

# Phototherapy Light

NAME: \_\_\_\_\_ DATE: \_\_\_\_\_

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

## Scenario Overview

The scenario is set in the newborn care ward where a phototherapy light is not working well. 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:** The nurse calls you to say that the babies are not improving as quickly as they used when receiving phototherapy, and she wonders if it is working 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 nurse is concerned the neonates are not improving as quickly after having been put on phototherapy as usual. She suspects the phototherapy light has deteriorated.	
3	Ask to see the device.	The phototherapy device is in use on a patient that is being managed on a radiant warmer.	
4	Ask the in-charge if it is possible to test the delivered irradiance at the patient's bed site using your lightmeter.	Sister Maria is happy to help. Using your lightmeter, she ascertains that the delivered irradiance at the bedside is 15 $\mu\text{W}/\text{cm}^2$ .	
5	Interpret the results for the in-charge. 15 $\mu\text{W}/\text{cm}^2$ is low for phototherapy treatment, which should typically be 25 to 30 $\mu\text{W}/\text{cm}^2$ for standard treatment.	Sister Maria is told normal therapeutic range of irradiance required and the results of this reading. Sister Maria arranges with a fellow nurse to try to find another phototherapy unit to use instead.	
6	Using the lightmeter, show the in-charge how lowering the head of the phototherapy light increases the treatment irradiance.	While waiting for the replacement and after your demonstration, Sister Maria angles the phototherapy light farther towards the patient, and retakes the reading. The phototherapy light is now delivering 20 $\mu\text{W}/\text{cm}^2$ . The reading is still too low.	
7	What will you do next? Ask the in-charge if you can remove the phototherapy light from the patient's radiant warmer cot to another, empty bassinet to test the device when it is directly overhead the patient.	Sister Maria is happy for you to do so. The additional phototherapy light is available and not in use; she switches this phototherapy light for the other and rolls it to an empty bedside for you to complete your tests.	

continue to the following page 

#	ACTION REQUIRED	INFORMATION / RESULT	COMMENTS:
8	<p><b>Perform minor checks on the device.</b></p> <p>With the phototherapy light set at normal brightness at a height of 30 cm directly above the mattress, test the delivered irradiance with a lightmeter.</p> <p>With the phototherapy light set at high brightness at a height of 30 cm directly above the mattress, test the delivered irradiance with a lightmeter.</p>	<p>The phototherapy light is now delivering 23 <math>\mu\text{W}/\text{cm}^2</math>.</p> <p>The phototherapy light is now delivering 28 <math>\mu\text{W}/\text{cm}^2</math>.</p>	
9	<p><b>Explain your findings to Sister Maria.</b></p> <p>The phototherapy light is beginning to deteriorate and the bulbs will need replacement. You will check at the workshop for replacement bulb assemblies, but in the meantime, the medical staff should check the delivered irradiance for each patient and lower the head of the phototherapy light or increase the settings if needed.</p>	<p>Explain your findings and what you intend to do.</p> <p>Sister Maria will wait for your feedback, and will confirm your instructions with the rest of the ward staff.</p>	
10	<p><b>Return to the maintenance unit.</b></p> <p>Check for a spare bulb assembly for this device model.</p> <p>Request additional spare bulb assembly be procured.</p> <p>Document corrective activities taken and next steps in maintenance &amp; repair records.</p>	<p>No spare bulb assemblies are available.</p> <p>Activities and bulb procurement follow-up steps are documented.</p>	

**THANK YOU**

**i REMIND PARTICIPANTS**

Any jaundice on day one needs urgent investigation and treatment.

**⚠ 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**

# Disclaimer

Newborn Essential Solutions and Technologies–Education Technical Scenarios

**This series reflects the work of the NEST360° team. Some rights reserved.**

**This work is available under the Creative Commons Attribution–**

**NonCommercial–NoDerivatives 4.0 International license**

**(CC BY–NC–ND 4.0; <https://creativecommons.org/licenses/by-nc-nd/4.0/>).**

Under the terms of this license, you may copy and redistribute the work for non-commercial purposes, provided the work has not been modified, and it is appropriately cited as indicated below. In any use of this work, there should be no suggestion that NEST360° endorses any specific organisation, products, or services. The unauthorized use of the NEST360° names or logos is not permitted. If you create a translation of this work, you should add the following disclaimer along with the suggested citation: *“This translation was not created by Newborn Essential Solutions and Technologies (NEST360°). NEST360° is not responsible for the content or accuracy of this translation. The original English edition shall be the binding and authentic edition”.*

## **SUGGESTED CITATION**

NEST360°. *Newborn Essential Solutions and Technologies–Education – Technical Scenarios: Phototherapy Light.* (February 2021). License: CC BY–NC–ND 4.0.

## **RIGHTS AND LICENSING**

For queries on rights and licensing, see the full legal code for the Creative Commons Attribution–NonCommercial–NoDerivatives 4.0 International Public License (<https://creativecommons.org/licenses/by-nc-nd/4.0/legalcode>).

## **THIRD–PARTY MATERIALS**

If you wish to reuse material from this work that is attributed to a third party, such as tables, figures or images, it is your responsibility to determine whether permission is needed for reuse and to obtain permission from the copyright holder. The risk of claims resulting from infringement of any third-party-owned component in the work rests solely with the user.

## **GENERAL DISCLAIMERS**

All reasonable precautions have been taken by NEST360° to verify the information contained in this publication. The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by NEST360° in preference to others of a similar nature that are not mentioned. The published material is being distributed without warranty of any kind, either expressed or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall NEST360° or affiliated partner institutions be liable for damages arising from its use.

The authors have made every effort to check the accuracy of all information. As knowledge base continues to expand, readers are advised to check current product information provided by the manufacturer of each device, instrument, or piece of equipment to verify recommendations for use and/or operating instructions.

In addition, all forms, instructions, checklists, guidelines, and examples are intended as training resources to meet national and local health care settings' needs and requirements.