the jaw to lift it forward and help keep the airway open.

Form a tight seal by pressing lightly on the top of the mask and gently holding the chin up toward the mask. If the seal is not tight, you will not move air into the lungs as you squeeze the bag. The air will escape under the rim of the mask. Do not push the mask down onto the face. This may change the head position and interfere with air entering the lungs.

Squeeze the bag to produce a gentle movement of the chest, as if the baby were taking an easy breath. Make sure there is no leak between the mask and the baby's face. Squeeze the bag harder if you need to deliver more air with each breath.

Give 40 breaths per minute.
Count aloud, "One…two…three…One…two…three." If you squeeze the bag as you say, "One," and release while you say, "two…three," you will ventilate at a rate that helps air move into and out of the lungs well.

Check yourself

Mark the box beside the best answer.

What allows you to move air into the baby's lungs during ventilation?

- ☐ *A flexed position of the head*
- ☐ *A good seal between the mask and the face*

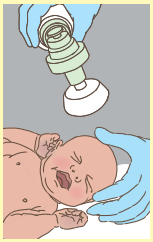
To help open the baby's airway, you should position the baby's head

- ☐ *Slightly extended*
- ☐ *Hyperextended*

Follow the Action Plan.
What are the action steps within The Golden Minute®?

During ventilation

Is the baby breathing well?



Notes

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Evaluate the baby during ventilation by asking: ***Is the baby breathing well?***

Some babies improve quickly and begin breathing well after brief ventilation. Some babies require continued ventilation with bag and mask.

A baby who is breathing well will be

- Crying

  or
- Breathing quietly and regularly

A baby who is not breathing well will be

- Gasping – taking a single deep breath followed by a long pause or several deep, irregular breaths followed by a pause

  or
- Not breathing at all

Decide what care the baby needs after beginning ventilation.

Stop ventilation when the baby is breathing well. The baby can remain with the mother under close monitoring. Count the breathing rate, listen for grunting, and look for chest indrawing.

A baby who is not breathing well (gasping or not breathing at all) needs continued ventilation with bag and mask.

Check yourself

Mark the box beside the best answer.

You are giving a baby ventilation with bag and mask. The baby is gasping. What should you do?

☐ *Stop ventilation and observe closely with mother.*

☐ *Continue ventilation.*

A baby begins to breathe well after 30 seconds of ventilation with bag and mask. How will you care for this baby?

☐ *Monitor the baby closely with the mother.*

☐ *Provide routine care.*

Follow the Action Plan.

What is the evaluation question after beginning ventilation?

Notes

Exercise: The Golden Minute® - ventilation

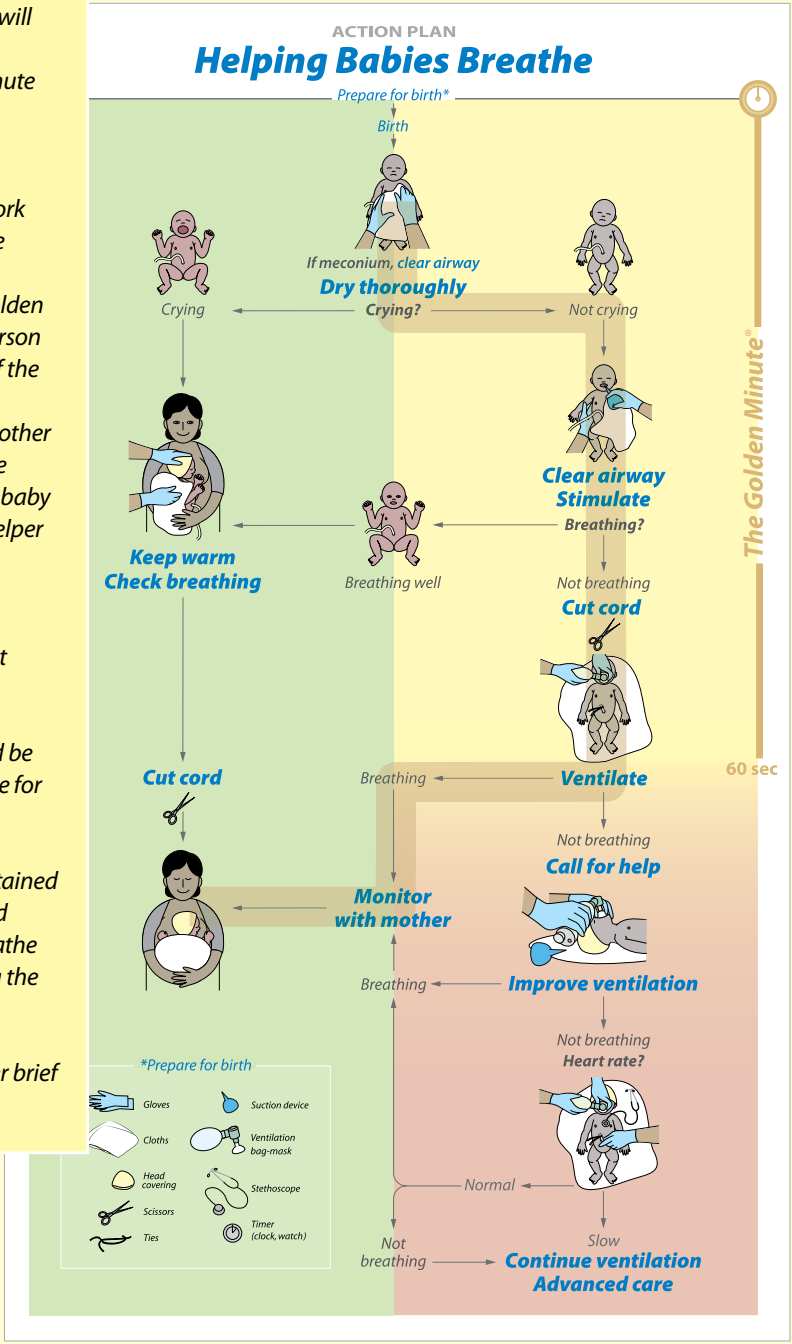
The facilitators will demonstrate The Golden Minute and the baby's responses.

Learners will work in pairs with the mannequin to practice The Golden Minute. One person takes the role of the skilled birth attendant. The other person gives the response of the baby and acts as a helper when needed.

Learners switch roles and repeat the exercise.

Learners should be prepared to care for a baby who

- *has clear OR meconium-stained amniotic fluid*
- *does not breathe after clearing the airway and stimulating*
- *breathes after brief ventilation*



Checklist

- ☐ *If meconium, clear airway*

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- ☐ *Dry thoroughly*

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- ☐ *Recognize not crying*

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- ☐ *Keep warm, position head, clear airway*

  .....

- ☐ *Stimulate breathing*

  .....

- ☐ *Recognize not breathing well*

  .....

- ☐ *Clamp or tie and cut the umbilical cord**

  .....

- ☐ *Move to area for ventilation*, stand at head, select correct mask*

  .....

- ☐ *Ventilate **(by 1 minute)***

  .....

- ☐ *Recognize breathing well*

  .....

- ☐ *Monitor with mother*

  .....

**Alternative: Position baby beside mother with cord intact*

Group discussion

Discuss with a small group of other learners how you will use the action and evaluation steps. Identify possible problems and solutions where you work.

1. *Where will you place a baby who needs ventilation with bag and mask? How will you keep the baby warm?*

2. *When will you clamp or tie and cut the cord of the baby who needs ventilation? How will you avoid delay in beginning ventilation?*

Notes

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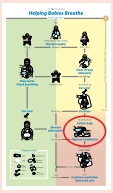
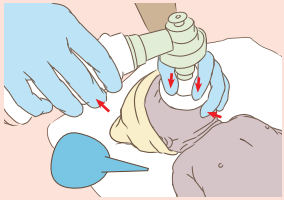


If the baby is not breathing

Call for help
Improve ventilation



Notes

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If the baby is not breathing, continue ventilation and call for help. Ask the birth companion to summon another skilled person, if available, and watch the mother.

Check that ventilation breaths produce movement of the chest as if the baby were breathing normally. Take steps to improve ventilation if the chest is not moving.

Head:
- Reapply the mask to the face to form a better seal.
- Reposition the head with the neck slightly extended.

Mouth:
- Check the mouth, the back of the throat, and the nose for secretions, and clear as necessary.
- Open the baby's mouth slightly before reapplying the mask.

Bag:
- Squeeze the bag harder to give a larger breath.

An air leak under the mask or incorrect position of the head is a common reason for poor chest movement. If you still do not see gentle movement of the chest, try to find the problem and repeat the necessary steps to improve ventilation. Recheck the function of the ventilation bag. Replace it if another bag is available.

Check yourself

Mark the box beside the best answer.

A baby does not breathe after brief ventilation. What should you do first?

☐ *Squeeze the bag harder to give a larger breath.*

☐ *Call for help.*

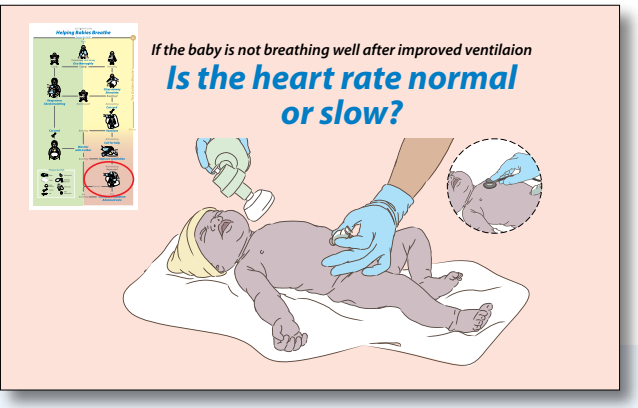
A baby's chest does not move with ventilation. What should you do?

☐ *Stimulate the baby.*

☐ *Reapply the mask to the face and reposition the head with the neck slightly extended.*

Follow the Action Plan.

Trace the action and evaluation steps during continued ventilation (red zone).



Notes

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If a baby does not begin to breathe after 1 minute of ventilation with chest movement, evaluate heart rate to decide if ventilation is adequate.

Ask the question:
Is the heart rate normal or slow?

Checking the heart rate is easier and faster with the help of another skilled person. A skilled helper can count the umbilical cord pulsations while you are giving the first minute of ventilation. If you have no skilled helper or the cord pulse cannot be felt, you will need to rely on movement of the chest as an indicator of adequate ventilation. Continue ventilation for 1 minute before stopping to listen to the heartbeat.

Decide if the heart rate is normal or slow.
Evaluate the heart rate by feeling the umbilical cord pulse or listening to the heartbeat with a stethoscope. Feel the pulse in the umbilical cord where it attaches to the baby's abdomen. If no pulse can be felt in the cord, you or your helper must listen over the left chest with a stethoscope and count the heartbeat. Pause ventilation for several seconds in order to hear the heartbeat.

- A heart rate of 100 beats per minute or more is normal.
- A heart rate of less than 100 beats per minute is slow.

Minimize the time without ventilation. Listen to the heart rate just long enough to recognize if it is normal or slow. If the heart rate sounds faster than your own, it is probably normal. If the heart rate sounds slower than your pulse, it is slow.

Check yourself

Mark the box beside the best answer.

You are breathing for a baby with bag and mask. When should you check the heart rate?

☐ *After every 10 breaths with the ventilation bag*
☐ *After 1 minute of ventilation*

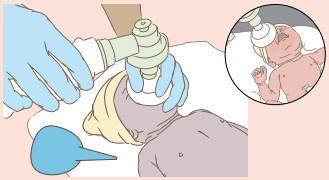
You feel the umbilical cord to count the heart rate. You cannot feel any pulsations. What should you do next?

☐ *Listen for the heartbeat with a stethoscope.*
☐ *Do nothing more. The baby is dead.*

Follow the Action Plan.
What are the evaluation questions during continued ventilation?

If the heart rate is normal

Ventilate until the baby is breathing well, then monitor with mother



Notes

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If the heart rate is normal, continue to ventilate until the baby is breathing well. Gradually reduce the rate of ventilation and look for the baby's breathing. If the heart rate stays normal as the baby begins to breathe, stop ventilation. Ventilation can stop when the baby is breathing and the heart rate stays normal (more than 100 beats per minute).

Monitor the baby who is breathing after ventilation.

Monitor the baby with the mother. Extended skin-to-skin care may be of special value to the small or sick baby who required ventilation. Monitor vital signs including breathing, heart rate, temperature, and color. A baby who received ventilation with bag and mask may need assistance with feeding. Talk with mother and the birth companion about the baby and the plan of care.

Continue ventilation and seek advanced care if the baby is not breathing or not breathing well.

- A baby who has a normal heart rate and pink color but does not breathe needs continued ventilation. A slow decrease in the rate of ventilation over several minutes may allow return of spontaneous breathing. If the baby still does not breathe, continue ventilation and consider specialty consultation and/or referral.
- The baby who begins to breathe, but has difficulty breathing and a slow heart rate without ventilation needs continued ventilation and specialty care.
- The baby who is blue, pale, or breathing fast may be helped by supplemental oxygen through nasal prongs or catheter.
- Severe chest indrawing, grunting, or frequent pauses in breathing (longer than 15 to 20 seconds) may require mechanical support of breathing.

A baby who has received continued ventilation (longer than 5 minutes) needs close monitoring and specialty consultation or referral. Warmth and assistance with feeding will be necessary.

Notes

Check yourself

Mark the box beside the best answer.

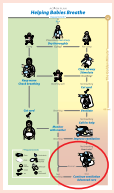
A baby has been ventilated for more than 3 minutes with bag and mask. The heart rate is 120 beats per minute. The baby is not breathing. What should you do next?

- ☐ *Slowly decrease the rate of ventilation and watch for breathing.*
- ☐ *Stop the ventilation and wait at least 1 minute to see if the baby breathes.*

A baby has been ventilated for 10 minutes with bag and mask. The baby is now breathing and has a heart rate of more than 100 beats per minute. What care does this baby need?

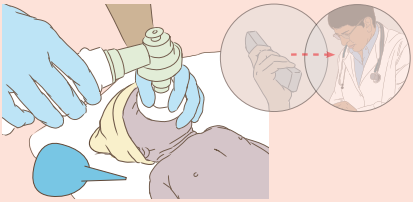
- ☐ *Routine care with mother*
- ☐ *Close monitoring with specialty consultation or referral*

Follow the Action Plan.
Trace the two action steps with normal heart rate during continued ventilation.



If the heart rate is slow or normal and the baby does not breathe

Continue ventilation and seek advanced care



Notes

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If the heart rate is slow, make sure that you have taken all the steps to improve ventilation. There may be a serious problem.

Such problems include pneumonia, meconium aspiration, immature lungs (prematurity), or a congenital malformation. The baby may need endotracheal intubation and supplemental oxygen or chest compressions and medications.

Activate the emergency plan to access advanced care at a specialty facility. Continue ventilation during transport if the baby must be moved for advanced care.

If the baby has no heart rate and no breathing after giving ventilation for 10 minutes, the baby is dead. Stop ventilation.

Skin that is purple-white or peeling (maceration) suggests that a baby died long before delivery. If recognized at delivery, ventilation need not begin. Ventilation can be stopped whenever maceration is recognized. No intervention is indicated. A baby who never had a heart rate and never breathed after birth is stillborn.

Check yourself

Mark the box beside the best answer.

You have provided ventilation with bag and mask for 5 minutes. The baby's chest is moving, but the heart rate is about 70 beats per minute. What should you do?

- ☐ *Continue ventilation, activate the emergency plan, and seek advice from a specialty facility.*
- ☐ *Stop ventilation and observe to see if the heart rate improves.*

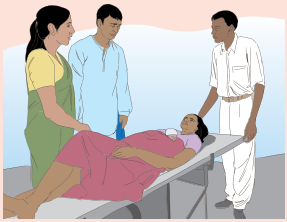
After 10 minutes of ventilation with good chest movement, the baby is not breathing and there is no heart rate (no cord pulse, no heartbeat by stethoscope). What should you do?

- ☐ *Stop ventilation. The baby is dead.*
- ☐ *Continue ventilation for another 10 minutes.*

Follow the Action Plan.
Trace the action step with slow heart rate during continued ventilation.

If transfer is necessary

Transport mother and baby together, and support the family



Notes

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A baby may have breathing problems or other danger signs that require specialty care. Every facility should have guidelines for referral (transport) of sick babies.

Transport mother and baby together.
Continue to monitor baby's breathing, heart rate, color and temperature closely. Communicate your assessment and the actions you have taken to the responsible person at the receiving facility. Try to keep mother and baby together during transfer, even if only one is ill. Consider skin-to-skin care in transport, as possible, to facilitate observation and protect the baby from cold stress.

Support the family of a baby who is ill or who died.
Explain to the family of a sick baby what is wrong and what can be done to help. Answer the family's questions or find help to answer them. If a baby dies, respond in a culturally appropriate way. If appropriate, explain to the family why you think the baby died and discuss with the family the events before death. Allow family members to see and hold the baby if they wish. Respect the family's wishes, privacy, and religious beliefs. Give the mother advice on breast care and family planning.

Check yourself

Mark the box beside the best answer.

A baby needed ventilation with bag and mask. She is breathing fast and cannot breastfeed. What should you do?

- ☐ *Leave mother and baby alone to rest.*
- ☐ *Explain the baby's condition to the mother and birth companion.*

A premature baby will be taken to the district hospital with breathing difficulty. How should you advise the mother?

- ☐ *Advise her not to travel for at least a week.*
- ☐ *Advise her to go with her baby if possible.*

Follow the Action Plan.
On the Action Plan, note the phone numbers or other means of communication to activate the emergency plan and obtain consultation or arrange referral.

Exercise: Continued ventilation with normal heart rate

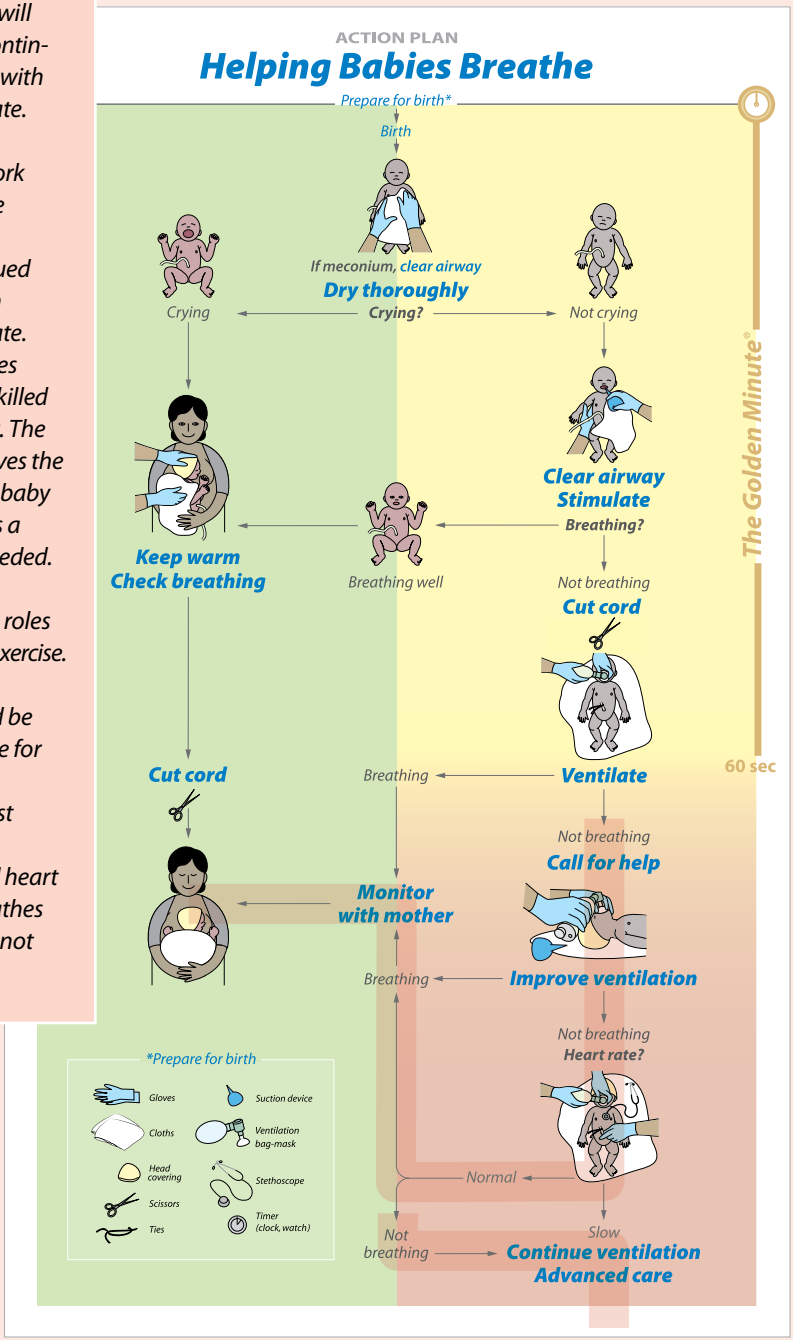
The facilitators will demonstrate continued ventilation with normal heart rate.

Learners will work in pairs with the mannequin to practice continued ventilation with normal heart rate. One person takes the role of the skilled birth attendant. The other person gives the response of the baby and also acts as a helper when needed.

Learners switch roles and repeat the exercise.

Learners should be prepared to care for a baby who

- *has poor chest movement*
- *has a normal heart rate and breathes well OR does not breathe well*



Checklist

☐ *Recognize not breathing and poor chest movement*

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☐ *Call for help*

.....

☐ *Continue and improve ventilation*

.....

☐ *Recognize still not breathing well*

.....

☐ *Recognize normal heart rate*

.....

☐ *Recognize breathing well now OR still not breathing well*

.....

☐ *If breathing well, monitor with mother OR if not breathing well, continue ventilation and seek advanced care*

.....

Group discussion

Discuss with a small group of other learners how you will use the action and evaluation steps. Identify possible problems and solutions where you work.

1. *How can you give ventilation and evaluate the baby if there is not a second skilled person at a delivery?*

2. *How will you activate your emergency plan if a baby needs advanced care (specialty consultation or referral)?*

Notes

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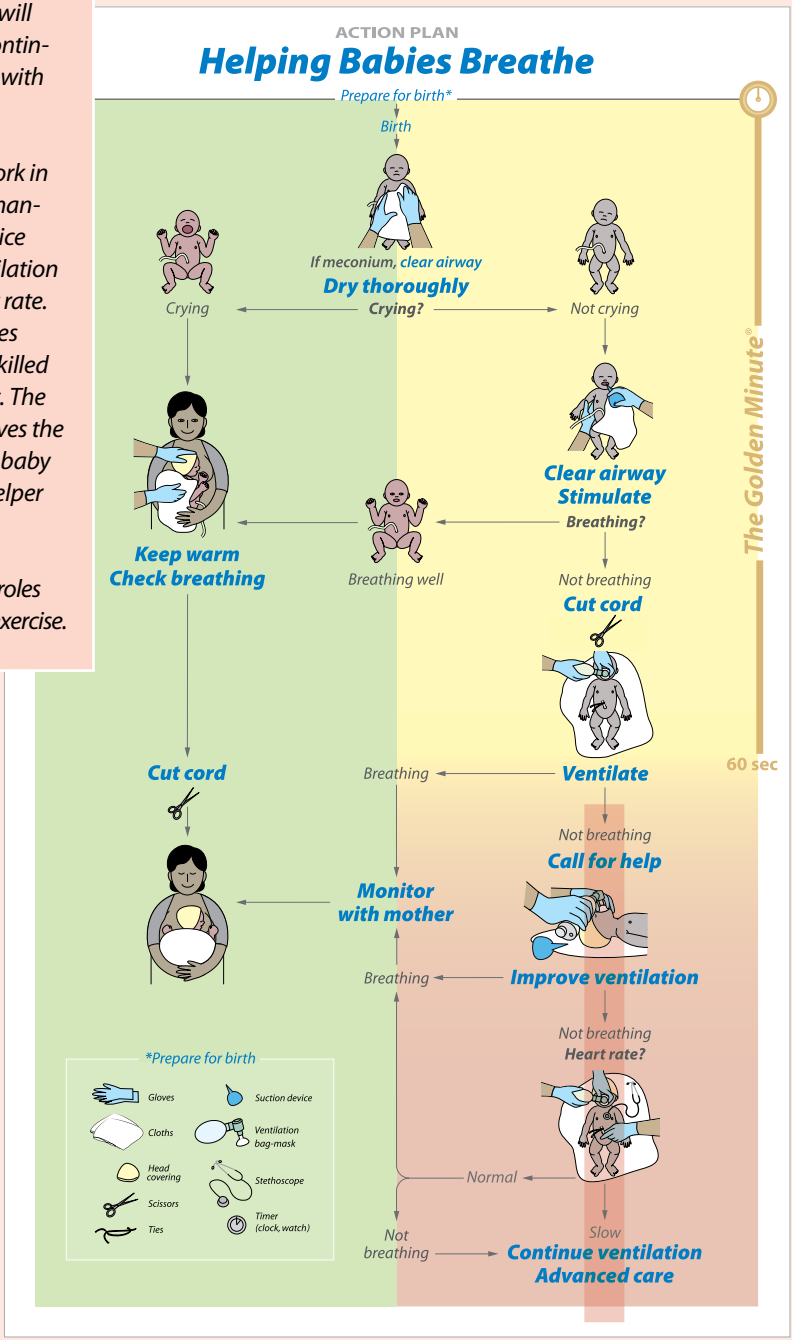
Exercise: Continued ventilation with slow heart rate

The facilitators will demonstrate continued ventilation with slow heart rate.

Learners will work in pairs with the mannequin to practice continued ventilation with slow heart rate. One person takes the role of the skilled birth attendant. The other person gives the response of the baby and acts as a helper when needed.

Learners switch roles and repeat the exercise.



Checklist

☐ *Recognize not breathing and poor chest movement*

.....

☐ *Call for help*

.....

☐ *Continue and improve ventilation*

.....

☐ *Recognize still not breathing well*

.....

☐ *Recognize slow heart rate*

.....

☐ *Continue ventilation and seek advanced care*

.....

Group discussion

Discuss with a small group of other learners how you will use the action and evaluation steps. Identify possible problems and solutions where you work.

1. *If a baby needs continued ventilation for longer than several minutes, where will that baby receive care?*

2. *What conditions can be cared for where you work and what are the reasons you would transfer a baby?*

3. *In your community, how can you best support the family of a baby who is ill or who died?*

Notes

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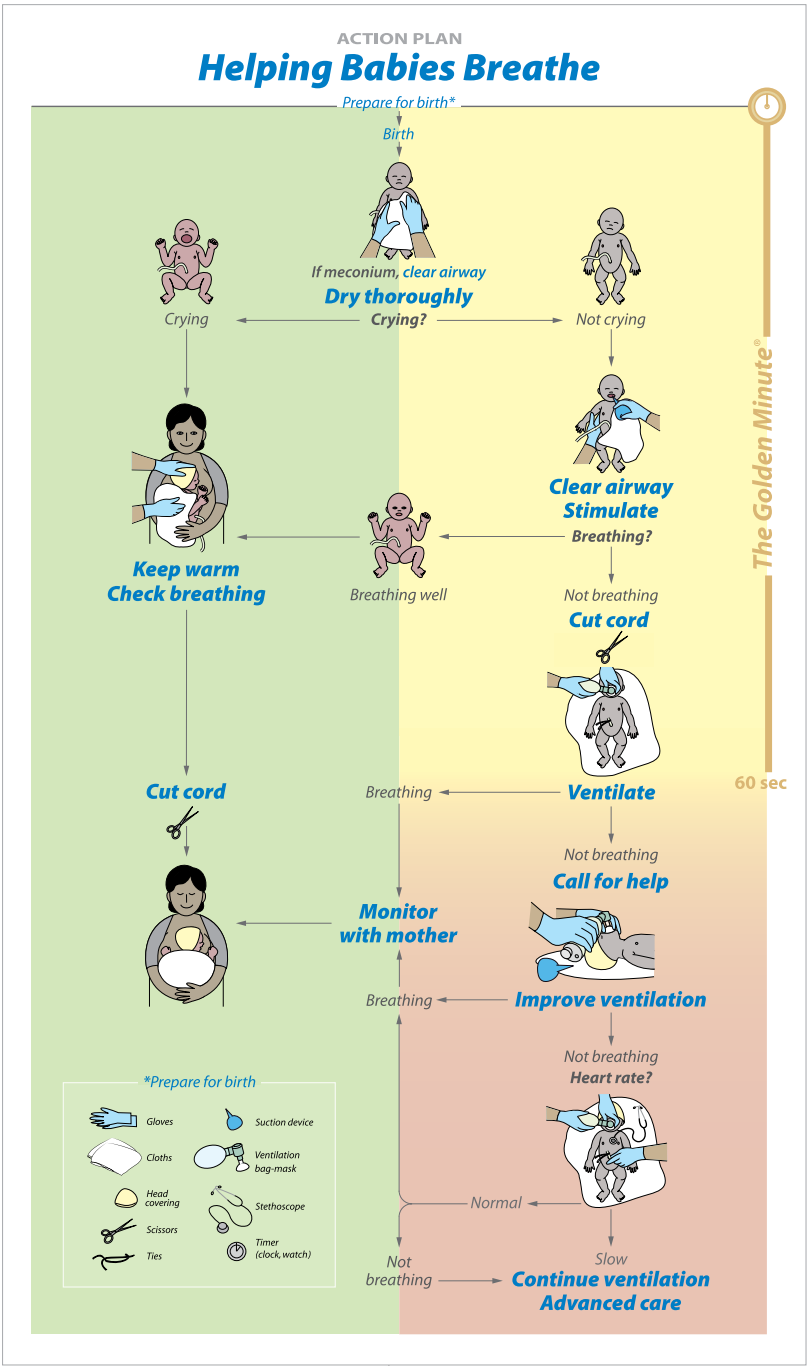
Action Plan


ACTION PLAN
Helping Babies Breathe
Prepare for birth*
Birth
If meconium, clear airway
Dry thoroughly
Crying?
Crying
Not crying
Keep warm
Check breathing
Breathing well
Clear airway
Stimulate
Breathing?
Not breathing
Cut cord
Ventilate
Breathing
Cut cord
Not breathing
Call for help
Monitor
with mother
Improve ventilation
Breathing
Not breathing
Heart rate?
Normal
Not breathing
Slow
Continue ventilation
Advanced care
The Golden Minute®
60 sec
*Prepare for birth
Gloves
Cloths
Head covering
Scissors
Ties
Suction device
Ventilation bag-mask
Stethoscope
Timer (clock, watch)

Trace six cases

1	2	3	4	5	6
	If meconium, clear airway				
Dry thoroughly	Dry thoroughly	Dry thoroughly	Dry thoroughly	Dry thoroughly	Dry thoroughly
Crying	Not crying	Not crying	Not crying	Not crying	Not crying
Keep warm Check breathing	Keep warm Position head	Keep warm Position head	Keep warm Position head	Keep warm Position head	Keep warm Position head
	Clear airway Stimulate breathing	Clear airway Stimulate breathing	Clear airway Stimulate breathing	Clear airway Stimulate breathing	Clear airway Stimulate breathing
Breathing well	Breathing well	Not breathing	Not breathing	Not breathing	Not breathing
Cut cord **Routine care**	Cut cord **Routine care**	Cut cord Ventilate	Cut cord Ventilate	Cut cord Ventilate	Cut cord Ventilate
		Breathing well	Not breathing	Not breathing	Not breathing
		Monitor with mother	Call for help	Call for help	Call for help
			Continue/ improve ventilation	Continue/ improve ventilation	Continue/ improve ventilation
			Breathing	Not breathing	Not breathing
			Monitor with mother	Continue ventilation	Continue ventilation
				Normal heart rate	Slow heart rate OR Normal heart rate
				Breathing	Not breathing
				Monitor with mother	**Continue ventilation** **Advanced care**

The Golden Minute®

60 sec

There are 3 main questions in the Action Plan:

- ***Crying?***
- ***Breathing?***
- ***Heart rate?***

The answers to these questions identify different pathways through the Action Plan and several different cases, as shown above. Trace each of the cases described above on the Action Plan (page 36). Remember, if meconium is present in the amniotic fluid, the airway is cleared before drying. The main key to success with Helping Babies Breathe® is practice. Practice during the course and as frequently as possible after the course.

Continue to learn with the Action Plan

Practice the questions you must ask and the actions you take in the correct order. Check yourself by having another learner describe a case to you. Ask the evaluation questions. Your partner will answer through the neonatal mannequin or in words. Decide on the correct action. Perform the action. Ask the next evaluation question. Continue until the baby is breathing well. If the baby does not breathe well, continue ventilation and indicate that advanced care is needed.

Think about what you will do in difficult cases. What will you do if the baby is macerated? If the baby has no heart beat or pulse after 1 minute of ventilation? If there is no heart beat or pulse after 10 minutes of ventilation?

Use the Action Plan as a guide to think about the care you provide to babies in your work.
- What did you do to help the baby breathe?
- What happened to the baby?
- What went well?
- What could have gone better?
- What did you learn from the case?

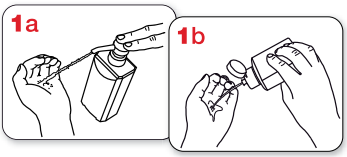
Share your experiences with other birth attendants so that they can learn from them.

Mastering bag and mask ventilation

Ventilation with bag and mask can be lifesaving when a baby does not breathe after clearing the airway and stimulation. Mastering and maintaining this skill require ongoing practice. Use the following steps to practice so that you can perform all of the steps perfectly.

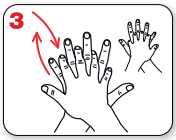
	Done	*Not done*
1. ***Check equipment and select the correct mask***	☐	☐
Test function of bag and mask		
Make sure mask fits the baby's face		
2. ***Apply the mask to make a firm seal***	☐	☐
Extend the head, place mask on the chin, then over the mouth and nose		
A firm seal permits chest movement when the bag is squeezed		
3. ***Ventilate at 40 breaths per minute***	☐	☐
The rate should not be less than 30 or more than 50 breaths per minute		
4. ***Look for chest movement***	☐	☐
Check that every ventilation breath produces chest movement		
5. ***Improve ventilation if the chest does not move:***		
a) Head – reapply mask and reposition head	☐	☐
b) Mouth – clear secretions and open the mouth	☐	☐
c) Bag – squeeze the bag harder	☐	☐

How to handrub?
WITH ALCOHOL-BASED FORMULATION

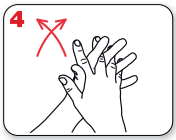


Apply a palmful of the product in a cupped hand and cover all surfaces.

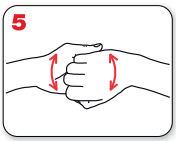
Rub hands palm to palm



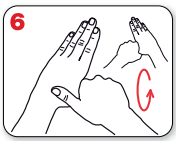
right palm over left dorsum with interlaced fingers and vice versa



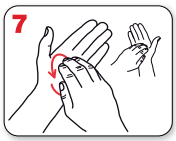
palm to palm with fingers interlaced



backs of fingers to opposing palms with fingers interlocked



rotational rubbing of left thumb clasped in right palm and vice versa

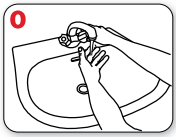


rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa

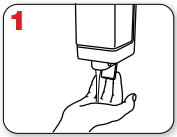
20-30 sec

…once dry, your hands are safe.

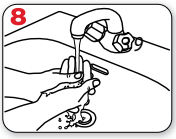
How to handwash?
WITH SOAP AND WATER



Wet hands with water

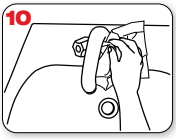


apply enough soap to cover all hand surfaces.



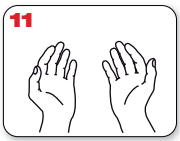
rinse hands with water

dry thoroughly with a single use towel



use towel to turn off faucet

40-60 sec



…and your hands are safe.

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in particular the members of the Infection Control Programme, for their active participation in developing this material.

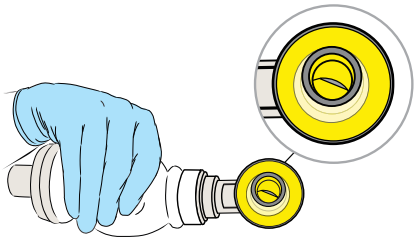
Design: moniksdesign.network

Cleaning and testing equipment after every use

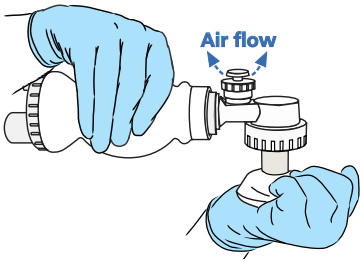
To clean

- Disassemble the ventilation bag and mask device, and if possible, the suction device while still wearing gloves. If the suction device cannot be opened for cleaning inside, discard it after use.
- To decontaminate:
  Soak all parts in a 0.5% chlorine solution for 10 minutes.
- To clean:
  Wash all parts with soap and water. Rinse carefully with clean water to remove all soap.
- To highly disinfect or sterilize:
  Boil in water for 10-20 minutes. OR Soak in activated glutaraldehyde, then rinse well with boiled water. OR Steam autoclave (sterilization).
- Dry completely and keep clean until next use.

To test



1. Squeeze the ventilation bag and look for the valve in the patient outlet to open as you squeeze. This shows the device is ready to deliver air to a patient.



2. Seal the mask tightly to the palm of your hand and squeeze hard enough to open the pressure release valve. This shows that air which cannot be delivered through a blocked airway will escape through the pressure relief valve.

- Test vital functions of the ventilation device:
  3. Check the mask rim for any damage that could prevent an airtight mask seal to the face.

To ensure equipment is ready for use at all times

- Repair or replace any equipment that is damaged or does not function. Correct a problem when it occurs.
- Store clean equipment in a protected, safe place where it can be accessed easily. Store in clean plastic bags or boxes used only for that purpose. Keep all equipment together where it will be used.
- Dispose of contaminated supplies and handle contaminated linen properly.
  Restock with clean supplies and linen.

Encouraging early breastfeeding

- ***Maintain contact between mother and baby.*** Place the baby on mother's abdomen for routine care or clearing the airway and stimulation to breathe. After clamping or tying and cutting the cord, position the baby on mother's chest.
- ***Encourage breastfeeding within 1 hour after birth.*** Most babies will become alert and ready to breastfeed shortly after birth. Not all will become ready at the same time. Help the mother recognize when the baby is ready to breastfeed.
- ***Facilitate correct positioning and attachment.*** Help mother position the baby at the breast. Mother should be comfortable. Baby should be facing the breast. Help the baby attach to the nipple if necessary.
- ***Encourage frequent feeding on demand.*** Keep mother and baby together. Teach mother to recognize when her baby is ready to breastfeed and respond.
- ***Offer no other fluids/foods to baby.*** Babies require no other fluid than colostrum and breast milk as mother produces them. Mothers need nutritious foods and fluids.

Monitoring after help to breathe

Monitor vital signs

- ***Breathing*** – Count the breathing rate, listen for grunting, and look for chest indrawing. A normal breathing rate is 30 to 60 breaths per minute.
- ***Color*** – Look at the color of the lips and the inside of the mouth. Note the color of the skin over the face, the body, and the hands and feet. The lips and mouth should be pink. A bluish or pale color of the lips, mouth, face or body may mean the baby is not breathing well. Bluish hands and feet may be normal if the rest of the baby is pink.
- ***Heart rate*** – Evaluate the heart rate if the breathing pattern or color is not normal. A normal heart rate is more than 100 beats per minute in the first hours after birth.
- ***Temperature*** – Touch the body and the feet of the baby. The temperature should be the same. If the feet are cold, warm the baby skin-to-skin with mother. Cover the baby with warm cloths or blankets and a hat.

Monitor behavior

- ***Alertness, posture and movement*** – Look for open eyes, flexed arms and legs, and spontaneous movement. These are normal behaviors. A baby who is always sleepy or crying, floppy or stiff, or not moving may be sick.
- ***Breastfeeding*** – A baby should breastfeed 8 to 12 times per day. The baby who is not interested in breastfeeding or who vomits after breastfeeding may be sick.

Recognizing danger signs

Recognize the danger signs that mean a baby is not well. Teach the danger signs to parents. A baby with any of the danger signs needs urgent care and treatment.

- ***Not breathing well*** – breathing too fast, too slow, grunting, or chest indrawing
- ***Color abnormal*** – skin bluish, red, pale, or jaundiced (yellow in first 24 hours)
- ***Cold or hot to touch*** – feet cold or body hot to touch
- ***Not acting well*** – abnormal alertness, posture, or movement
- ***Not breastfeeding well***
- ***Pus or swelling of eyes; pus, redness or bleeding of umbilicus; pustules on skin***
- ***Convulsions*** – jerking movements of arms and/or legs

Caring for the preterm or small baby

The preterm or small baby needs special attention to cleanliness, warmth, and nutrition.

- ***Cleanliness of all persons and objects*** – All caregivers must wash their hands before touching the baby. All objects (clothes, cloths, and cups or spoons to help give breast milk) should be clean.
- ***Continued skin-to-skin care*** – Skin-to-skin contact between mother and baby can help keep breathing and temperature stable. It also encourages frequent breastfeeding.
- ***Frequent breastfeeding*** – Frequent breastfeeding helps avoid low blood sugar.
- ***Expressed breast milk*** – Preterm, small or sick babies may need to have breastfeeding supplemented with expressed mother's milk given by cup or spoon.

Kangaroo Mother Care (KMC) is a special way of caring for small babies with continuous skin-to-skin contact and exclusive breastfeeding. KMC promotes warmth, breastfeeding, prevention of infection, and support for mother and infant.

Recording births

Record the birth as soon as possible after mother and baby are stable.

- ***Date and time of birth***
- ***Apgar score*** – Assign Apgar scores to evaluate how well a baby is adjusting to life outside the womb. Give points for each sign at 1 and 5 minutes after birth. Total the points. Repeat the evaluation every 5 minutes until the total is 7 or more. A baby who has a low Apgar score at 5 minutes (0-3) has a higher chance of problems after birth than a baby with a higher score. The Apgar score gives important information about a baby who needs consultation or referral.
- ***Weight*** – Weigh the baby after the first hour and within 24 hours of birth when the temperature is stable. Babies less than 2500 grams are small. Note if the baby was born more than 2 weeks before the date expected by mother.
- ***Birth attendant note*** – Describe what was done to help the baby breathe and the baby's response.

APGAR SCORE

Sign	*0*	*1*	*2*	*Score*	
				1 min	*5min*
Breathing	*Absent*	*Weak cry, Shallow breaths*	*Good cry*		
Heart rate	*Absent*	*< 100 beats/min*	*> 100 beats/min*		
Color	*Blue or pale*	*Blue hands, feet Pink mouth, body*	*Completely pink*		
Tone	*Limp*	*Some flexion*	*Active motion*		
Reflex irritability	*No response*	*Grimace*	*Cry or active withdrawal*		
			Total		

Glossary

Apgar score – A numeric score that indicates how a baby is adjusting to life outside the womb (named for the doctor who described it)

Assess – to evaluate; to consider a set of facts or findings and make a judgement; to examine a baby or woman and identify signs of health or illness

Birth plan – a plan for safe childbirth developed in antenatal care visits that considers the woman's condition, preferences, and available resources

Birth companion – partner, spouse, other family member or friend who accompanies the woman during labor and delivery

Chest wall indrawing – movement of the chest wall inward while air is moving into the lungs during a breath; also known as retractions

Congenital malformation – a physical deformity present at birth

Consultation – assessment and advice, often by a specialist

Danger signs – physical evidence of health problems that are serious or life-threatening and require immediate care

Emergency plan - a plan to seek care for danger signs during pregnancy, childbirth, and the postpartum period in the woman and newborn

Endotracheal intubation – placing a tube through the mouth into the throat to give extra oxygen and mechanical ventilation

Facility – a place where organized care is provided, such as a health post, clinic, health center, or hospital

Gasping – a deep, sometimes single, indrawing of breath; in babies, indicates serious difficulty breathing

Grunting – soft, short sounds that a baby makes when breathing out; indicates difficulty breathing

Hospital – a health facility that cares for inpatients and has the capacity to treat complications in a woman or baby

Intervention – an action done to improve health

Maceration – skin changes that indicate fetal death well before delivery

Meconium aspiration – meconium inhaled into a baby's lungs; a cause of difficult breathing

Monitoring – frequently repeated measurements of vital signs or observations of physical signs

Newborn – a very young infant; interchangeable with baby

Pneumonia – infection or other irritation in the lungs; a cause of difficult breathing

Premature (or preterm) – before 37 completed weeks of gestation

Reassess – to examine (the woman or baby) again for signs of a specific condition or to decide if a condition is getting better, getting worse, or staying the same

Referral – sending a woman or baby, or both, for further assessment and care to a higher level of care; including arrangement of transport, care during transport, and written and spoken communication with the receiving facility

Referral hospital – a hospital with a full range of obstetric services, including surgery, and blood transfusion, and care for newborns with problems

Retractions – movement of the chest wall or spaces between the ribs inward while air is moving into the lungs during a breath; also known as chest wall indrawing

Sign - physical evidence of a condition or health problem observed by looking, listening, feeling, or measuring

Skilled birth attendant – A person with training to manage normal deliveries and diagnose or refer complications in the newborn and the woman

Stillbirth – birth of a baby who shows no signs of life (no gasping, breathing, heartbeat or movement)

Term (full-term) – after 37 completed weeks of pregnancy

Ventilation – to breathe for a baby with bag and mask or other mechanical device; to move air into and out of the lungs

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ACTION PLAN

Helping Babies Breathe

*Prepare for birth**

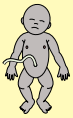
Birth

If meconium, clear airway

Dry thoroughly

Crying?

Crying



Not crying

Keep warm
Check breathing

Breathing well

Breathing?

Clear airway
Stimulate

Not breathing

Cut cord

Ventilate

Breathing

Not breathing

Call for help

Improve ventilation

Breathing

Not breathing

Heart rate?

Normal

Slow

Continue ventilation
Advanced care

Not breathing

Cut cord

Monitor with mother

The Golden Minute®

60 sec

**Prepare for birth*

- Gloves
- Cloths
- Head covering
- Scissors
- Ties
- Suction device
- Ventilation bag-mask
- Stethoscope
- Timer (clock, watch)

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