

bCPAP

NAME: _____ DATE: _____

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

Scenario Overview

The scenario is set in the newborn care ward where a bCPAP device 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: A nurse from the nursery has called you to say they are having a problem with the bCPAP device as no oxygen seems to be reaching it. **WHAT DO YOU DO?**

#	ACTION REQUIRED	INFORMATION / RESULT	COMMENTS:
1	Go to the ward and introduce yourself to the in-charge.	Sister Thoko is glad to see you.	
2	Ask what the problem is.	The nurse has been trying to use the bCPAP all morning with various oxygen sources. The oxygen flow meter will not move.	
3	Ask to see the device.	The bCPAP is on a shelf on the wall. It is in use and plugged into a walled oxygen flowmeter that is set at 3 L/min.	
4	Ask if it is okay for you to do some minor checks on the machine where it is.	Sister Thoko is happy for you to do so.	
5	Perform minor checks on the device. Put on a pair of gloves. Remove the oxygen tubing from the walled oxygen flowmeter. 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 bCPAP. Open the Oxygen Flowmeter. Press power switch 'on.'	Gloves are donned and oxygen tubing is removed. The device is plugged into the wall and the wall socket is switched on. The power cable is slightly loose. The device pump audibly powers on.	
6	What will you do next? Press a finger against the oxygen source port on the bCPAP. Check for an audible and visible rattle of the Oxygen Flowmeter bead. Visually inspect the Oxygen Flowmeter base for debris. Connect the oxygen tubing from the walled oxygen flowmeter to the oxygen source port on the bCPAP. Lightly tap the Oxygen Flowmeter and check if the flowmeter bead rises.	The bead does not rattle. There is some minimal debris at the base of the flowmeter. The bead does not rise.	

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#	ACTION REQUIRED	INFORMATION / RESULT	COMMENTS:
7	<p>Explain your findings to Sister Thoko.</p> <p>The bCPAP seems to have a problem with either the Oxygen Flowmeter or internal tubing connections. More investigation is needed to determine which failure is occurring.</p>	<p>The problem is explained to Sister Thoko.</p> <p>Sister Thoko will wait for your feedback, and will confirm your instructions with the rest of the ward staff.</p>	
8	<p>Decide where to work on the oxygen concentrator (e.g., at the ward or in the workshop).</p> <p>The internal tubing connections should be assessed before taking apart the flowmeter. Ask if you can perform this at the nurse's station to prevent the device being removed from the ward.</p>	<p>Sister Thoko agrees that you may use the nurse's station to provide basic maintenance.</p>	
9	<p>You remove the bCPAP to the nurse's station. What will you do next?</p> <p>Document device information and note all components received with the device.</p> <p>Put on gloves. Disinfect the device housing using 70% alcohol.</p>	<p>The bCPAP has been brought to the nurse's station with power cable, patient circuit and bottle.</p>	
10	<p>Begin further troubleshooting of the device. Check the condition of the internal components.</p> <p>Remove device housing screws and remove housing. Set aside screws in separate container.</p> <p>Check the internal tubing connections.</p> <p>Replace the tubing. Secure in place with a zip tie or metal crimp.</p>	<p>Device housing is removed.</p> <p>The tube connecting the oxygen source to the oxygen flowmeter has become dislodged.</p> <p>The tubing is repositioned and secured in place.</p>	
11	<p>Test the bCPAP.</p> <p>Plug in the bCPAP. Press a finger against the oxygen source port on the bCPAP. Check for an audible and visible rattle of the Oxygen Flowmeter bead.</p> <p>Connect oxygen tubing from an oxygen source to the oxygen source port on the bCPAP. Lightly tap the Oxygen Flowmeter and check if the flowmeter bead rises.</p>	<p>The bead rattles.</p> <p>The flowmeter bead rises to 3 L/min.</p>	
12	<p>Explain your findings to Sister Thoko.</p> <p>The internal tubing connections for the Oxygen Flowmeter popped off. They have been secured in place.</p>	<p>Sister is shown what happened and how it was fixed.</p>	
13	<p>Return the bCPAP to the ward.</p> <p>Go through repair and maintenance steps taken with the in-charge. Ask her to turn on and verify that the device is working well.</p>	<p>Sister Thoko is happy to receive back the device and places a patient with severe respiratory distress on it immediately.</p> <p>She arranges for a training session for the ward staff next week and asks you to come.</p>	

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#	ACTION REQUIRED	INFORMATION / RESULT	COMMENTS:
14	<p>Explain next steps needed to prevent this from happening again.</p> <p>If the Oxygen Flowmeter is not opened before attaching the oxygen source, pressure can build up and pop off the internal tubing. Users should ensure that they open the Oxygen Flowmeter prior to connecting an oxygen source.</p> <p>There was also some additional build-up on the Oxygen Flowmeter that could present a problem at a later stage. Users should provide preventive maintenance by turning on the device and letting it run for 15 minutes every week.</p>	<p>Sister Thoko is told that this happens if the oxygen flowmeter is off when the oxygen source is turned on. The nurses must be careful to always turn the flowmeter on before the oxygen source.</p> <p>Sister Thoko is also asked to turn the device on for 15 minutes every week to stop debris building up in the flowmeter.</p> <p>Sister Thoko believes that additional orientation is needed for the staff on the ward and sets a date for you to come and help provide background on why this type of preventive maintenance is necessary.</p>	
15	<p>Document corrective activities taken and next steps in maintenance & repair records.</p>	<p>Activities and CPD session orientation information are documented.</p>	

THANK YOU

i REMIND PARTICIPANTS

How CPAP works: CPAP devices use a pump to provide air or a mixture of air and oxygen at a continuous positive pressure. This pressure keeps airway spaces open and increases alveolar recruitment throughout respiration in a spontaneously breathing infant. This improves oxygenation and reduces work of breathing.

⚠ 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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