Bubble CPAP from the Respiratory Therapy Perspective

Christopher Thornton, RRT
Respiratory Therapist
Anne Arundel Medical Center
Annapolis, MD

Disclosures

Off-Label Usage: None

Interests: None

Building Bubble CPAP

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

Building Bubble CPAP

5 Building Steps

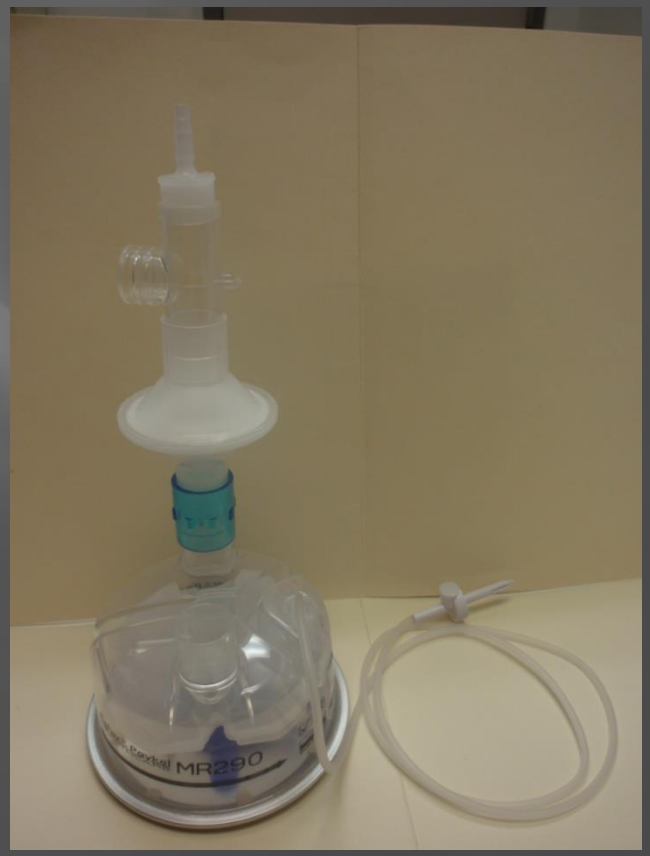
1. Blender
2. Humidifier
3. Inspiratory & Expiratory tubing
4. Bubble bottle
5. Test

Building Bubble CPAP

1) Blender: Controls
   a. FIO_2
   b. Flow rate

Building Bubble CPAP

2. Humidifier assembly
   a. Connects to Blender
   b. Access for O_2 Analyzer
   c. Filters gas source
   d. Humidifies Gas



Building Bubble CPAP

2. Humidifier Assembly

5 Pieces Required

Building Bubble CPAP

2. Humidifier Assembly

1) Oxygen Barb ¾'' O.D.

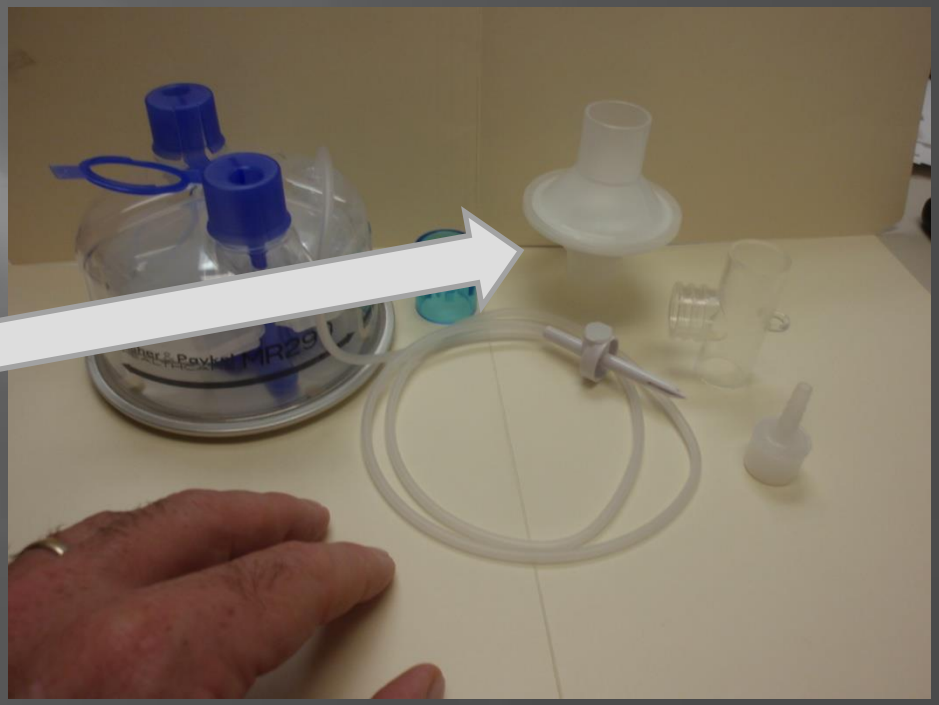
Building Bubble CPAP

2. Humidifier Assembly

2) Adapter, Trach T 22mm

Building Bubble CPAP

2. Humidifier Assembly



3) Bacterial/ Viral Filter

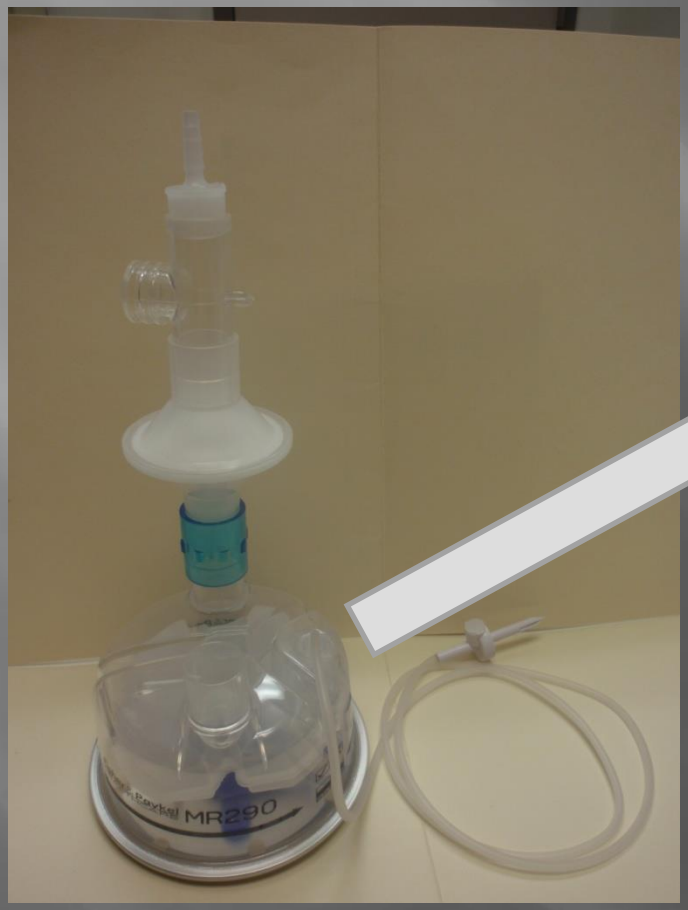
Building Bubble CPAP

2. Humidifier Assembly

4) Airlife Cuff Connector
22 mm I.D.

Building Bubble CPAP

2. Humidifier Assembly



5) Humidifier Chamber

Building Bubble CPAP

2. Humidifier Assembly

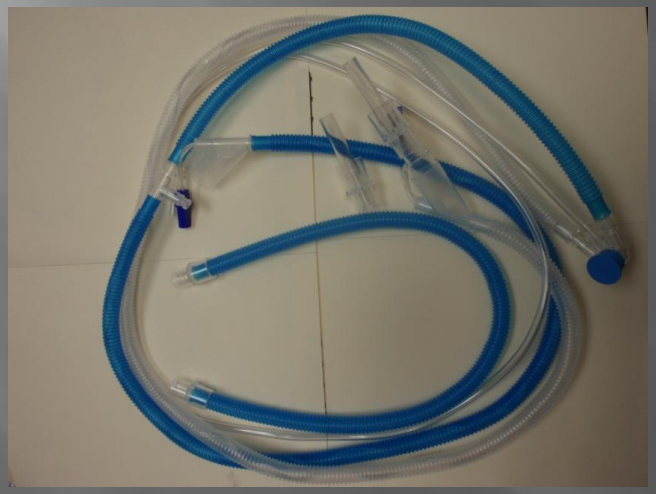
a. Attach Oxygen Barb
   to Adapter, Trach T
b. Attach Filter to above
c. Attach Airlife Cuff Connector
   to above
d. Attach above
   to Humidifier Chamber

Find pieces & Assemble

Building Bubble CPAP

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

Building Bubble CPAP

4. Bubble Bottle

5 Pieces Required

Building Bubble CPAP

4. Bubble Bottle

1) Measuring tape (cut from 0 to 8cm)

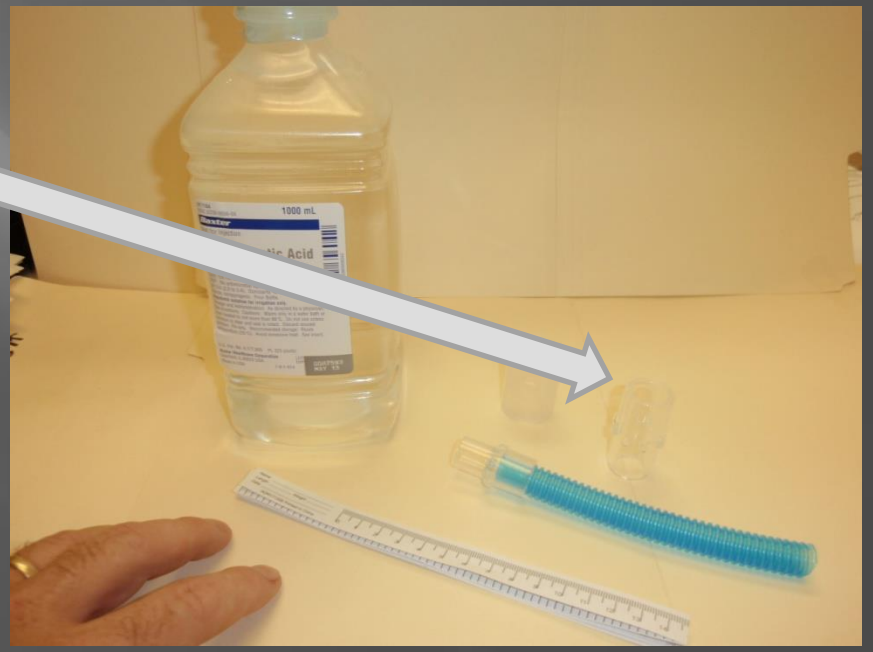
Building Bubble CPAP

4. Bubble Bottle

2) Capillary Tube

Building Bubble CPAP

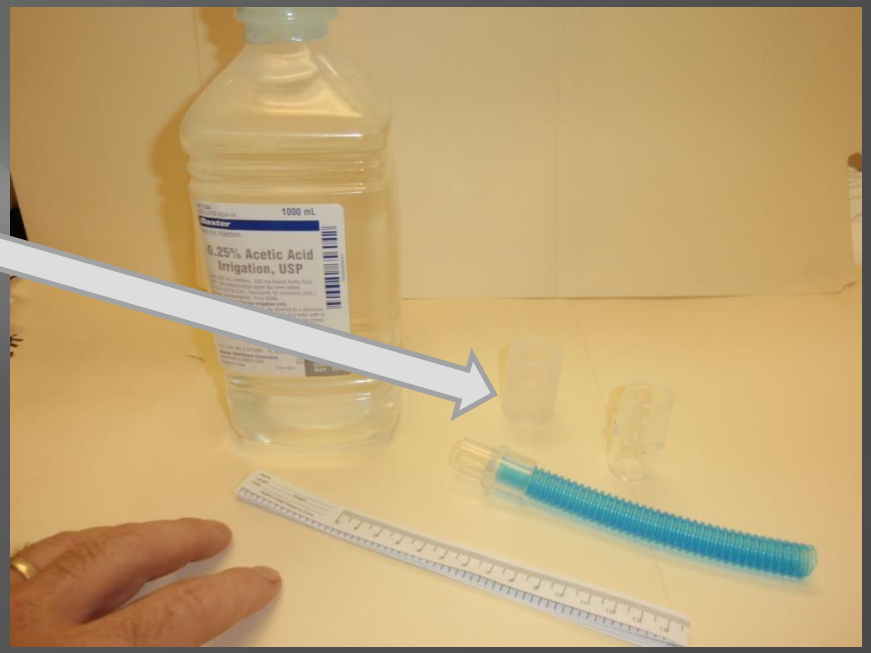
4. Bubble Bottle



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

Building Bubble CPAP

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

Supply Tubing

2) Humidifier Assembly

BABY

3) Inspiratory Tubing

Attach Inspiratory Tubing(Blue) To Humidifier Assembly

Building Bubble CPAP

Final build Bubble CPAP System

1) Blender

Supply Tubing

2) Humidifier Assembly

BABY

3) Inspiratory Tubing

Attach Expiratory Tubing(White) To Bubble Bottle Assembly

3) Expiratory Tubing

4) Bubble Bottle Assembly

Building Bubble CPAP

Gas Flow thru the Bubble CPAP System

1) Blender

Supply Tubing

2) Humidifier Assembly

BABY

3) Inspiratory Tubing

Atmosphere

3) Expiratory Tubing

4) Bubble Bottle Assembly

Building Bubble CPAP

To Test: Turn on Flow Meter if it Bubbles…….

Its Working!!

Building Bubble CPAP

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

MOC Question #1

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 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

MOC Answer #1

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 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

Supply Tubing

2) Humidifier Assembly

BABY

3) Inspiratory Tubing

Atmosphere

3) Expiratory Tubing

4) Bubble Bottle Assembly

MOC Question #2

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

True or False

MOC Answer #2

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?