Bubble CPAP from the Respiratory Therapy Perspective

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Disclosures

Off-Label Usage: None

Interests: None
Objectives:

1. Demonstrate Building of Bubble CPAP
2. Guide thru ‘Hands-on’ building of CPAP
3. Explain Gas flow thru Bubble CPAP
4. Discuss Troubleshooting
5. Parts list for Bubble CPAP
6. Questions
Building Bubble CPAP

5 Building Steps

1. Blender
2. Humidifier
3. Inspiratory & Expiratory tubing
4. Bubble bottle
5. Test
1) Blender: Controls
   a. FIO₂
   b. Flow rate
Building Bubble CPAP

2. Humidifier assembly
   a. Connects to Blender
   b. Access for O2 Analyzer
   c. Filters gas source
   d. Humidifies Gas
2. Humidifier Assembly

5 Pieces Required
2. Humidifier Assembly

1) Oxygen Barb $\frac{3}{4}''$ O.D.
Building Bubble CPAP

2. Humidifier Assembly

2) Adapter, Trach T 22mm
2. Humidifier Assembly

3) Bacterial/ Viral Filter
Building Bubble CPAP

2. Humidifier Assembly

4) Airlife Cuff Connector
   22 mm I.D.
2. Humidifier Assembly

5) Humidifier Chamber
2. Humidifier Assembly

a. Attach Oxygen Barb to Adapter, Trach T
b. Attach Filter to above
c. Attach Airlife Cuff Connector to above
d. Attach above to Humidifier Chamber

Find pieces & Assemble
3. Inspiratory & Expiratory Tubing
   a. Blue tubing moves Inspiratory Gas to baby
   b. White tubing moves Expiratory Gas to Bubble Bottle
   c. Blue tubing by convention is Inspiratory
   d. White tubing by convention is Expiratory

F&P 750 Circuit

F&P 850 Circuit
Building Bubble CPAP

4. Bubble Bottle
   a. Connects to Expiratory Tubing
   b. Holds Acetic Acid solution
   c. Capillary tube depth provides CPAP
4. Bubble Bottle

5 Pieces Required
4. Bubble Bottle

1) Measuring tape (cut from 0 to 8cm)
Building Bubble CPAP

4. Bubble Bottle

2) Capillary Tube
Building Bubble CPAP

4. Bubble Bottle

3) Mask Intubation Adapter (15mm X 22mm)
Building Bubble CPAP

4. Bubble Bottle

4) Silicone Flex-adapter
Building Bubble CPAP

4. Bubble Bottle

5) 0.25% Acetic Acid Bottle
4. **Bubble Bottle**

a. Attach Measuring Tape 8cm at bottom with Zero up

b. Attach Capillary tube to Mask Intubation adapter

c. Thread bottom of Capillary tube thru Silicone Flex-adapter and push ½ way up and over Mask Intubation Adapter

d. Place Capillary Assembly in Bottle top

e. Empty Acetic Acid to Zero

f. Cut Gas escape hole in Bottle

**Find Pieces and Assemble**
Building Bubble CPAP

Final build Bubble CPAP System

1) Blender
Building Bubble CPAP
Final build Bubble CPAP System

1) Blender

2) Humidifier Assembly

Attach Blender to Humidifier Assembly with Supply Tubing
Building Bubble CPAP
Final build Bubble CPAP System

1) Blender
2) Humidifier Assembly
3) Inspiratory Tubing

Attach Inspiratory Tubing (Blue) To Humidifier Assembly
Building Bubble CPAP

Final build Bubble CPAP System

1) Blender
2) Humidifier Assembly
3) Inspiratory Tubing
4) Bubble Bottle Assembly

Attach Expiratory Tubing (White) To Bubble Bottle Assembly

Supply Tubing

BABY
Building Bubble CPAP

Gas Flow thru the Bubble CPAP System

1) Blender
2) Humidifier Assembly
3) Inspiratory Tubing
4) Bubble Bottle Assembly

Supply Tubing

BABY

Atmosphere

3) Expiratory Tubing
To Test: Turn on Flow Meter if it Bubbles......

Its Working!!
Troubleshooting:
“Not Bubbling” equals a LEAK
   a. #1 leak is the babies mouth
   b. Connections are not tight
   c. CPAP Prongs are too small
   d. Check tubing connections starting at Blender to Bubble Bottle for gas escaping
Gas flow through the Bubble CPAP system could best be described by which of the following?

A) Gas source to heater to Bubble CPAP device to inspiratory limb to baby to expiratory limb to atmosphere

B) Bubble CPAP device to heater to inspiratory limb to baby to expiratory limb to atmosphere

C) Gas source to heater to inspiratory limb to baby to expiratory limb to Bubble CPAP device to atmosphere

D) None of the above
Gas flow through the Bubble CPAP system could best be described by which of the following?

A) Gas source to heater to Bubble CPAP device to inspiratory limb to baby to expiratory limb to atmosphere

B) Bubble CPAP device to heater to inspiratory limb to baby to expiratory limb to atmosphere

C) Gas source to heater to inspiratory limb to baby to expiratory limb to Bubble CPAP device to atmosphere

D) None of the above
Building Bubble CPAP
Gas Flow thru the Bubble CPAP System

1) Blender
2) Humidifier Assembly
3) Inspiratory Tubing
4) Bubble Bottle Assembly

Supply Tubing
BABY
Atmosphere
3) Expiratory Tubing
MOC Question #2

Does ‘Bubbling’ in the final bubble bottle assembly guarantee CPAP delivery to baby?

True or False
False –

1) Pinched or occluded prongs could cause ‘bubbling’ without CPAP delivery to baby
2) Congested or occluded nasal passages could cause ‘bubbling’ without CPAP delivery to baby
3) Auscultation to listen for CPAP transmission is the standard of care to determine for CPAP delivery
Building Bubble CPAP

QUESTIONS?