PEARLS IN PULMONARY MEDICINE

Kellie R. Jones, MD
Associate Professor
University of Oklahoma Health Sciences Center
Pulmonary Pearls

Case 1

While moonlighting in the ER, you are asked to evaluate a lady for shortness of breath. She is 3 weeks post partum and required a C Section. She stopped smoking while pregnant but has resumed smoking again due to stress from the “colicky” baby.

She reports binge watching Law and Order SVU for the last 4 days for about 12 hours/day.

Her BMI = 35.

She reports resume her birth control pills last week because “one is enough right now”.

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- On exam, she is dyspneic and tachypneic. Heart Rate is 115 BPM
- Lungs are clear to auscultation bilaterally.
- O2 saturations are 91% on RA
- What would you like to do next?
  1. Give her some Ativan for a few days to help with the anxiety
  2. Given her some antibiotics for a upper respiratory infection
  3. Advise diet and exercise to improve mood and help with weight reduction
  4. Order a CT of the chest PE protocol
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Pulmonary Pearls

■ Patient has numerous risk factors for PE
■ Obesity, smoking, BCPs, less than 6 weeks after delivery, sedentary, recent surgery
■ Other risk factors include active malignancy as well as history of DVT or PE
■ Don’t dismiss a patient with numerous risks factors as anxious!
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Case 2

A new patient presents in clinic for evaluation of shortness of breath. During your review of the patient’s past medical history, she informs you that she has been diagnosed with scleroderma.

She reports that her shortness of breath has slowly progressed over the past 9 months. Although she used to spend 25 minutes on the elliptical daily previously, she has had a decline in functional status and now has difficulty grocery shopping.
What would be a reasonable next step to evaluate this patient?
1. Pulmonary function testing with DLCO
2. Non contrast CT of chest
3. ECHO
4. Cardiology referral
5. All of the above
Pulmonary Pearls

- Patients with connective tissue diseases are at increased risk for pulmonary hypertension as well as pulmonary fibrosis, so a thorough investigation is warranted.
- Scleroderma patients have a high incidence of both diseases.
- Patient has WHO Class III symptoms.
- ECHO can suggest pulmonary hypertension but right heart catheterization is still the gold standard and required for treatment prior authorization.
### Functional Class

<table>
<thead>
<tr>
<th>Class</th>
<th>Description</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No limitation of activity</td>
<td>Doing great!</td>
</tr>
<tr>
<td>2</td>
<td>Slight limitation: ordinary activities cause some sx</td>
<td>Acceptable</td>
</tr>
<tr>
<td>3</td>
<td>Marked limitation: less than ordinary activity causes sx</td>
<td>Caution</td>
</tr>
<tr>
<td>4</td>
<td>Severe limitation: any activity causes sx. Overt RHF</td>
<td>Emergency</td>
</tr>
</tbody>
</table>
Case 3
Nursing staff triages a call to you from a patient who you see routinely for COPD. He stopped smoking 10 years ago.
His current medications include tiotropium and albuterol PRN.
He reports increasing sputum production over the past 3 days, as well as change in color of sputum from white to green. He is more short of breath.
You make the decision to start treatment for an acute exacerbation of chronic bronchitis.
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- In addition to a course of antibiotics, you also:
  1. Arrange for a short term FU and have patient call if not better in 3 days
  2. Call in a Medrol dose pack
  3. Call in a prescription for 40 mg of prednisone for 5 days
  4. 1 and 2
  5. 1 and 3
Global initiative for Chronic Obstructive Pulmonary Disease

Manage Stable COPD: Pharmacologic Therapy

(Medications in each box are mentioned in alphabetical order, and therefore not necessarily in order of preference.)

<table>
<thead>
<tr>
<th>Patient</th>
<th>Recommended First choice</th>
<th>Alternative choice</th>
<th>Other Possible Treatments</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>SAMA prn or SABA prn</td>
<td>LAMA or LABA or SABA and SAMA</td>
<td>Theophylline</td>
</tr>
<tr>
<td>B</td>
<td>LAMA or LABA</td>
<td>LAMA and LABA</td>
<td>SABA and/or SAMA Theophylline</td>
</tr>
<tr>
<td>C</td>
<td>ICS + LABA or LAMA</td>
<td>LAMA and LABA or LAMA and PDE4-inh. or LABA and PDE4-inh.</td>
<td>SABA and/or SAMA Theophylline</td>
</tr>
<tr>
<td>D</td>
<td>ICS + LABA and/or LAMA</td>
<td>ICS + LABA and LAMA or ICS+LABA and PDE4-inh. or LAMA and LABA or LAMA and PDE4-inh.</td>
<td>Carbocysteine SABA and/or SAMA Theophylline</td>
</tr>
</tbody>
</table>

Short-acting bronchodilators as needed in all symptomatic patients
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■ Case 4

You have been following a patient for asthma for several years. She has been well controlled in the past 12 months with no issues.

Since finishing college and starting her new job, she has started waking up 2-3 time/week coughing. Her short acting B agonist use has increased from twice a month to almost ever day. She has noted an increase in nasal symptoms also.

Her current medications include a low dose inhaled corticosteroid in addition to the SABA
# Pulmonary Pearls

## FIGURE 2 Components of Asthma Control

<table>
<thead>
<tr>
<th>Components of Control</th>
<th>Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impairment</td>
<td>• Nighttime awakenings</td>
</tr>
<tr>
<td></td>
<td>• Interference with normal activity</td>
</tr>
<tr>
<td></td>
<td>• Short-acting beta-2 agonist use for symptom control</td>
</tr>
<tr>
<td></td>
<td>• Lung function</td>
</tr>
<tr>
<td></td>
<td>• Validated questionnaires</td>
</tr>
<tr>
<td>Risk</td>
<td>• Exacerbations requiring oral systemic corticosteroids</td>
</tr>
<tr>
<td></td>
<td>• Progressive loss of lung function</td>
</tr>
<tr>
<td></td>
<td>• Treatment-related adverse effects</td>
</tr>
</tbody>
</table>
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- In order to respond to this patient’s worsening symptoms, you decide to update her therapy by doing which of the following:
  1. Changing her therapy to low dose ICS/LABA combination therapy
  2. Increase her inhaled corticosteroid dose
  3. Add a leukotriene receptor antagonist
  4. Any of the above
ASTHMA UPDATE

NAEPP guidelines 2007
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■ Case 5

You are asked to evaluate a patient with an abnormal CXRay. He was diagnosed with pneumonia 6 weeks ago and has been on 3 different rounds of antibiotics. He is still experiencing shortness of breath, cough, and blood tinged sputum. Because of the unresolving “pneumonia”, you order a CT of the chest.
Best next step is to:

1. Refer the patient ASAP so someone else can give him the bad news
2. Give him a hug and tell him the bad news yourself
3. Contemplate palliative care referral
4. Interventional radiology referral
5. Pulmonary referral
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Better QOL

Less aggressive measures in palliative care group
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- Case 6
- You have a 47 yo lady with HIV who you manage in conjunction with an Infectious Disease specialist. She had been sober from ETOH for many years, and hasn’t used any IV drugs for 10 years.
- Her long term partner died about a year ago. She has not been to see any provider since her partner’s death.
- She is being seen in clinic today for complaints of shortness of breath and chest pain, as well as low grade fevers.
- She is disheveled and reports not being on any medications for “months”.
- HR= 120, RR =25, sats = 89 % on RA
- You asked the nursing staff to have her get a Cxray prior to the appointment and it shows:
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- The most likely cause of this patient’s findings is:
  1. Streptococcal pneumonia
  2. Influenza
  3. Pneumocystis jiroveci pneumonia
  4. Aspiration pneumonia
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Case 7

One of your clinic patients with asthma has called in to be seen for mucous production. She brings a picture taken on her cell phone of what she is bringing up (see next slide).

She has had increased shortness of breath as well as pleuritic pain. All VS are normal including O2 sats = 97% on room air.

She is 35 years old and a lifetime nonsmoker.

She was treated with a “Z pack” at urgent care a month ago with no improvement.

You decide to get a culture and gram stain as well as a CXRay. The radiologist calls you about a “mass.”

You obtain the following CT:
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Pulmonary Pearls
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- You are most concerned this patient has:
  1. Adenocarcinoma
  2. Pneumococcal pneumonia
  3. Pulmonary aspergillosis
  4. MRSA pneumonia
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- Patients with asthma have increased risk of Allergic Bronchopulmonary Aspergillosis
- Radiographic findings for this patient show more disease than just an allergic reaction
- Reasonable to proceed with Pulmonary referral at this time
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- **Case 8**
- You are practicing in a rural community in urgent care. A 35 yo gentleman comes into the clinic with complaints of increased shortness of breath and cough. His sputum is blood tinged, but no frank hemoptysis.
- During the history of present illness, he reports that he has cystic fibrosis. He has just moved from Atlanta and hasn’t established care with a CF center yet.
- He is out of all of his medications.
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- In order to best treat this patient, you do the following:
  1. Give the patient a 7 day course of TMP-Sulfa
  2. Give the patient a 14 day course of Cipro
  3. Call the nearest CF center to facilitate this patient’s care
  4. Educate the patient on how important it is to arrange continuity of care when he has a complicated disease that affects multiple organ systems
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- **Case 9**
- A young man presents to clinic with a persistent cough. He denies any fever or chills but thinks he may have lost some weight. He mentions that he has coughed up some blood.
- He is not on any medications.
- You obtain the following CXRAY
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- You decide to take a closer social history after reviewing the CXray.
- Patient reports that he recently returned from South Africa where he was on a medical mission trip for 2 months.
- What is a reasonable way to proceed with evaluating this patient?
  1. Sputum culture and gram stain
  2. PPD
  3. Sputum for acid fast bacteria
  4. Pulmonary referral
  5. Referral to Health Department
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- **Case 10**
- Your next patient is a 42 yo African American patient who has increased shortness of breath. She has noted some swollen lymph nodes in her neck and they are palpable.
- She has noticed that her eyes seems dry and painful for the last 4 months. She has also noted red bumps on her arms that have not resolved with application of OTC creams.
- She is a lifetime nonsmoker.
- You obtain the following CXray.
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Which of the following disease processes is likely in this patient?

1. Hodgkin’s lymphoma
2. Sarcoidosis
3. Lung cancer
4. Pulmonary Hypertension
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- **Case 11**
- 72 yo gentleman comes into the clinic with a 2 week history of cough and sputum production. He has had 2 days of temperatures elevated to > 100.8 F.
- He is now more SOB and complains of Right sided chest pain.
- In addition to starting oral antibiotics, you obtain the following Cxray:
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Pulmonary Pearls

The next step in this patients care should be:

1. CT chest
2. Pulmonary consult
3. Interventional Radiology consult
4. US of right side of chest
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■ Case 12

■ Your patient calls with shortness of breath since an attempted port placement for chemotherapy for multiple myeloma. She reports that the Radiologist stuck her several time with the needle, but could not place the port.

■ You order a Cxray and instruct her to proceed to the clinic as soon as possible.

■ She has no underlying lung disease and takes no respiratory medications
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Pulmonary Pearls
Pulmonary Pearls

- **Case 13**
- You are part of a busy Internal Medicine practice. As part of your duties, you help with hospital rounds. You are seeing a patient who is on the ventilator.
- The patient is a 32 yo lady who aspirated after a C section. She is on appropriate antibiotics. Her wound appears clean and dry.
- The patient is on assist control ventilation. Set rate is 20, TV = 500 cc( 7 ml/kg ideal body weight), FiO2 = .8 and PEEP = 12
- Her latest ABG shows the following 7.32/40/72
- What is the next step to optimize this patient’s ventilator management?
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1. Increase the FiO2 to better oxygenate the patient
2. Increase the respiratory rate to normalize the pH
3. Decrease the TV to achieve a goal of 6 ml/kg ideal body weight
4. Change nothing, as patient is well oxygenated and pH is within acceptable range
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- Case 14
- One of your patients has called asking for an urgent appointment because he may have lung cancer. You overbook him and he brings in a CT report of abdomen and pelvis he had for concerns of a kidney stone.
- CT report shows a 3 mm lung nodule
- The patient is 65 years old and is a lifetime nonsmoker. He has never experienced any second hand smoke or any environmental exposures. He has no history of malignancy.
- What should you tell the patient?
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1. You are sorry he has lung cancer and you will refer him to an Oncologist
2. He needs to see a Pulmonary provider
3. He needs to be referred to a Thoracic Surgeon
4. He needs 2 years of serial CTs to make sure the lung nodule does not grow
# Pulmonary Pearls

## Entry Criteria for the NLST

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Criterion</th>
</tr>
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<tbody>
<tr>
<td><strong>Eligibility</strong></td>
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</tr>
<tr>
<td>Age 55–74 years</td>
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</tr>
<tr>
<td>30 or more pack-years of cigarette smoking history</td>
<td>(pack-years = packs per day × years smoked)</td>
</tr>
<tr>
<td>Former smokers: quit smoking within the previous 15 years</td>
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<tr>
<td>Ability to lie on the back with arms raised over the head</td>
<td></td>
</tr>
<tr>
<td>Signed informed consent form</td>
<td></td>
</tr>
<tr>
<td><strong>Exclusion</strong></td>
<td></td>
</tr>
<tr>
<td>Metallic implants or devices in the chest or back, such as pacemakers or Harrington fixation rods</td>
<td></td>
</tr>
<tr>
<td>Treatment for, or evidence of, any cancer other than nonmelanoma skin cancer or carcinoma in situ (with the exception of transitional cell carcinoma in situ or bladder carcinoma in situ) in the 5 years prior to eligibility assessment</td>
<td></td>
</tr>
<tr>
<td>History of lung cancer</td>
<td></td>
</tr>
<tr>
<td>History of removal of any portion of the lung, excluding needle biopsy</td>
<td></td>
</tr>
<tr>
<td>Requirement for home oxygen supplementation</td>
<td></td>
</tr>
<tr>
<td>Participation in another cancer screening trial</td>
<td></td>
</tr>
<tr>
<td>Participation in a cancer prevention study, other than a smoking cessation study</td>
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<tr>
<td>Unexplained weight loss of more than 15 pounds in the 12 months prior to eligibility assessment</td>
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</tr>
<tr>
<td>Recent hemoptysis</td>
<td></td>
</tr>
<tr>
<td>Pneumonia or acute respiratory infection treated with antibiotics in the 12 weeks prior to eligibility assessment</td>
<td></td>
</tr>
<tr>
<td>Chest CT examination in the 18 months prior to eligibility assessment</td>
<td></td>
</tr>
</tbody>
</table>
# Pulmonary Pearls

<table>
<thead>
<tr>
<th>NODULE SIZE</th>
<th>LOW-RISK PATIENT</th>
<th>HIGH-RISK PATIENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 4 mm</td>
<td>No follow-up needed</td>
<td>• CT at 12 months • If stable, no further follow-up</td>
</tr>
<tr>
<td>&gt;4 ≤ 6 mm</td>
<td>• CT at 12 months • If stable, no further follow-up</td>
<td>• Initial CT at 6-12 months • If stable, repeat CT at 18-24 months</td>
</tr>
<tr>
<td>&gt;6 ≤ 8 mm</td>
<td>• Initial CT at 6-12 months • If stable, repeat CT at 18-24 months</td>
<td>• Initial CT at 3-6 months • If stable, repeat CT at 9-12 months and 24 months</td>
</tr>
<tr>
<td>&gt; 8 mm</td>
<td>• CT at 3, 9, and 24 months • Consider PET or biopsy</td>
<td>• CT at 3, 9, and 24 months • Consider PET or biopsy</td>
</tr>
</tbody>
</table>

**LOW RISK** = minimal or absent history of smoking or other known risk factors.

**HIGH RISK** = history of smoking or other known risk factors.
Pulmonary Pearls

- Thank you for your attention!
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