How important are the lungs in neuromuscular disease?

Tim Starner MD
Department of Pediatrics
Division of Allergy-Pulmonary
University of Iowa
Overview

• Clearing Secretions

• BiPAP for helping ventilate
Overview

• Clearing Secretions
  1) Suctioning
  2) Cough assistance
  3) Chest physiotherapy
Public Enemy #1

- Oral Secretions
- Saliva
- Nasal drainage
- Worse when ill
- Pooled in back of throat
- “Rattly” breathing
- Aspiration
Suctioning

- Impaired cough from weak muscles
- Even if they can be coughed up from the lung, they can’t be coughed out
- Need to be removed by suctioning
- Deep suctioning if by vocal cords (most commonly where they are)
- Hard plastic Yankauer cause gagging
- Need deep suctioning with soft red rubber catheters

Yankauer
Oral catheter
Nasal catheter
Cough Assist
• If weaker can’t even cough out of lung
• Need help with cough

“Quad cough”  Cough-Assist
Cough Assist

http://www.youtube.com/watch?v=ivwKr-841a8
Pounding the Chest

- Chest Physiotherapy (CPT)
- Needed if too weak to even loosen secretions to be able to cough them up
- Last thing needed for airway clearance
- First thing to do (CPT->Cough->Suction)
- Main types of CPT for impaired cough
  - Manual CPT
  - Percussor
  - “Vest”
Airway Clearance Summary

- 3 steps to clear lungs
  - Loosen
    - Manual CPT, Vest, etc.
    - No data that one better than another
  - Mobilize to upper airway
    - Cough assist
    - “Abd thrust” cough
  - Suction
    - May need 10-14 French red rubber catheter
Overview

• Clearing Secretions

• BiPAP for helping ventilate
Breathing/Ventilation Problems

• We all breathe a little less when we sleep
• With muscular weakness this can be much worse
• Low tone can have more OSA
• Can result in low sats at night
• Low saturation follows a very predictable progression

Low sats  *(Hypoxemia)*

Illnesses  ➔  Night time  ➔  Day time
Why not just give some oxygen?

- Saturations are one of the best ways to monitor breathing at home.
- $\text{CO}_2$ goes up when poorly ventilating.
- If $\text{CO}_2$ is rising $\text{O}_2$ drops.
- If on supplemental oxygen can’t tell if $\text{CO}_2$ is high.
- Can mask respiratory failure until $\text{CO}_2$ is really high (*may be too late*)
Pulse ox Monitor overnight

Before BiPAP

With BiPAP
Questions?