Interdisciplinary Approach to Managing a Patient with Chronic Lung Disease Across Settings – Part 1

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Learning Objectives:

- Review three common tests for diagnosis of COPD
- Describe two standardized scales used to assess the patient with COPD
- Discuss three hands-on assessment skills related to the examination of the patient with COPD in the home setting
- Review what OASIS items may be affected by a diagnosis of COPD and how to effect your agencies outcomes positively

Review Anatomy of the Healthy Lung
Healthy Diaphragm
- Inhale -> Diaphragm Flattens
- Exhale -> Diaphragm Domes
- Attaches at:
  - Rib 6, Rib 8
  - T10
- Innervation:
  - Phrenic Nerve

Chronic Obstructive Pulmonary Disease

Review Anatomy of the Diseased Lung

Chronic Obstructive Pulmonary Disease (COPD)
Comparison of Diaphragms

Important Clinical Tests

- Arterial Blood Gases (ABGs)
  - Assess the pH (7.35-7.45)
  - Assess PaCO2 (35-45mmHG)
  - Assess PaO2 (>80mmHG)
  - Assess Bicarb level (22-26 mmol/L)
  - Assess arterial SaO2 (>95%)
  - Values for COPD may show some type of resp failure:
    - Resp Acidosis: pH , PaCO2 and HCO3 (Tip: probably a CO2 retainer – don’t turn up O2; work on exhale!)
    - Resp Alkalosis: pH , PaCO2 and HCO3

Important Clinical Tests

- Chest X-rays:
  - Bony changes such as barrel chestedness and horizontal ribs; sometimes hard to see on just visual inspection of obese patient
  - Muscular changes such as flatterd diaphragm (Tip: don’t bother with diaphragmatic breathing, pick another strategy)
  - Tissue changes:
    - Blebs and bullae with emphysema
    - Infiltrate/consolidation with chronic bronchitis
    - Bronchial narrowing with chronic bronchitis and asthma
    - (Tip: make sure patient is using appropriate meds pre-exercise)
Important Clinical Tests

- Pulmonary Functions Tests (PFTs)
  - Assess lung volume/capacity, ventilation, pulmonary mechanics, and diffusion
  - COPD: ↓ vital capacity and total lung volume due to ↓ residual volume and ↓ functional residual volume (>120% expected). Expiratory flow rates ↓
  - Tip: this is NOT a good thing to have increased volume; increased volume = decreased efficiency of breathing

Important Clinical Tests

Pulmonary Exercise Tests
- May be called Cardiopulmonary Exercise Testing (CPX or CPET)
- Analyzes the O2 uptake and CO2 production during exercise test
- Patient breathes through a non-re-breather mask and may also have a line in so that serial ABGs can be drawn
- Can be as simple as 6MWT or as taxing as TMT
- Can be helpful in comparing subjective reports of DOE, with objective data related to ventilation/perfusion with activity
- Will probably only find this report if referred from Pulmonologist; you can call and request report
- Tip: results can help you know where to start with aerobic exercise

The central role of airflow limitation leading to symptoms in COPD
- COPD
  - Exercise
    - Expiratory flow limitation
    - Air trapping
    - Hyperinflation
  - Breathlessness
    - Deconditioning
    - Quality of life
    - Inactivity
    - Reduced exercise capacity
  - Disability
  - Disease progression
  - Death

Adapted from Cooper, Respir Med 2009
Clinical Examination – Vital Signs

- You need a good set of Vital Signs at every visit:
  - Blood Pressure
  - O2 Sats (if you can get a reading)
  - Temperature, need to catch infection fast!
  - Respiratory Rate
  - Pulse Rate and/or Heart Rate
  - Heart Sounds (check for S3 if CHF is co-morbidity)
  - LUNGS SOUNDS – every visit!!

Clinical Examination – Standardized Scales

- Standardized scales to rate breathing at rest and with activity
  - ACSM Dyspnea Scale (0-4): subjective rating!!
  - Ventilatory Response Index(VRI) - count to 15: objective rating!!
  - Rate of Perceived Exertion (RPE) scale – subjective rating
  - Use the standardized scales at rest and activity
  - Use the same scale throughout to avoid confusion
ACSM DYSPEA SCALE

<table>
<thead>
<tr>
<th>Classification</th>
<th>Descriptor</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No dyspnea</td>
</tr>
<tr>
<td>1</td>
<td>Mild, noticable</td>
</tr>
<tr>
<td>2</td>
<td>Mild, some difficulty</td>
</tr>
<tr>
<td>3</td>
<td>Moderate difficulty, but can continue</td>
</tr>
<tr>
<td>4</td>
<td>Severe difficulty, cannot continue</td>
</tr>
</tbody>
</table>

VENTILATORY RESPONSE INDEX

Instructions: Have the patient take a deep breath and count out loud to 15 over an 8 second period of time. Snap or tap to help the patient keep pace. Listen for how many breaths are required to get to 15.

<table>
<thead>
<tr>
<th>Classification</th>
<th>Descriptor</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Able to get to 15 in a single breath</td>
</tr>
<tr>
<td>1</td>
<td>Able to count to 15, but requires 1 additional breath</td>
</tr>
<tr>
<td>2</td>
<td>Able to count to 15, but requires 2 additional breaths</td>
</tr>
<tr>
<td>3</td>
<td>Requires 3 additional breaths</td>
</tr>
<tr>
<td>4</td>
<td>Requires 4 or more additional breaths</td>
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Clinical Examination – General Inspection

- Any chest wall scars that will limit/restrict breathing
- How did you find them?
  - Are they leaning to one side? If that is the preferred side, that side will be more mobile.
  - Do they need to prop forward or backward to breathe comfortably? Tip: teaching a “breathlessness position” is a skilled service! You are helping them understand their diaphragm!
  - Can they even find a comfortable position?
  - Are they already relying on accessory muscles?
Clinical Examination – General Inspection

Hypoxia:
- Cyanosis = acute
- Clubbing = chronic

Posture:
- Head forward – overuse of accessory muscles
- Thoracic kyphosis – overuse of accessory muscles
- Barrel chested – flattened diaphragm

Clinical Examination – General Inspection

Horizontal ribs

Ribs at downward angle

Elliptical Shape

Round Shape

Clinical Examination – Assessment of Breathing

Assess the pattern of breathing at rest
- In supine/reclined (or as close as possible)
- Normal = diaphragm, middle chest, upper chest
- COPD = lots of upper chest breathing, either due to chronic SOB or due to diaphragm not viable

COPD

Inhaler
Clinical Examination – Assessment of the Diaphragm

**Sniff Test:**
- You place your hand at the xiphoid process
- Instruct the patient to sniff 3 times quickly
- You note where the sniff happens:
  - If you feel the diaphragm contract under your hand and see the abdominal wall move outward, then the diaphragm is still viable
  - If you don’t feel anything, the abdomen doesn’t really move, and you see all the movement happening in the upper chest, then the diaphragm is no longer viable
- TIP: We will use this as a treatment strategy later

**Chest wall excursion with Inhale/Exhale:**
- Patient supine or reclined, thumbs at xiphoid and hands wrap around costal margins
- Normal = 2-3” gap with inhale; COPD = inward movement of costal margins

Mediate Percussion:
- Middle finger of the non-dominant hand is tapped with middle finger of dominant hand
- Find the resting diaphragm
- Patient inhales and hold, percuss down to see how far the diaphragm moves with max inhale
- Patient exhales and holds, percuss up to see how far the diaphragm moves with max exhale

**Sounds:**
- Dull sound = Organs
- Resonant sound = Lungs
- Hyperresonant = Emphysema
- Dull/Absent = Chronic Bronchitis
Clinical Examination – Assessment of Cough

- Four phases of cough:
  1. Inspiration
  2. Glottal closure
  3. Increased abdominal/thoracic pressure
  4. Forced exhale

- Have them cough (without your coaching at first) and see which phase(s) they are struggling with

Clinical Examination – Assessment of Cough

- If something comes up, assess & document:
  - Color:
    - New yellow/green = infection
    - Pink/frothy = pulmonary edema = STOP coughing and call MD
  - Amount: trace, min, mod, max, copious
  - Viscosity: thin, thick
  - Odor: in general
  - Expenditure – cough is an aerobic workout

- Tip: secretions have to get to the proximal 1/3 of the bronchial tree in order for patient to expel them. For some of them, that’s A LOT of effort!

Clinical Examination – Assessment of Aerobic Capacity

- Always take vitals pre, during/peak, and post
- Note the time it takes to recover to baseline
- Include the standardized scales; ACSM dyspnea, VRI, RPE
- Can use:
  - 2 MWT
  - 6MWT**
  - Symptom limited TM – if they have TM in home
  - Symptom limited bike test – if they have bike in home
- This gives you a place to start with home program
When is the patient dyspneic or noticeably short of breath?

0 - Patient is not short of breath
1 - When walking more than 20 feet, climbing stairs
2 - With moderate exertion (e.g., while dressing, using commode or bedpan, walking distances less than 20 feet)
3 - With minimal exertion (e.g., while eating, talking, or performing other ADLs) or with agitation
4 - At rest (during day or night)

More considerations:
- If chairbound/bedbound, what is min/mod exertion for that pt?
- The examples are just examples, you have to decide what is min or mod exertion for your pt given their functional status
- How do we improve the score:
  - Teach the pt how to modify their breathing (PLB, diaphragmatic) to accommodate the activity
  - Environmental modifications to allow pt to be more comfortable – sleep with 2-3 pillows to decrease dyspnea

M1033: Risk for Re-hospitalization
- Does the pt have s/s of depression or increased anxiety r/t their condition?
- Often rehospitalized – verify if recent
- How many ER visits
- Are they compliant with their regimen?
- Usually taking 5 or more meds
- Frailty indicators are common with moderator to severe COPD
Documentation - Other OASIS Items

- M1034: Overall status
  - (2) or (3) Complications are likely vs. healthy person of the same age
- M1036: Risk Factors:
  - Are all behaviors captured? Past and present

Documentation – Other OASIS Items

- M1410: Respiratory Treatments
- M1700-M1720:
  - Are cognition and confusion issues present due to hypoxia? Is anxiety affecting ability to learn self care?
- M1730: Depression Screening
  - Are current s/s of depression affecting self care abilities
- M1800-M1860: Functional Mobility
  - Dyspnea affects function! Do you have to cue? That is assist! Does O2 tubing put pt at risk? Can pt tolerate a shower safely?

Documentation – Other OASIS Items

- M2020 Oral med management
  - Are all meds in home? Can pt demo ability to take all meds?
  - Can pt safely ambulate/wheel self to get to the med storage area and get the beverage to take meds
- M2250a POC Synopsis: Vital Signs
  - Did the MD give us specific parameters for when to contact him for O2 sats? Other VS?
Consider Speech referral

- If there are cognitive/memory issues that can be addressed to increase compliance issues with meds and exercise program
- If there is an issue with swallowing and SOB that needs to assessed

Consider Hospice Referral

- Consider that your documentation of decline can assist in qualifying a patient for Hospice
- This is a progressive disease, we want to help patient/family meet their goals through all stages of the diseases
- Comfort and symptom management become the number one goal towards the end stages and we can provide that in the home through Hospice!
Consider Hospice Referral

- It is not an exact science but some common indicators that patient will qualify for Hospice include
  - Dyspnea at rest
  - Frequent/recurrent pulmonary infections
  - Sats <88% on O2
  - Resting tachycardia >100bpm
  - Weight loss, >10% in past 6 months
  - PaO2 55mmHG determined by ABGs
  - FEV1 <30% after bronchodilators
  - Cor pulmonale/right heart failure

Questions

Speaker information

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