

Oxygenation Ventilation of COVID-19 Patients

Module 1: Noninvasive Support Overview

In collaboration with



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KJ-1425

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The American Heart Association does not endorse or recommend any specific manufacturer or product.

To show skills clearly, the healthcare providers shown do not always use recommended personal protective equipment (such as gloves, masks, face shields).

Objectives

- To provide just-in-time training for the non-intensive-care-unit healthcare provider for patients requiring ventilation assistance who are under investigation for or confirmed to have COVID-19
- To mitigate risks frequently associated with ventilation-assistance devices, such as noninvasive ventilation (NIV) and high-flow nasal cannula (HFNC) in the COVID-19 pandemic
- To briefly review the benefits and functionality of NIV and HFNC

Risk mitigation

- Attempt to use ventilation equipment and methods with the least aerosol generation
- Noninvasive positive pressure ventilation (NIPPV) and HFNC have a higher risk of aerosol generation than invasive mechanical ventilation and therefore are not routinely recommended in confirmed COVID-19 cases
- Requirements if NIV or HFNC
 - Room: Airborne precautions
 - Equipment: Full face mask and filtered circuits

Quick review of HFNC

- HFNC is recommended over NIV
- Use minimal flow to maintain SpO₂ greater than 88% to 94%; lower flow rates under 30 L/min may have less aerosolization
 - To minimize flow, titrate fraction of inspired oxygen (FIO₂) to maximum support before increasing flow greater than 30 L/min

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Review of device set-up

- Requirements

- Gas source and blender
- Flowmeter: 40 to 60 L/min
- FIO₂ analyzer
- Humidifier
- Surgical mask to reduce aerosol



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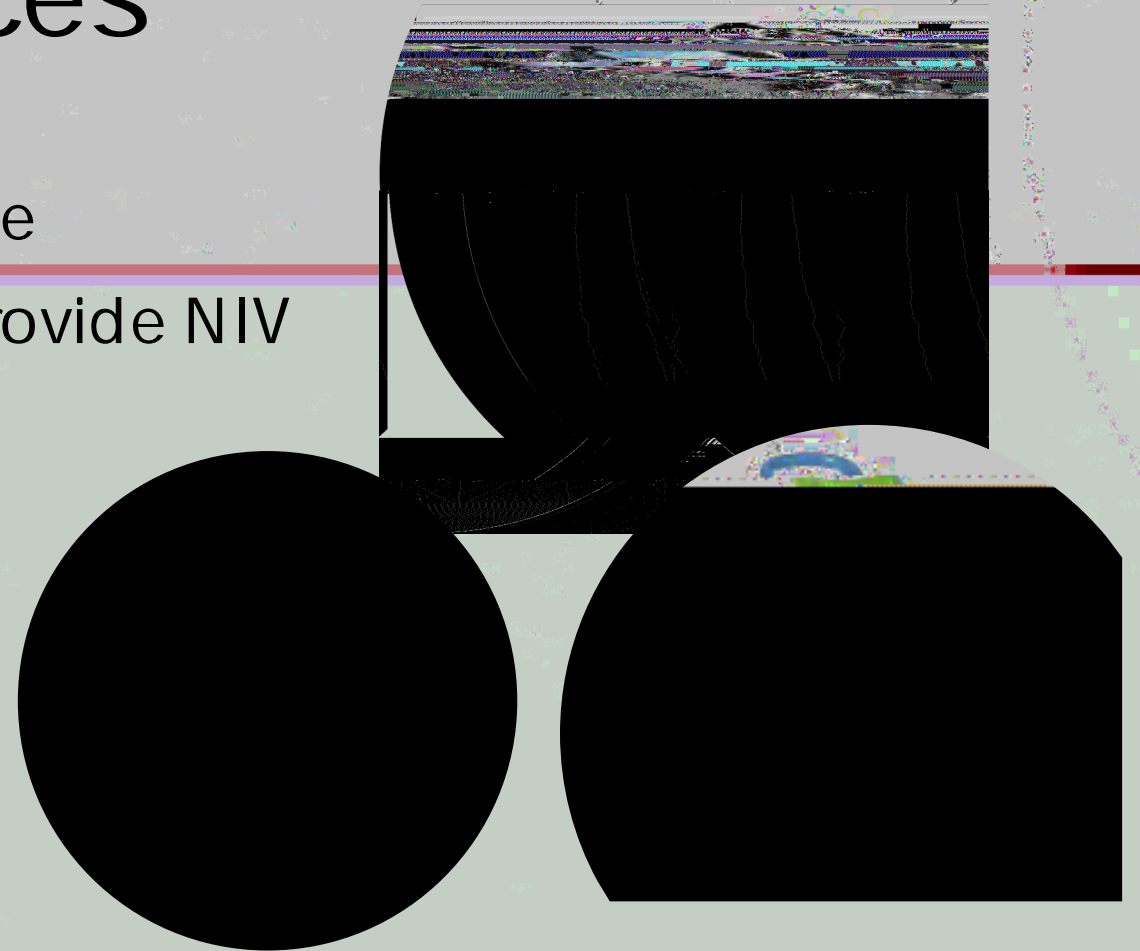
Quick review of NIV

- NIV provides ventilation assistance with positive pressure at 2 levels:
 - Unload respiratory muscles
 - Lung volumes
- Successful NIV attempt requires that the patient
 - Can maintain an airway
 - Is alert and oriented with a strong respiratory drive
 - Has no facial abnormalities that would prohibit a mask seal
- Typical settings
 - Spontaneous mode
 - Peak airway pressure range from 8 to 20 cm H₂O
 - CPAP or positive end-expiratory pressure (PEEP) range from 5-15
- General guidelines
 - If you need more ventilation (more carbon dioxide [CO₂] removal), adjust the peak airway pressure
 - If you need better oxygenation, adjust the CPAP/PEEP



Some common devices

- Several brands and devices available
- Many critical care ventilators can provide NIV
- Requirements for COVID-19
 - FIO_2 .21-1.0
 - CPAP/BiPAP or Bi-level
 - Filtering of exhaled gases
 - Full face mask



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