Lung health on trach – what to do when

A friend of a friend passed along this "lung protocol" for us to use. Written by an RT, it's become our bible. Of course **we're NOT doctors nor RTs nor pulmonologists** and **everyone is different**. We can only say that this table was critical for survival and that we want to share it in case it can help others. Note that it was written for an ALS patient on a trach who has saliva draining into the lungs and who uses a ventilator at night.

Here's the birds-eye view table of what we do when. Some additional guidelines/protocols are listed below the table. Oh and here's a great description of each lung sound, complete with audio: *Lung sounds made easy* on Ausmed.com.

Condition	**What to do for it**
Crackle lung sound	Percuss (CPT). If caregiver knows how to listen to lung sounds, focus percussion more on area where there are crackles. If caregiver doesn't know how to listen to lung sounds, percuss normally with occasional emphasis on lower areas (since it is where secretions are likely to drain).
Wheezing lung sound	Nebulize with albuterol. Wheezing might be caused by airways being inflamed. If after nebulizing patient coughs a lot with copious amounts of secretions, do percussion.
Faint lung sound	This might be caused by lung collapse due to frequent suctions. Patient may deep sigh after a series of suctions. Deep sighing is the lungs' coping mechanism to reinflate the lungs. Percussion can help. Can also be caused by a lot of secretions, where again, percussion can greatly help.
Rattle lung sound	This might be caused by secretions mobilizing and starting to work their way out of the lungs. When patient breathes, air makes the secretions vibrate. Suction them out using trach suction catheters, and if that doesn't work, percuss.
Patient says it feels "thick" and "dry" in his lungs; nothing comes out after cough assist/suction	Try turning up the room humidifier. If this doesn't work, nebulize with .9% NaCl to hydrate thick secretions so patient can cough it out (even if patient can't do much coughing on his own… in that case the cough assist after nebulizing). In extreme cases hypertonic saline may help, but we found this to be very rough on the patient.

Patient says he feels like he's drowning	Might be from too much humidity and secretions. Do suction and try to dry out the environment a bit (turn down or off humidifier, etc.) The problem could also be saliva draining into the lungs. In this case look into alternatives such as hyoscyamine under-tongue pills, scopolamine patches, or getting your salivary glands botoxed.
Patient can't stop coughing and trach suctions don't seem to help	Nebulize with albuterol to relax the airways. May be caused by: • Irritation/inflammation • Secretions (too much) • Mobilization of secretions (usually after nebulization)
Patient feels mucus build up "in back of throat" and feels very uncomfortable	Air coming in from ventilator might be too dry and/or too cool. Even with expensive ventilator humidifiers and heated-wire tubing, it is difficult to get the air that's coming into the body warm enough to not cause drying. Add a room humidifier or put socks around the tubing to help insulate it (just make sure the socks can't break free and block the exhalation holes). Nebulizing with saline (.9% NaCl) using a face mask made for oral/nasal nebulizing has worked for us. Using fenestrated trachs has worked for us too—let's us catheter suction through the 4 holes. Can also try sitting up as straight as possible so gravity can help drop the mucus down towards the bottom of the trach where it can be suctioned out.

Additional guidelines/protocols

- Percussing at least once per day is crucial. By "percuss" in this document we mean CPT on the back of the patient. You can percuss on patient's back when patient is on his side when being rolled in bed or when being rolled to get into a sling, etc. No gentle taps here—it's pretty forceful. There seem to be no videos of this online—we'll try to add one soon.
- Daily routine:
    - This patient nebulizes with ipratropium bromide after getting up in the a.m. and before bed. If secretions being suctioned out are especially thick, you can follow it up with a 1 to 3 ml of .9% NaCl (saline) nebulization.
    - About 5-10 minutes after nebulizing, trach suction with suction catheters and cough assist.

    - Just after trach suction/cough assist, percuss back of patient (with patient lying on his side) for 90 seconds or until patient starts to cough. Turn patient onto his back, raise head of bed to at least 30 degrees, and then do cough assists with trach suction with suction catheters.
- After percussion and/or nebulization, always be ready with trach suction catheters and cough assist.
- How deep to suction? So far we have avoided going deep enough to hit the carina to induce coughing, but we know some RTs like to do that. We generally avoid going "deep" (ie, near carina) unless everything else has failed.
- If you must go deep, avoid circling/twisting the suction catheter on first plunge. If patient is still having trouble breathing/clearing lungs, then go deep again but do very gentle twisting (again, there seem to be no instructional videos on this that hit all the key points—we will try to post one).
- We used to use Budesonide (a corticosteroid hormone) in lieu of ipratropium bromide for the twice per day regimen. General Budesonide, ipratropium bromide, and .9% saline are considered good for daily regimens. Albuterol is a rescue nebulization.