TECHNICAL SCENARIO

Suction Pump 1

NAME: _____ DATE: _____

PURPOSE: ☐ Teaching / Practice
☐ Test Result: Pass / Fail / Retest

Scenario Overview

The scenario is set in the newborn care ward where a suction pump has malfunctioned. Participants should assess and troubleshoot the device, implement needed repairs and return the device for use.

Reminder to Facilitator

The facilitator team decides what is essential for participants' understanding. We suggest the team underline or mark these essential items in the **INFORMATION/RESULT** column before beginning the session to ensure these are highlighted throughout the practice.

ALWAYS REMEMBER THE CANDIDATE SHOULD START WITH THE 4 Ss

Safety: for you, the staff around you and the patient on the device
Setting: for possible checks and repairs to the devices
Supplies: adequate tools and spare parts for this device
Shout: for additional technical support if necessary

Begin Scenario

SETTING THE SCENE: *You are called to the newborn care ward where the nurse in-charge has alerted you that the suction pump is not sucking properly.* ***WHAT DO YOU DO?***

#	ACTION REQUIRED	INFORMATION / RESULT	COMMENTS:
1	**Go to the ward and introduce yourself to the in-charge.**	Sister Maria is glad to see you.	
2	**Ask what the problem is.**	The suction pump comes on but does not seem to have any 'power.'	
3	**Ask to see the device.**	The suction pump is on the floor beside the cot of a baby.	
4	**Ask if it is okay for you to do some minor checks on the device where it is.**	Sister Maria is happy for you to do so in the ward.	
5	**Perform minor checks on the device.** Put on a pair of gloves. Make sure the device is plugged into the wall and switched on at the wall. Make sure the power cable is pushed well into the socket on the back of the suction pump. Press the power switch to 'on.'	 The device is plugged into the wall and the wall socket is switched on. The power cable is slightly loose. The device motor audibly powers on.	
6	**The device has powered on. What will you do next?** Check the collection reservoir is attached and not full. Check that all tubing connections are tight. Ensure there is a filter in the pump circuit and that the long patient suction tube is attached to the outlet. Check that the float valve on the collection reservoir is moving up and down.	 The collection reservoir is a quarter full. All tubing connections are tight. There is a filter in the pump circuit and the patient suction tube is attached. The filter appears discoloured. The float valve appears to be sticking or jammed.	
7	**Explain your findings to Sister Maria.** The float valve is sticking and the filter appears discoloured. The pump assembly should be examined.	 'Sister Maria, I've found the problem. The float is sticking and the filter is discoloured. I will have to look inside the device to check the pump properly.'	

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#	ACTION REQUIRED	INFORMATION / RESULT	COMMENTS:
8	**Explain to Sister Maria what next steps are needed to prevent this from happening again.** The internal pump assembly can be damaged if the suction pump collection reservoir is allowed to get too full and liquid enters past the bacterial filter into the suction pump. Users should regularly empty and clean the reservoir to prevent this from happening.	The problem is explained to Sister Maria. Sister Maria agrees that additional orientation is needed for the staff on the ward and sets a date for you to come and help provide this orientation.	
9	**Decide where to work on the suction pump (e.g., at the ward or in the workshop).** The pump assembly must be assessed, which requires opening the device. Best practice is to remove to workshop for further examination.	The device should be removed to the workshop.	
10	**Check with the in-charge if it is okay to remove the suction pump and if she has a working one to use while this pump is being repaired.** Put on gloves. Disinfect the device housing using 70% alcohol and empty the collection reservoir.	She is anxious not to be without it for long as it means taking a suction pump from one cot-side to another and re-plugging it in every time a baby needs it. The housing is disinfected and the collection reservoir is emptied.	
11	**You remove the suction pump to the workshop. What will you do next?** Document device information and note all components received with the device. Inspect the tubing, reservoir and float valve. Follow facility protocols to clean and disinfect tubing, reservoir and float valve in a tub of 0.5% chlorinated water.	The suction pump has come to the unit with power cable, collection reservoir, float valve and tubing. The float valve is clogged with dried blood and debris. The pump tubing shows signs of having been contaminated with fluid. The tubing is disinfected.	
12	**Begin further troubleshooting of the device.** Check the condition of the internal pump. Remove device housing screws and detach chassis ground and housing. Set aside screws in separate container.	The internal pump shows signs of having had fluid in it and the internal housing shows dried fluid-debris build-up.	
13	**What will you do next?** Clean build-up on internal housing using 70% alcohol. Check for a spare pump assembly for this device model. Remove pump assembly screws and detach assembly. Replace assembly with spare. Set pump assembly aside in a cleanable tray for later maintenance. Request additional spare pump assembly be procured.	The internal housing is cleaned. Only one spare pump assembly is available.	
14	**Reassemble the suction pump.** Check that all internal connections are stable. Reattach chassis ground and housing. Reassemble device tubing, collection reservoir and float valve.	All internal connections are secure. Device chassis and ground are reattached and tubing, collection reservoir and float valve reassembled.	
15	**Return the suction pump to the ward.** Go through repair and maintenance steps taken with the in-charge. Ask her to turn on and verify that the device is working well. Check with Sister Maria for a convenient time to can come and teach her staff about suction pump ward maintenance.	Sister Maria is happy to receive back the device. She plugs in and turns on the device; it suctions well. Sister arranges a time for you to come during the nurses' weekly CPD session.	

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#	ACTION REQUIRED	INFORMATION / RESULT	COMMENTS:
16	**Return to the maintenance unit. Put on gloves. Disassemble and assess the pump assembly removed from the device.**		
	Take apart the pump assembly. Check the assembly piston, bearing and motor rotor for fluid-debris build-up.	There is fluid-debris build-up within the bearing and motor rotor.	
	Clean pump assembly using a cloth with soapy water, being careful not to drip water into the components. Allow to dry.		
	Place in Spare Parts storage and label with device model, ward location and repair details.	The device is properly labelled and stored.	
	Document corrective activities taken in maintenance & repair records.	Activities are documented.	

THANK YOU

REMIND PARTICIPANTS

All suctioning must be done gently, not too vigorously and not for too long.

INFECTION PREVENTION AND CONTROL

Be sure to wash your hands thoroughly and to put on gloves before handling any equipment. After every use, remember to disinfect all consumables and equipment before using them again.

Scenario end

TECHNICAL SCENARIO

Suction Pump 2

NAME: _____ DATE: _____

PURPOSE: ☐ Teaching / Practice
☐ Test Result: Pass / Fail / Retest

Scenario Overview

The scenario is set in the newborn care ward where a suction pump has malfunctioned. Participants should assess and troubleshoot the device, implement needed repairs and return the device for use.

Reminder to Facilitator

The facilitator team decides what is essential for participants' understanding. We suggest the team underline or mark these essential items in the **INFORMATION/RESULT** column before beginning the session to ensure these are highlighted throughout the practice.

ALWAYS REMEMBER THE CANDIDATE SHOULD START WITH THE 4 Ss

Safety: for you, the staff around you and the patient on the device
Setting: for possible checks and repairs to the devices
Supplies: adequate tools and spare parts for this device
Shout: for additional technical support if necessary

Begin Scenario

SETTING THE SCENE: *You are called to the newborn care ward where the nurse in-charge has alerted you that the suction pump is not suctioning well and is making a very loud noise during use.* ***WHAT DO YOU DO?***

#	ACTION REQUIRED	INFORMATION / RESULT	COMMENTS:
1	**Go to the ward and introduce yourself to the in-charge.**	Sister Theresa is glad to see you.	
2	**Ask what the problem is.**	The suction pump comes on but is making a very loud sound when it is used.	
3	**Ask to see the device.**	The suction pump is on a radiant warmer shelf, where it is in use.	
4	**Ask if you should wait until the device is not in use to do some minor checks.**	The procedure will be done in 2 minutes, after which the nurse using the pump will empty the collection reservoir and give it for you to test. You have observed that the suction pump was making a sound outside normal operation.	
5	**The procedure is complete and the nurse has cleaned the collection reservoir. Perform minor checks on the device.**		
	Put on a pair of gloves. Make sure the device is plugged into the wall and switched on at the wall.	The device is plugged into the wall and the wall socket is switched on.	
	Make sure the power cable is pushed well into the socket on the back of the suction pump.	The power cable is slightly loose.	
	Press the power switch to 'on.'	The device motor audibly powers on, with the same loud sound.	
6	**The device has powered on. What will you do next?**		
	Check that all the tubing connections are tight.	All tubing connections are tight.	
	Ensure there is a filter in the pump circuit and that the long patient suction tube is attached to the outlet.	There is a filter in the pump circuit and the patient suction tube is attached. The filter is inserted in the wrong orientation.	
	Check that the float valve on the collection reservoir is moving up and down.	The float valve appears to be functioning well.	

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#	ACTION REQUIRED	INFORMATION / RESULT	COMMENTS:
7	**Explain your findings to Sister Theresa.** The filter was inserted in the wrong orientation, but the problem appears to be with the pump assembly which should be examined.	'Sister, the problem appears to be with the pump itself, but I also see that the filter in in the wrong way around.'	
8	**Explain next steps needed to prevent this from happening again.** This part of the internal pump assembly can be damaged with normal wear and tear over time. If this issue is happening repeatedly, it could be due to users leaving the suction pump on when not in use. Users should be sure to turn off the suction pump after using.	The problem is explained to Sister Theresa. Sister Theresa agrees that additional orientation is needed for the staff on the ward and sets a date for you to come and help provide this orientation.	
9	**Decide where to work on the suction pump (e.g., at the ward or in the workshop).** The pump assembly must be assessed, which requires opening the device. Best practice is to remove to workshop for further examination.	The device should be removed to the workshop.	
10	**Check with the in-charge if it is okay to remove the suction pump and if she has a working one to use while this pump is being repaired.**	The ward has one other suction pump that they can use, but as this is an emergency device, she is anxious not to be without it for long.	
11	**You remove the suction pump to the workshop. What will you do next?** Document device information and note all components received with the device. Put on gloves. Disinfect the device housing using 70% alcohol. Disassemble tubing and collection reservoir. Inspect the tubing, reservoir and float valve. Follow facility protocols to clean and disinfect tubing, reservoir and float valve in a tub of 0.5% chlorinated water.	The suction pump has come to the unit with power cable, collection reservoir, float valve and tubing. The housing is disinfected and tubing disassembled. The float valve, tubing and reservoir are undamaged.	
12	**Begin further troubleshooting of the device.** Check the condition of the internal pump. Remove device housing screws and detach chassis ground and housing. Set aside screws in separate container. Check the condition of the pump's components, including the motor stator, pistons and piston diaphragms.	**Begin further troubleshooting of the device.** The internal pump shows no signs of fluid. The piston diaphragms appear worn and cracked.	
13	**What will you do next?** Check for a spare pump assembly for this device model. Check for a replacement diaphragm of an appropriate size. Remove diaphragm and replace with spare. Clean internal housing of dust and debris.	No spare pump assemblies are available. A spare diaphragm is available from a decommissioned suction pump. The old diaphragm is removed and replaced with the spare.	
14	**Reassemble the suction pump assembly.** Check that all internal connections are stable. Reattach chassis ground and housing. Reassemble device tubing, collection reservoir and float valve. Make sure the filter is correctly aligned. Test the suction pump by suctioning water.	All internal connections are secure. The suction pump suctions well.	

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#	ACTION REQUIRED	INFORMATION / RESULT	COMMENTS:
15	**Return the suction pump to the ward.** Go through repair and maintenance steps taken with the in-charge. Ask her to turn on and verify that the device is working well. Arrange a time when you can train the nursery staff on assembling and maintaining the suction pump. Document corrective activities taken and next steps in maintenance & repair records.	Sister Theresa is happy to receive back the device. She plugs in and turns on the device; it suctions well, with normal operating noise. Sister Theresa arranges a time for you to come during the nurses' weekly CPD session. Activities and CPD session orientation information are documented.	

THANK YOU

REMIND PARTICIPANTS

All suctioning must be done gently, not too vigorously and not for too long.

INFECTION PREVENTION AND CONTROL

Be sure to wash your hands thoroughly and to put on gloves before handling any equipment. After every use, remember to disinfect all consumables and equipment before using them again.

Scenario end

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