

Moyo - Fetal Heart Rate Monitor

Flip Chart



Practical information

Introduction

This flip-chart will walk you through the use of Moyo. It will be interactive, meaning that there will be questions asked to reassure your knowledge on how to use Moyo. After the training, learners can:

- Understand how Moyo works
- Use Moyo on patients
- Use Moyo to **support** medical decision making. Moyo only monitors, it can not make obstetric decisions.

Additional information on Moyo can be found in the Moyo user guide.

Cautions

- Read the user guide and become familiar with the operation of the device prior to use
- Moyo is intended for use by authorized healthcare professionals only
- Moyo is intended for monitoring only one fetus at a time

Preparation

Learners

This training is ideal for 1 facilitator and learners.

Equipment

1 Moyo for the learners and 1 Moyo for the instructor.

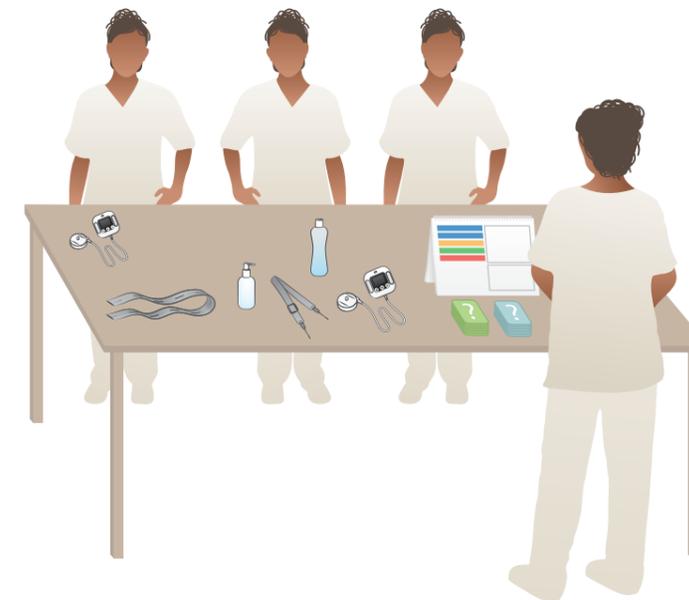
Make sure Moyo devices are charged sufficiently before the training.

In addition, you need:

- Ultrasound gel
- A cup of water
- Abdominal transducer belt
- Neck-strap
- Flip Chart

Setup

Prepare the equipment and place on the table as illustrated below. Make sure Moyo devices are charged sufficiently before training



Tips

How to simulate FHR

Place the patient side of the ultrasound transducer inside your hand, and tap on the top of your hand like this:



Make sure the ultrasound transducer has good skin contact inside your hand.

Acronyms

HR = Heart rate

FHR = Fetal heart rate

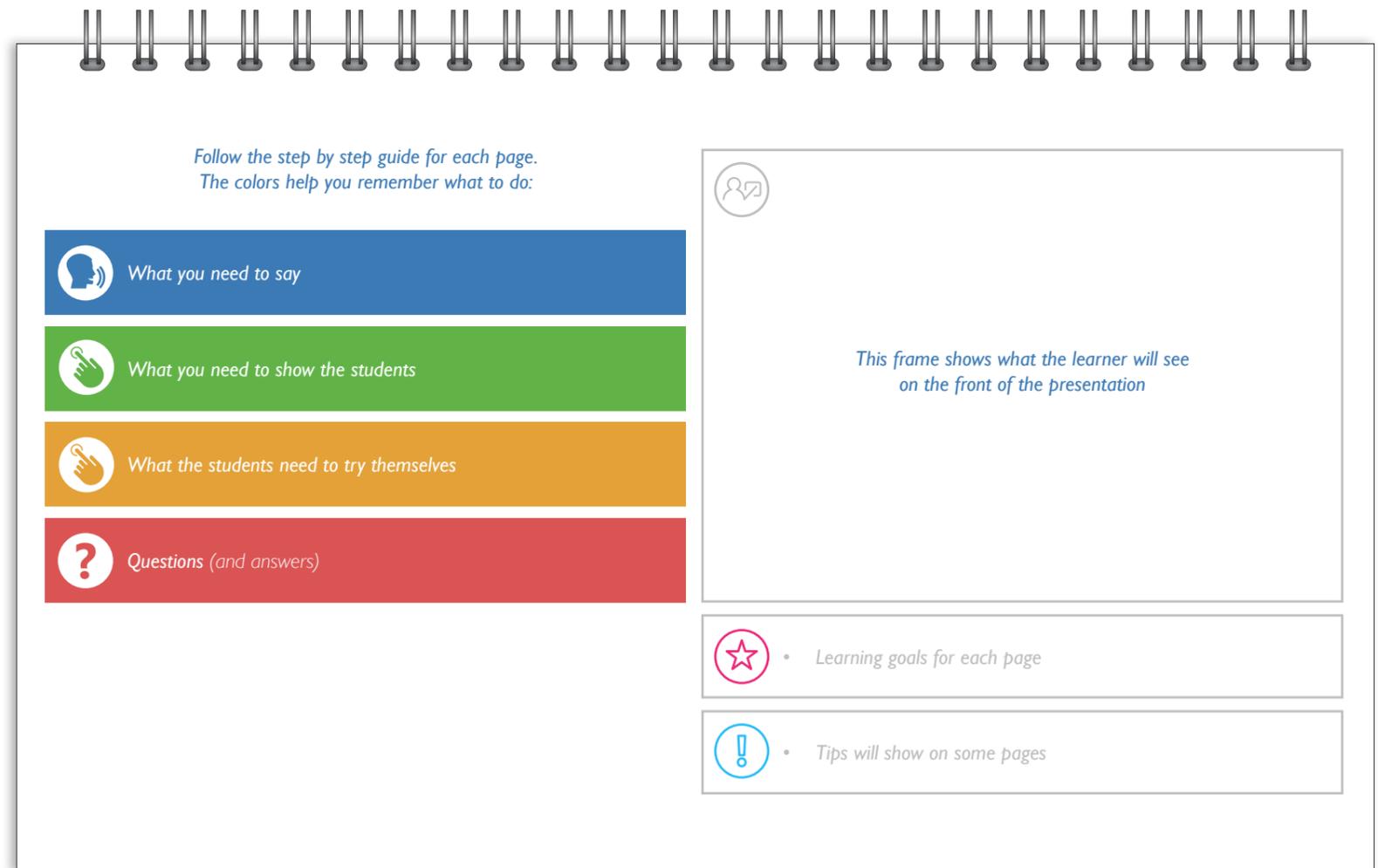
MHR = Maternal heart rate

How to use the back of the flip-chart

Color coding and page layout

The back of each flip-chart has information for the instructor to better facilitate the training. Tasks are color coded and each color represents a task for the instructor to follow. On the right side is an example of a back page with explanations. Read through to understand what the color coding means.

This flip chart is a fun and interactive way to assess the learning outcomes in between chapters. The flip chart can also be used to refresh knowledge whenever needed.





Welcome, my name is...



Can you introduce yourself? Name, position...



Show Moyo and give one Moyo to health workers.



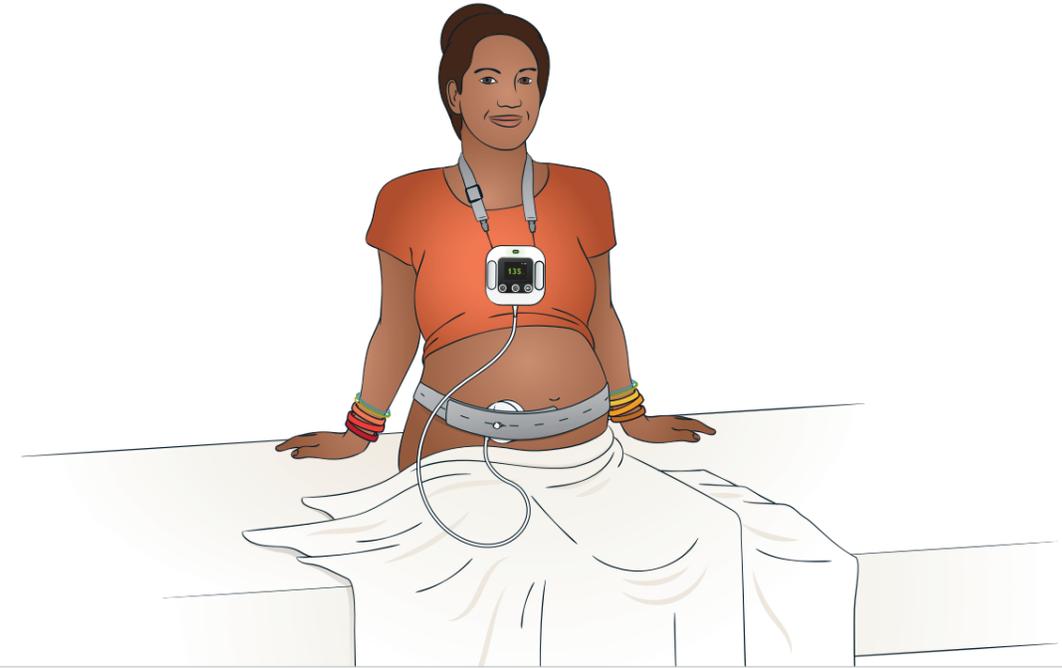
We are here today to learn how to use Moyo Fetal Heart Rate Monitor.



This flipchart consists of 4 chapters and questions in between the chapters. It will take approximately 1 hour to go through. When you have questions, don't hesitate to ask me.



Chapter 1 Introduction of Moyo



- Welcome the health workers.
- Give one Moyo to health workers.



Show Moyo.



- This is the **Monitor**.
- This is the **Ultrasound transducer**.
- They are connected together with the cable.



Note
Protect the cable from tight bending



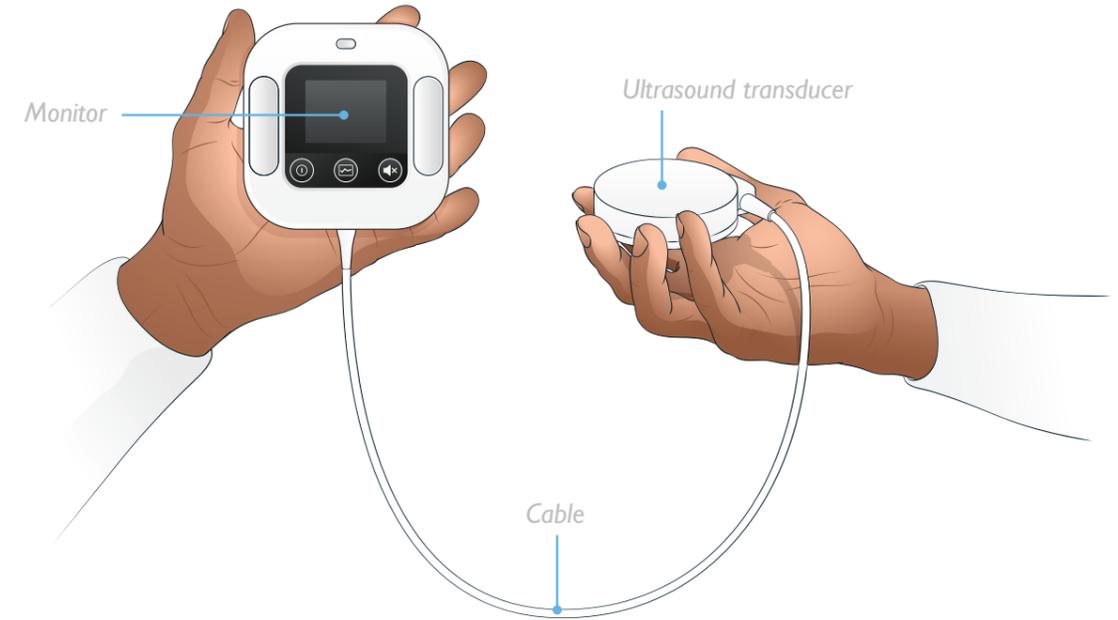
Ultrasound transducer finds FHR and the monitor displays it.



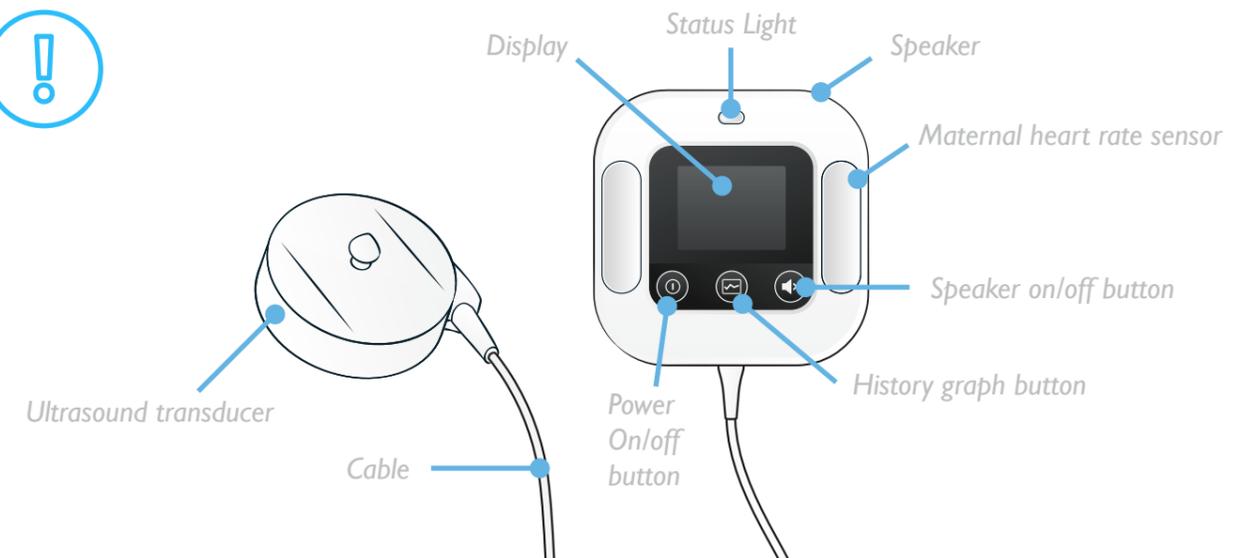
Let students get familiar with Moyo.



This is Moyo



- Get an overview of the device.





To use Moyo, you need ultrasound gel.



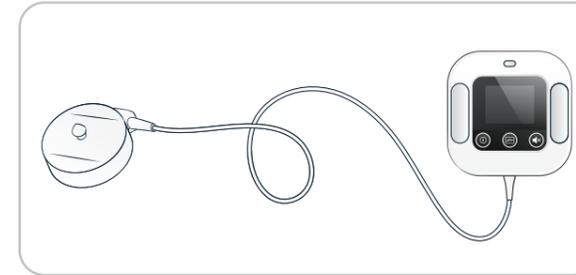
To attach Moyo ultrasound transducer on the mother, you need to use the abdominal transducer belt.



The Neck-strap allows Moyo to be carried by the mother.



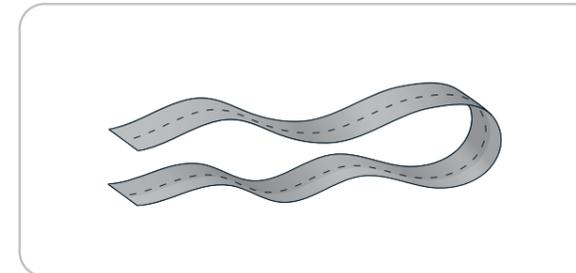
This is what you need to use Moyo



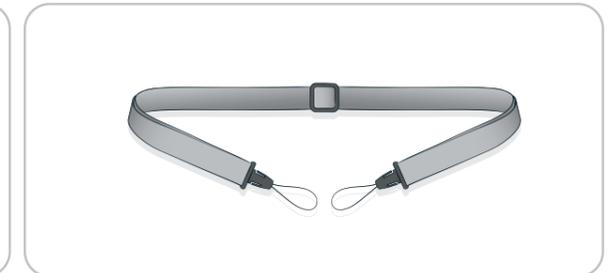
Moyo



Ultrasound gel



Abdominal transducer belt
(To attach the ultrasound transducer on the mother)



Neck-strap
(Allows Moyo to be carried by the mother)



Learn what is needed to use Moyo effectively:

- Water base ultrasound gel
- Abdominal transducer belt
- Neck-strap



- If ultrasound gel is not available, water may be used as a replacement for a **short time**.



Moyo has a rechargeable battery. Just like a cell phone.



With a full battery Moyo can monitor FHR for more than 10 hours.



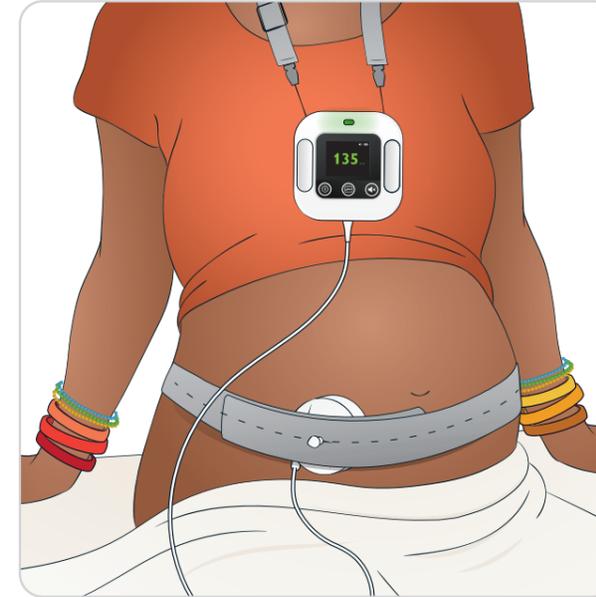
When battery is empty, you can charge Moyo with the provided power adapter. It can take 5 hours to charge the battery.



Moyo should be charged between patient uses or if the battery is low/empty.



Moyo has a rechargeable battery



When fully charged you can use Moyo more than 10 hours



Charging time can be 5 hours when the battery is empty



- *Moyo is powered by a rechargeable battery.*
- *The battery lasts for more than 10 hours.*
- *Charging time can be 5 hours when the battery is empty.*
- *Moyo should be charged between patient uses or if the battery is low/empty.*



Show the power button, press and hold to turn it on.



Press and hold this button to turn on Moyo.



When you hear the startup sound release the button. The startup sound means that Moyo is ready for use.



You can try it yourself.



Turning on Moyo:

Press and hold the power button for at least 0.5 seconds



• How to turn on Moyo.



Why do we see a 'question mark' on the display?

Because the ultrasound transducer does not find any FHR.



Show how to tap on the ultrasound transducer. Make sure it has good skin contact inside your hand.



You can try it yourself.



Be aware that Moyo can pick up different movements, because the ultrasound transducer is able to search in a big area. The movements could be registered from FHR, umbilical cord, maternal vessels or maternal intestines.



Moyo shows the feedback with number, light and sound.



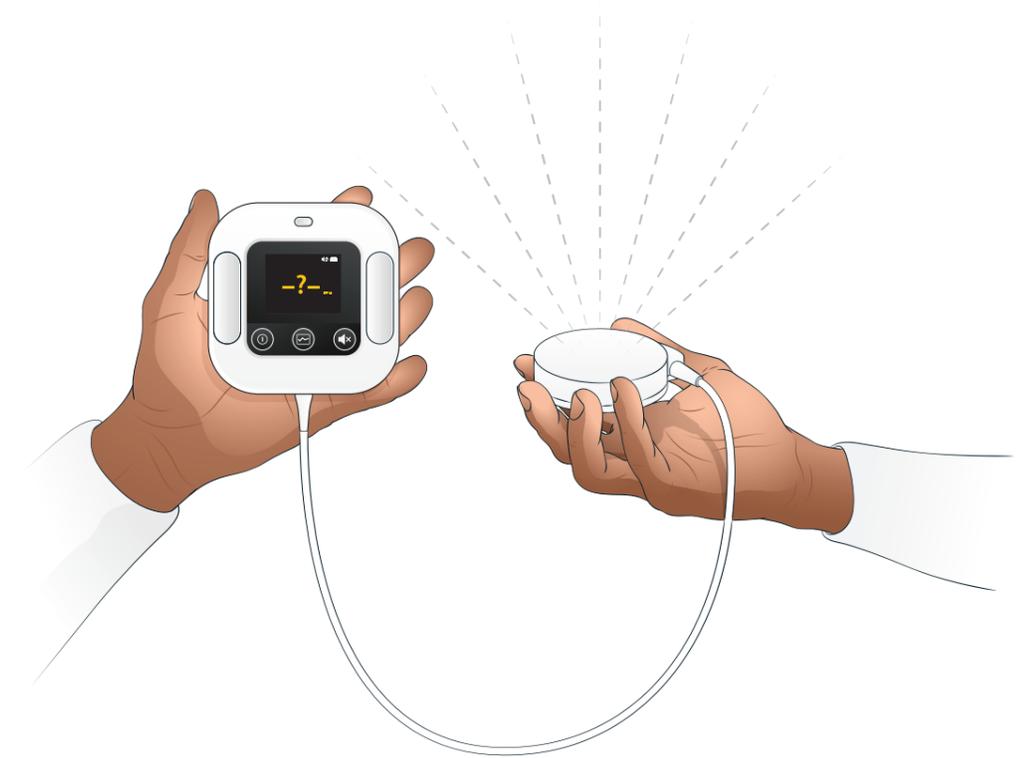
Press the volume button on the right.



If you want to silence the sound, you can press the volume button on the right.



Ultrasound transducer and feedback



- Ultrasound transducer may pick up any movement.
- Ultrasound transducer shows a 'question mark' when there is no movement or FHR, or when the signal quality is low.



- If the lost signal alarm goes off: Turn off Moyo, and turn it on again. Explain that you will discuss the alarm later.



Can someone show me how to turn Moyo off?
(Press and hold the power button)



To turn off Moyo press and hold the power button for at least 1.5 seconds.



Show how to turn off Moyo.



Turn your Moyo off.



To turn off Moyo,
press and hold the “power on/off” button
for at least 1.5 seconds.



• How to turn off Moyo.



How many hours can Moyo be used when fully charged?

When fully charged you can use Moyo more than 10 hours.

What does -?- mean?

The ultrasound transducer does not find any FHR.



Chapter 1 - Questions

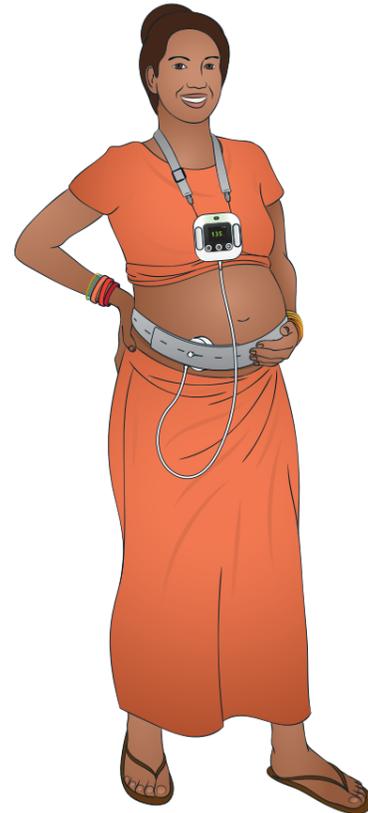
1. How many hours can Moyo be used when fully charged?
2. What does -?- mean?





Chapter 2

Monitoring FHR using Moyo



In this chapter, we will talk about monitoring FHR using Moyo.



Moyo can be used for intermittent monitoring to regularly assess the fetus.

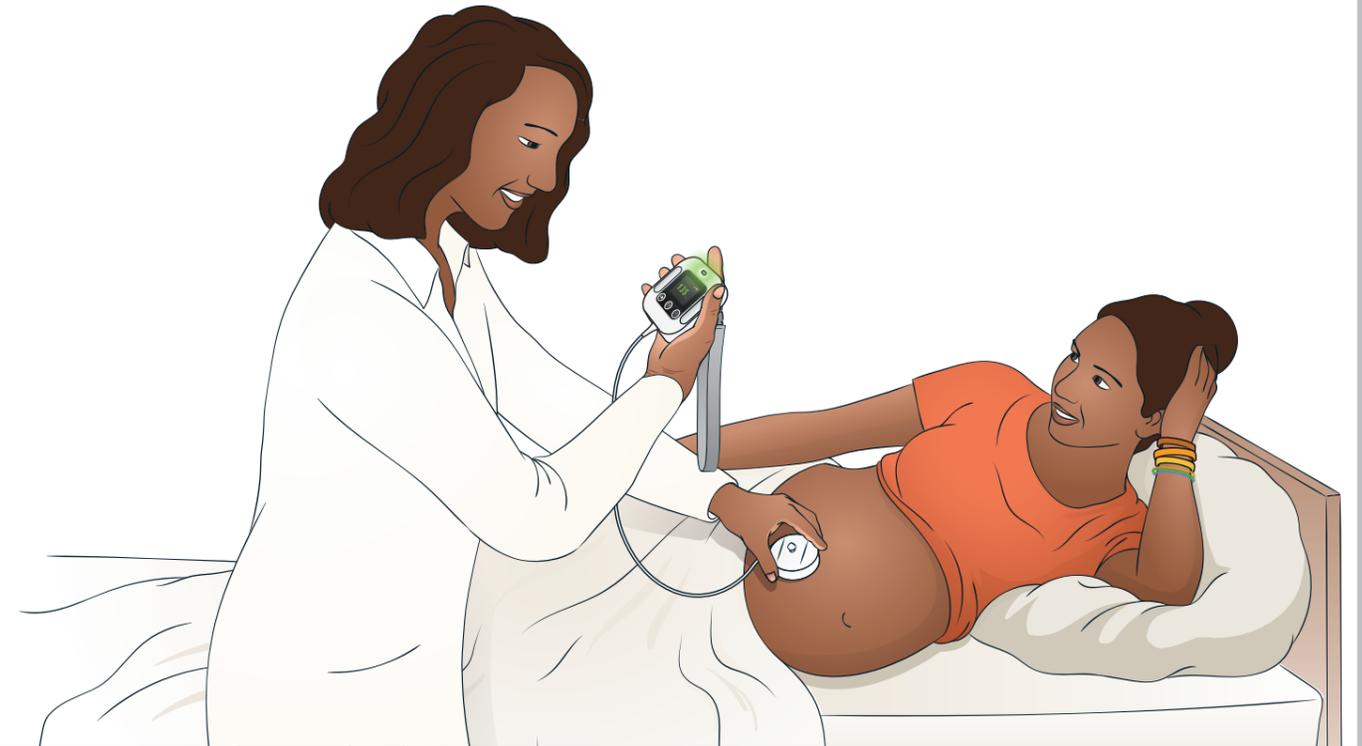


How often do you need to check the FHR?

Please refer to your local guidelines to assess whether you are attending a high risk or low risk pregnancy.



Moyo can be used for intermittent monitoring



- Moyo can be used for intermittent monitoring to regularly assess the fetus.*



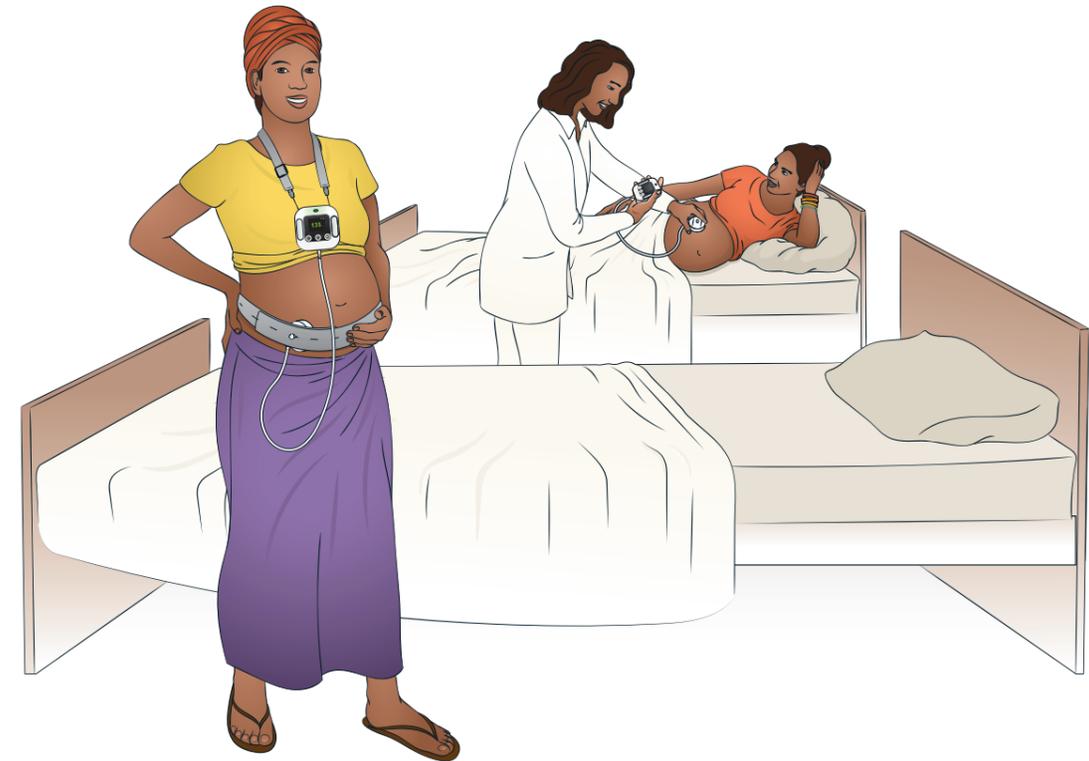
Moyo can be attached to the mother to monitor FHR continuously. By using an abdominal transducer belt for the ultrasound transducer and a neck strap to carry the monitor, the mother will be able to move freely.



In case of abnormal FHR or loss of signal, Moyo provides an alarm calling the attention for health workers. We will discuss the alarm later.



Moyo can be used for continuous monitoring



• Moyo can be attached to the mother, with an abdominal transducer belt and a neck strap, to monitor FHR



• If there are questions about alarms, explain that you will discuss the alarms later.



1) Put ultrasound gel on the ultrasound transducer.



2) Palpate the fetus, locate the back of the baby.



3) Place the ultrasound transducer.



4) Look for a number on the display of Moyo and listen for a rhythmic FHR sound.



5) Once you find the FHR, you can attach the ultrasound transducer with the abdominal transducer belt for continuous monitoring. Remember to tighten the abdominal transducer belt, so that the ultrasound transducer does not move.



6) Neck-strap allows the mother to move freely.



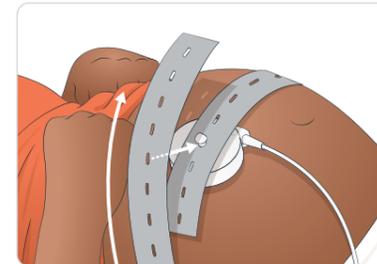
This is how to use Moyo



Put ultrasound gel on the ultrasound transducer.



Palpate, place and listen to find the FHR.



The ultrasound transducer can be attached to the mother.



Neck strap allows the mother to move freely.



- Apply ultrasound gel.
- Palpate.
- Attach abdominal transducer belt.
- Use the neck-strap for mobility.



- A small amount of base ultrasound gel is generally enough to be used with the ultrasound transducer. Search for the sound of the FHR.



Remember, Moyo can only monitor FHR and measure the maternal heart rate. Moyo can not make any obstetric decisions for you.



As a health worker you have to make decisions together with your colleagues, and take action accordingly.



Moyo only monitors,
it can not make obstetric decisions.



- *Moyo can not make obstetric decisions.*
- *Health workers makes obstetric decisions together with their colleagues.*



Now let's talk about what Moyo shows on the display.



What is the normal range of FHR?

Between 110-160 bpm.



What is the abnormal range of FHR?

- More than 160 bpm.
- Less than 110 bpm.



If the FHR is in the normal range the number on Moyo will be displayed in green. If the FHR is outside of the normal range it will be in yellow or red. The light will blink in the same color as the number.



FHR range

Abnormally High FHR
(yellow and red)

More than
160 bpm

Normal FHR
(green)

Between
110 - 160 bpm

Abnormally Low FHR
(yellow and red)

Less than
110 bpm



- Discuss FHR range.
- FHR range, both normal and abnormal.
- Colors associated with them.



Turn on Moyo.



Push and hold the middle button on Moyo, show Moyo to the health workers.



Moyo records the FHR when used. You can see up to 30 minutes of FHR history by pressing the middle button.



Why is it important to look at the FHR history?
It helps you make timely obstetric decisions.



Each point on the history graph represents a 20 second average of FHR recorded.



Turn off Moyo.



Moyo FHR history



30
minutes



- Moyo records FHR obtained from the ultrasound transducer. It can be accessed by pushing the history button.
- Use this feature to help you make timely obstetric decisions.



Does Moyo make obstetric decisions for you?

Moyo only monitors, it can not make obstetric decisions. As a health worker you have to make decisions together with your colleagues, and take action accordingly.

What do you need to use Moyo?

To use Moyo you need ultrasound gel, abdominal transducer belt and the neck-strap.

How do you use Moyo?

- 1. Put ultrasound gel on the ultrasound transducer*
- 2. Palpate, place and listen to find the FHR*
- 3. The ultrasound transducer can be attached to the mother*
- 4. Neck-strap allows the mother to move freely*

What does these numbers mean and what will you do when you see them?

The numbers means that the FHR is in abnormal range. Follow your guidelines and take action accordingly.



Chapter 2 - Questions

1. Does Moyo make obstetric decisions for you?
2. What do you need to use Moyo?
3. How do you use Moyo?



Chapter 3

How can Moyo assist you as a health worker?



This section covers how Moyo can assist you.



Turn on Moyo, tap on ultrasound transducer for 5 seconds, stop tapping and leave Moyo on the table. Make sure it shows -?- for at least 1 min.



What were the ranges for normal and abnormal FHR?

- Normal: Between 110 bpm - 160 bpm
- Abnormal: Less than 110 bpm. More than 160 bpm.



Do you remember what 'question mark' means?

The ultrasound transducer does not find FHR or that the signal is lost.



1. What happened in the picture on the left?

Ultrasound transducer came off. So no FHR can be detected.

2. What happened in the picture on the right?

Baby has moved or the ultrasound transducer has moved, so FHR can not be detected.



After you hear the alarm



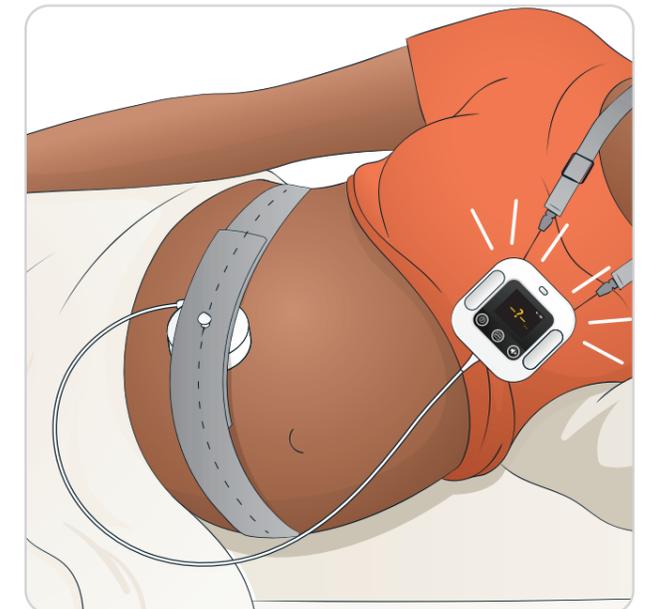
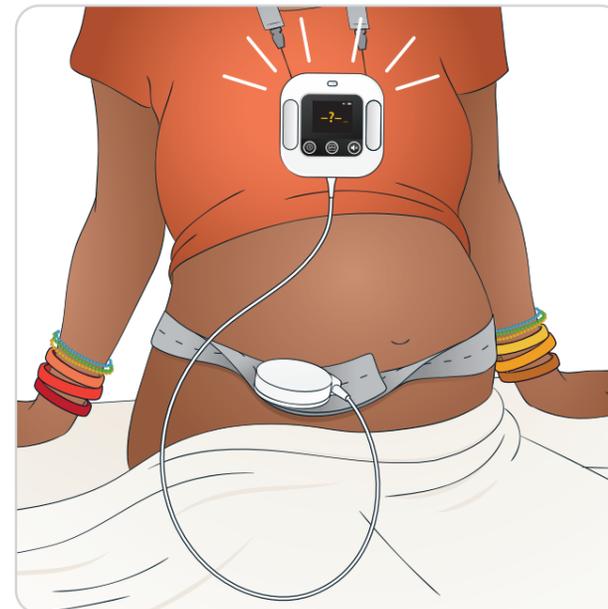
This is the lost signal alarm. You will hear this alarm when the ultrasound transducer does not find any heart rate, or movement. If you want to silence the sound, press the volume button on the right.



Press the volume button on the right to silence the alarm sound.



Moyo provides a lost signal alarm



- Moyo provides a lost signal alarm.
- Hearing the lost signal alarm and getting familiar with it.



- Continue to ask questions until the alarm is triggered.



When you see the 'question mark', place the ultrasound transducer on the back of the fetus and search for the FHR again.



It is normal to see the 'question mark' on the Moyo display from time to time, e.g. during contractions or during extensive movements by the mother. These simple steps can help reduce the amount of 'question marks':

- 1) Ensure that there is gel under the ultrasound transducer.
- 2) Ensure that the position of the transducer is optimal by palpating and placing it on the back of the fetus.
- 4) Look at the display and listen for a rhythmic FHR.



Turn off Moyo.



Reposition the ultrasound transducer



- Repositioning the ultrasound transducer and searching for FHR when signal is lost.



- Seeing 'question marks' from time to time is normal due to movements of the mother, the fetus or the ultrasound transducer.



When you monitor FHR over time, the rate can be in normal or abnormal range.



As you see in the picture. The FHR can go from green to yellow and to red.

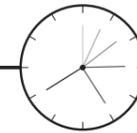


If the FHR is more than 160 bpm or less than 110 bpm the displayed number and blinking light will turn into yellow. If it stays yellow over time, it will turn red and the alarm will be triggered.



Abnormal FHR Alarm

FHR stays **more than 160 bpm** the displayed number and blinking light will turn into yellow or red



FHR stays **less than 110 bpm** the displayed number and blinking light will turn into yellow or red



- Yellow and red are both abnormal FHR.
- Yellow will turn into red if abnormal FHR does not improve.



Will the number displayed in Moyo always be the FHR?

As Moyo is picking up all movements, the displayed number is not necessarily the FHR. It could be the MHR, multiple fetuses or other movements.



With good signal quality, you will see a FHR history on Moyo similar to the first illustration.



However, sometimes the FHR history can look like the second illustration. Points are everywhere on the display. This may indicate that Moyo finds different movements (mother, fetus or twins).



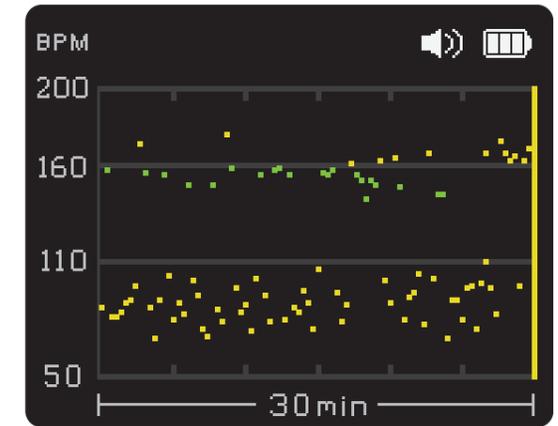
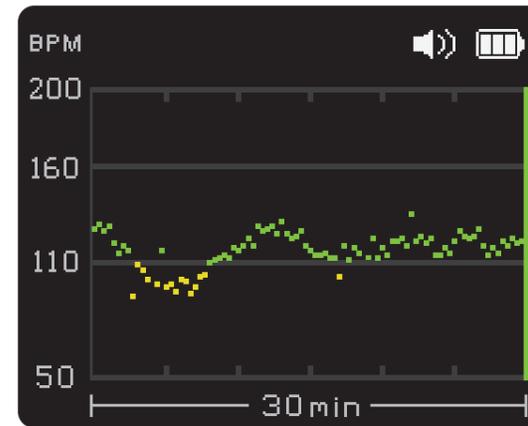
When you are not sure whose HR you are monitoring, compare the number on Moyo with MHR. Reposition the Moyo Ultrasound transducer, use other tools if necessary (CTG, Doppler, Pinard). Re-evaluate the situation before making obstetric decisions.



Moyo is intended for monitoring only one fetus at a time. In pregnancies with multiple fetuses, alternative devices/methods should be used for monitoring FHR.



FHR or MHR?



- Moyo may show the heart rate of twins or the mother.
- Make sure that you monitor the actual FHR before making obstetric decisions.
- Moyo can pick up all movements. The displayed number is not necessarily the FHR. It could be the maternal HR, multiple fetuses or other movements.



- Moyo is intended for monitoring only one fetus at a time. In pregnancies with multiple fetuses, alternative devices/methods should be used for monitoring FHR.



Can you tell me how you compare FHR with MHR using a Pinard?

Listen to the answer and continue below.



You can compare MHR with FHR using Moyo, in a similar way as you do with a Pinard.



Show the metal pads on Moyo.



When the mother holds these metal pads for at least one minute, Moyo will show her heart rate at the bottom of the screen.



Turn on Moyo and hold the metal pads, find your own heart rate.



What does the picture of that pregnant woman on the screen mean?

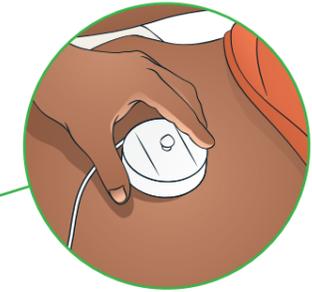
It shows that the bottom number is always MHR.



The bottom number always shows MHR. The top number comes from the ultrasound transducer and even though it intends to show the FHR, it may pick up the MHR or other movements.



How to compare heart rates with Moyo?



- Learning how to use the metal pads to measure MHR.



When you compare MHR with FHR, Moyo may show different or similar numbers.



When the numbers on the display are different, it means that the ultrasound transducer is picking up the FHR (upper number) and that the maternal pads are picking up the MHR (number below with pregnant woman symbol)



But, what does 'similar numbers' mean?

If the two numbers on the display are similar, then the HR found by the ultrasound sensor might be the MHR.



When numbers stay similar, reposition ultrasound transducer, assess mothers condition and try to find different numbers.



FHR may drop during contractions. Observe if mother has contraction and monitor FHR together with contractions. Wait to see if the FHR increases at end of contraction.

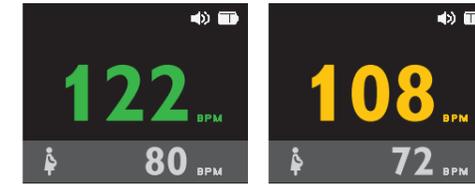


If you still have similar numbers, use other tools like CTG, Doppler or Pinard to find the FHR. Ask your colleagues for advice before making obstetric decisions.

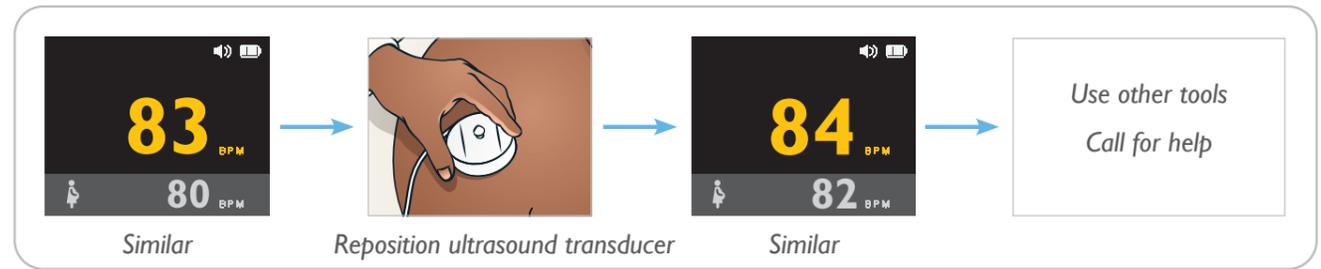


FHR or MHR?

Different numbers



Similar numbers



- Moyo can show similar or different numbers.
- Understand how to compare MHR and FHR.
- Use other tools to compare FHR with MHR, if needed.
- If numbers are still similar call for help



Let's play a little game.



Tap on the ultrasound transducer, and get a HR on the monitor.



Ask one of the learners to hold the metal pads.



Tap similar numbers.



So, what does it mean when the two numbers are similar?

Moyo Ultrasound transducer may be showing MHR.
Reposition Ultrasound transducer, try to get different numbers.
Call for help if number stays similar.



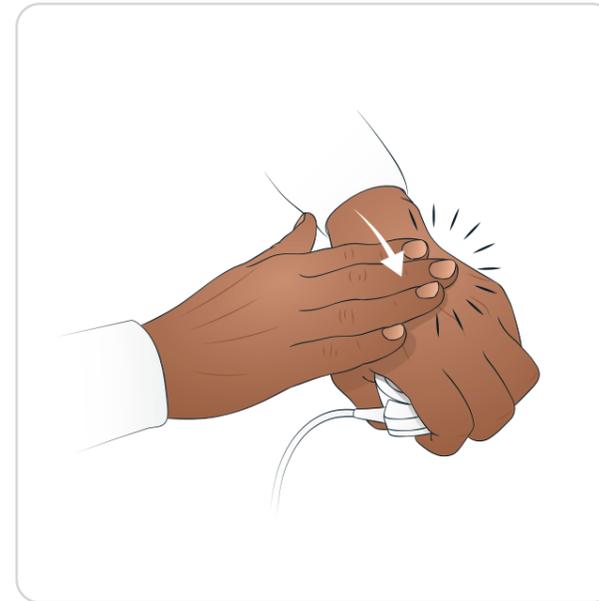
Always make sure you find the actual FHR before making obstetric decisions.



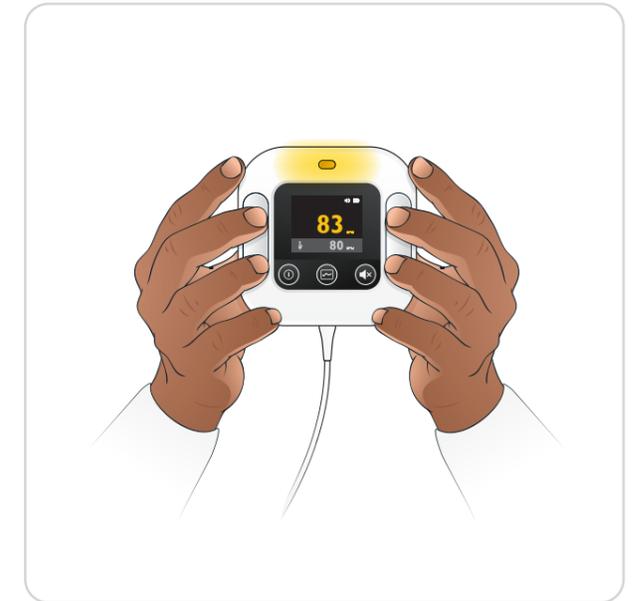
Turn off Moyo.



Let's play a little game!



Person one



Person two



• Practice how to compare MHR and FHR.



How do you make sure that the number measured with the ultrasound transducer is the actual FHR?

Compare the found FHR from the ultrasound transducer with the MHR by using the metal pads on Moyo at least one minute.

What do you do if the FHR from the Moyo sensor is similar to the MHR?

Reposition the ultrasound transducer and try to find different numbers. Use other tools if needed.

If FHR is still low after repositioning the ultrasound transducer. What do you do?

Call for help before making obstetric decisions. Use other devices and discuss with colleagues to assess abnormal FHR.



Chapter 3 - Questions

1. How do you make sure that the number measured with the ultrasound transducer is the actual FHR?
2. What do you do if the FHR from the Moyo sensor is similar to the MHR?
3. If FHR is still low after repositioning the ultrasound transducer. What do you do?



4. What does these numbers mean and what will you do when you see them?

165 BPM

181 BPM

175 BPM



Chapter 4

How to care for your Moyo?

Care for your Moyo 

	DO	DONT
Use the neckstrap Dropping Moyo can damage the device.		
Always close the USB lid Fluids can damage the electronics inside Moyo.		
Protect the cable from tight bending Moyo cable can break from excessive bending.		
Keep the area around Moyo tidy Due to a magnetic force in Moyo, metal objects like staples can penetrate and damage the loudspeaker.		
Clean using a cloth dampened with soapy water (not dripping wet) Fluids can damage the electronics inside Moyo.		
Only use 70% ethanol for disinfection (dampened cloth or spray) Chlorine can damage Moyo.		

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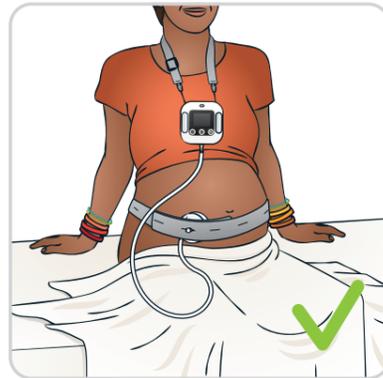
This section covers how to store and maintain the Moyo.



It is important that Moyo is handled with care.

*Use the neckstrap.
Dropping Moyo can damage the device.*

*Always close the USB lid.
Fluids can damage the electronics inside Moyo.*



How to care for your Moyo?

Use the neckstrap

Dropping Moyo can damage the device.



Always close the USB lid

Fluids can damage the electronics inside Moyo.

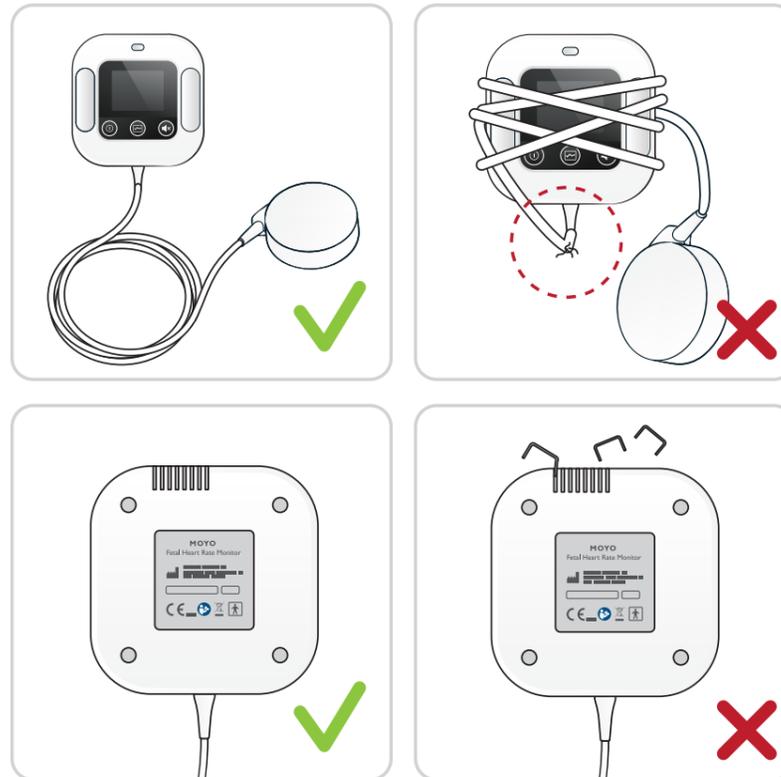




It is important that Moyo is handled with care.

Protect the cable from tight bending. Moyo cable can break from excessive bending.

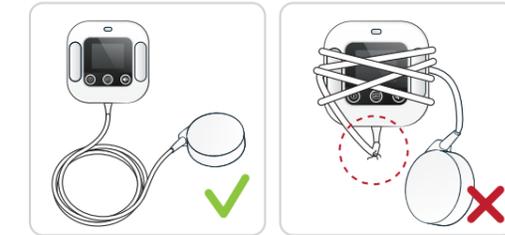
Keep the area around Moyo tidy. Due to a magnetic force in Moyo, metal objects like staples can penetrate and damage the loudspeaker.



How to care for your Moyo?

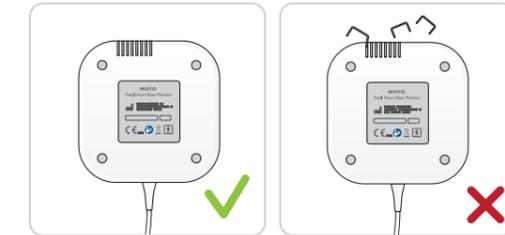
Protect the cable from tight bending

Moyo cable can break from excessive bending.



Keep the area around Moyo tidy

Due to a magnetic force in Moyo, metal objects like staples can penetrate and damage the loudspeaker.





It is important that Moyo is handled with care.

Clean using a cloth dampened with soapy water (not dripping wet). Fluids can damage the electronics inside Moyo.

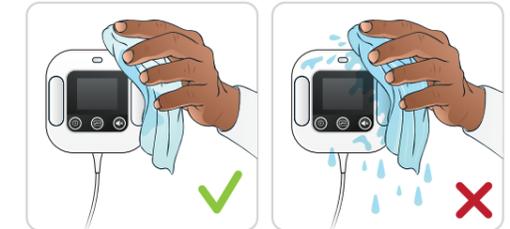
Only use 70% ethanol for disinfection (dampened cloth or spray). Chlorine can damage Moyo.



How to care for your Moyo?

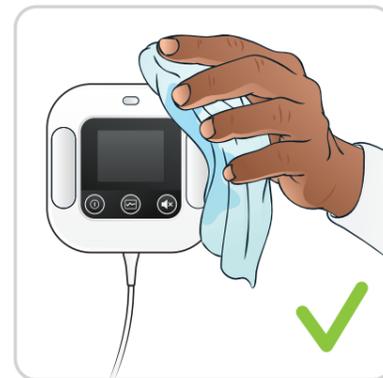
Clean using a cloth dampened with soapy water (not dripping wet)

Fluids can damage the electronics inside Moyo.



Only use 70% ethanol for disinfection (dampened cloth or spray)

Chlorine can damage Moyo.





Can you name at least 3 things that you can do to take care of your Moyo?

1. Use the neck strap, as dropping Moyo can damage the device.
2. Always close the USB lid, as fluids can damage the electronics inside Moyo.
3. Protect the cable from bending, as the cable can break from excessive bending.
4. Keep the area around Moyo tidy. Due to magnetic force in Moyo, metal objects like staples can penetrate and damage the loudspeaker.



Chapter 4 - Questions

Can you name at least 3 things that you can do to take care of your Moyo?

You have successfully completed the flip-chart - well done!

Welcome back whenever you wish to refresh your knowledge about Moyo.