Use of Population Health Data to Plan and Evaluate Medical Education Initiatives – one example

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AAMC/ SACME Research Workshop
Boston, MA
November 6, 2009
Relevant to Learning Objectives

- Articulate a rationale for using population health data for CME needs assessments (#1)
- Integrate population health data with data and information from other sources to make decisions regarding program planning priorities (#2)
- Identify existing data sources (#3)
- Define questions to be answered (#4)
- Select data (#5)
- Do basic analyses to assess differences by key demographic variables (#7)
- Be able to identify collaborators who can assist (#8)
- Describe process and rationale in a grant proposal (#12)
Disclosure

- Have no relevant personal financial relationships to disclose

- This project was supported by educational grants from Pfizer and Boehringer Ingelheim
Evidence Based Diagnosis and Management of COPD in the Primary Care Setting
U Penn COPD PI CME Initiative
Acknowledgements

Major partners on this project:

- Our Faculty – G. Tino, F. Leone, R. Morrow
- NetHealth
- Outcomes, Inc.
- Medical Writer D. Gurley
- QI Content Advisor J. Foster
- NJ and WV AHACs, AAFP PA, ACP and NHLBI NY, AOA OH
Questions we Asked

- Are there national needs for additional education in COPD
  - What are the regional, local, individual needs to be addressed
- The best ways to address each of those
- The most effective educational efforts we can provide to begin to change competence, practice, pt. outcomes
- Can we measure the change/outcomes
Chronic obstructive pulmonary disease (COPD) is currently the 4\textsuperscript{th} leading cause of death in the United States (US) and is predicted to be the 3\textsuperscript{rd} leading cause of death in males and females by the year 2020. Though 12 million adults, ages 25 and older, have the diagnosis of COPD, an additional 12 million are likely to have the disease but do not know it. In addition to the effect’s on the individual patient’s health and quality of life, COPD cost the US $32.1 billion in direct and indirect costs in 2002. (NHLBI, NIH)

From 2000 to 2005, the annual number of deaths of persons aged >25 years from COPD increased 5% among men, and the number of deaths was higher in 2005 than in 2004 (CDC)
New 2006 updated **GOLD guidelines** outlines 4 components for the proper management of COPD:

- Assess and monitor disease
- Reduce risk factors
- Manage stable COPD
- Manage exacerbations

PCPs treat the vast majority of patients with COPD but only

- 45% of survey respondents were unaware of GOLD or ATS-ERS guidelines and 30% of those who were aware did not use them in clinical decision-making
- 36% lack the ability to perform spirometry testing in their practice; an additional 22% have spirometry available, but do not routinely use it, 60% rated their recent exposure to CME on COPD as inadequate *(COPD Foundation and Outcomes survey)*
Conclusions No. 1

Based on initial national gap and needs analysis we proposed an integrated educational strategy:

- **Phase I:** Comprehensive Educational Needs Assessment Analysis
- **Phase II:** Selection of EB Quality Measures Indicators, Development of PI CME Web Module
- **Phase III:** Need more information to inform the edu strategy process, propose Live Small Group Workshop Series
- **Phase IV:** Need more information to inform the process, propose Online Patient Case Studies
- **Phase V:** Outcomes Assessment and Analysis
Phase I: Comprehensive Educational Needs Assessment Analysis

- **Purpose**
  - **Mapping:** Identify geographic variations of COPD and healthcare provider distribution in order to **effectively plan educational activities** on COPD.
  - **Survey:** Identify gaps in knowledge, competence and practice in managing COPD relative to **established performance measures for educational focus (PI CME)**.

Mapping
Methodology and Sources of Data

- Geographic Information System (GIS) mapping software utilized to create maps
  - Overlay layers of information to explore possible relationships and identify geographic clusters
  - States examined: New York, Ohio, Pennsylvania, West Virginia, New Jersey

- Sources of information
  - Center for Disease Control and Prevention (CDC)
    - National Center for Health Statistics
  - U.S. Census Bureau
    - Population Estimates Program
  - AMA Master File
COPD Mortality Rates – New York
COPD Mortality Rates – Ohio

COPD Mortality Rates – Pennsylvania

COPD Mortality Rates for Pennsylvania 1999-2005

- 34 PCPs
- 3 PUL
- 2 PCPs, 0 PUL
- 0 PCPs, 0 PUL

COPD Mortality Rates – West Virginia

COPD Mortality Rates for West Virginia 1999-2005

- 3 PCPs, 0 PUL
- 9 PCPs, 0 PUL
- 6 PCPs, 1 PUL
- 4 PCPs, 0 PUL
- 32 PCPs, 1 PUL

COPD Mortality Rates – New Jersey

COPD Mortality Rates for New Jersey
1999-2005

COPD Mortality Rates – Combined with Pulmonologist Distribution

COPD Mortality Rates for New Jersey, New York, Ohio, West Virginia and Pennsylvania 1999-2005

AMA Masterfile, 2008
Distribution of Physicians
Data about the region

- New Jersey (23:1 ratio)
  - 5,860 PCPs
  - 258 Pulmonologists
- New York (26:1 ratio)
  - 14,216 PCPs
  - 527 Pulmonologists
- Ohio (37:1 ratio)
  - 7,395 PCPs
  - 199 Pulmonologists
- Pennsylvania (29:1 ratio)
  - 9,161 PCPs
  - 312 Pulmonologists
- West Virginia (30:1 ratio)
  - 1,175 PCPs
  - 39 Pulmonologists
Data about the region

- There are **146 counties** across the 5 state regions with **ZERO pulmonologists**
  - 36.9% are in OH (56 counties)
  - 28.7% are in WV (42 counties)
  - 18.5% are in PA (27 counties)
  - 14.3% are in NY (21 counties)

- In these same regions there are **2,482 primary care physicians**
Data about the region

The Top 20 counties with the greatest number of PCPs and ZERO pulmonologists

<table>
<thead>
<tr>
<th>State</th>
<th>County</th>
<th>PCPs</th>
</tr>
</thead>
<tbody>
<tr>
<td>OH</td>
<td>Warren</td>
<td>134</td>
</tr>
<tr>
<td>OH</td>
<td>Clermont</td>
<td>77</td>
</tr>
<tr>
<td>OH</td>
<td>Wood</td>
<td>77</td>
</tr>
<tr>
<td>PA</td>
<td>Bradford</td>
<td>71</td>
</tr>
<tr>
<td>WV</td>
<td>Wood</td>
<td>57</td>
</tr>
<tr>
<td>OH</td>
<td>Licking</td>
<td>51</td>
</tr>
<tr>
<td>OH</td>
<td>Columbiana</td>
<td>50</td>
</tr>
<tr>
<td>OH</td>
<td>Ross</td>
<td>49</td>
</tr>
<tr>
<td>NJ</td>
<td>Sussex</td>
<td>48</td>
</tr>
<tr>
<td>PA</td>
<td>Fayette</td>
<td>46</td>
</tr>
<tr>
<td>PA</td>
<td>Adams</td>
<td>44</td>
</tr>
<tr>
<td>OH</td>
<td>Clinton</td>
<td>43</td>
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<tr>
<td>PA</td>
<td>Columbia</td>
<td>39</td>
</tr>
<tr>
<td>OH</td>
<td>Tuscarawas</td>
<td>39</td>
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<tr>
<td>WV</td>
<td>Putnam</td>
<td>37</td>
</tr>
<tr>
<td>NY</td>
<td>Madison</td>
<td>36</td>
</tr>
<tr>
<td>OH</td>
<td>Athens</td>
<td>35</td>
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<tr>
<td>OH</td>
<td>Huron</td>
<td>35</td>
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<tr>
<td>WV</td>
<td>Jefferson</td>
<td>34</td>
</tr>
<tr>
<td>PA</td>
<td>Union</td>
<td>32</td>
</tr>
</tbody>
</table>
Phase II and III: Validated Need at the Regional Population Level, Selection of Measures and Informed the Educational Design and Content

- Validated regional needs for PCPs in the 5 states to improve diagnosis and management of Pts with COPD
- Standard CME won’t do it
- Confirmed Need for Comprehensive PI CME
  - Selected 10 EB performance measures measures in 7 areas from the AMA PCPI COPD set

- Identified regional areas for live workshops (one in each state)
- Confirmed need for mixed edu formats strategy
- Developed standardized assessment tool to be used across all elements
One Comprehensive Assessment Instrument Developed

- 28 questions case-based vignettes combining
  - MCQs
  - Confidence questions
  - Barriers questions
  - Practice system questions
  - Demographic questions
Continuous Assessment Model

- **Baseline** in targeted population – serve as control
- Pre- and post-assessment in **live workshops**
- Pre- and post- as **self assessment** for PI CME to precede **assessment in practice-chart reviews**
- Pre- and post-test for **online modules**
- Overall **analysis** across edu continuum comparing with baseline/no CME to any CME; sub analysis of 3 educational formats
- Pre- and post-education in each format cumulative
- Pre-and post-education **per learner per format**
- Pre- and post-PI individual PCP’s patient data
Purpose of Regional Baseline Assessments

- Document gaps in knowledge and competence as unmet educational needs on an independent basis
- Provide information to understand the practice patterns of community-based healthcare professionals relative to established performance measures
- Establish baseline data for examining effectiveness of educational programming
- Monitor trends in practice patterns across time and educational formats
Methodology

- **Initial Survey:**
  - Case-based survey instrument distributed via email and fax to physicians in New York, Pennsylvania, New Jersey, Ohio, and West Virginia

- **Target groups and sample size:**
  - Primary care physicians (PCPs) (n= 170)
    - Family physicians (n= 88)
    - Internal medicine (n= 82)
  - Data was collected from March 11 – 20, 2009 via email and fax
  - The survey was pilot tested prior to distribution

Survey Results
## Demographics of Survey Sample

<table>
<thead>
<tr>
<th>Demographic Characteristics</th>
<th>Primary Care n = 170</th>
</tr>
</thead>
<tbody>
<tr>
<td>Years in practice (mean)</td>
<td>23 years</td>
</tr>
<tr>
<td>Patients seen per week with COPD (mean)</td>
<td>20 patients</td>
</tr>
<tr>
<td>Practice location</td>
<td>Urban: 28%</td>
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<tr>
<td></td>
<td>Suburban: 57%</td>
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<td></td>
<td>Rural: 15%</td>
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<tr>
<td>Present employment</td>
<td>Solo practice: 32%</td>
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<td></td>
<td>Group practice: 61%</td>
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<td></td>
<td>Other: 7%</td>
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</table>

Note: No significant differences between the demographic characteristics of the sample and the overall population of primary care physicians from data compiled by the American Medical Association, 2008 were found.
Targeted Clinical Recommendations

- **Spirometry**
  - Spirometry should be performed in all patients suspected of having COPD. This is necessary for diagnosis, assessment of severity of the disease, and for following the progress of the disease.
  - For the diagnosis and assessment of COPD, spirometry is the gold standard as it is the most reproducible, standardized, and objective way of measuring airflow limitation.

- **Assessment of symptoms**
  - Symptoms and objective measures of airflow should be monitored for development of complications and to determine when to adjust therapy. Follow-up visits should include a discussion of new or worsening symptoms.

- **Smoking assessment**
  - Periodic screening for tobacco use is recommended for all patients.

Measures used were drawn from Physician Consortium for Performance Improvement® Chronic Obstructive Pulmonary Disease Performance Measurement Set 2006
Targeted Clinical Recommendations

- **Smoking cessation intervention**
  - Tobacco cessation counseling is recommended for all patients who smoke.
  - Quitting smoking can slow the progressive loss of lung function and can reduce symptoms at any point in time.

- **Inhaled bronchodilator therapy**
  - Bronchodilator medications are central to the symptomatic management of COPD.

- **Recommendation of influenza immunization**
  - Influenza vaccines can reduce serious illness and death in patients with COPD by about 50%.

- **Assessment of pneumococcus immunization status**
  - All patients with chronic diseases of the pulmonary system should be vaccinated.

Measures used were drawn from Physician Consortium for Performance Improvement® Chronic Obstructive Pulmonary Disease Performance Measurement Set 2006
Spirometry in COPD Assessment

Presence of spirometer at PCP practice site

- Yes: 51%
- No: 49%

n = 170
Spirometry in COPD Assessment

Likelihood of ordering spirometry for a smoker with comorbidities incidentally reporting chronic productive cough without dyspnea

- Not likely (1-3)
- Somewhat likely (4-7)
- Very likely (8-10)

n = 170

15% 44% 41%
Spirometry in COPD Assessment

Evaluation of a chronic smoker without other medical history who has chronic morning cough and production of clear sputum

n = 170

- Peak flow measurement: 3%
- Spirometry without bronchodilator administration: 5%
- Spirometry pre- and post-bronchodilator administration: 81%
- Chest CT: 6%
- Would not order additional studies at this time: 5%
Spirometry in COPD Assessment

Frequency of evaluation by spirometry in patients over age 45 presenting for a “check-up” who report cardinal COPD symptoms

Percent of time spirometry is ordered

- <=25%: 29%
- 26% - 50%: 25%
- 51% - 75%: 18%
- 76% - 90%: 19%
- 91% to 100%: 9%

n = 170
Spirometry in COPD Assessment

Interpretation of spirometry measurements pre- and post-bronchodilator administration

- Normal pulmonary function: 1%
- Mild obstruction without reversibility: 22%
- Mild obstruction with significant reversibility: 47%
- Moderate obstruction without reversibility: 15%
- Moderate obstruction with significant reversibility: 16%

n = 170
Assessment of Respiratory Symptoms

Frequency of assessing recent respiratory symptoms in patients presenting for routine COPD follow-up

<table>
<thead>
<tr>
<th>Interval</th>
<th>Percent</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;=25%</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>26% - 50%</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>51% - 75%</td>
<td>8%</td>
<td>8%</td>
</tr>
<tr>
<td>76% - 90%</td>
<td>20%</td>
<td>20%</td>
</tr>
<tr>
<td>91% to 100%</td>
<td>67%</td>
<td>67%</td>
</tr>
</tbody>
</table>

n = 170

Percent of time respiratory symptoms are assessed at follow-up visit
Assessment of Respiratory Symptoms

Frequency of assessing current activity level and exercise tolerance in patients presenting for routine COPD follow-up

Percent of time current activity level/exercise tolerance is assessed at follow-up visit

n = 170
Assessment of Smoking Status

Frequency of assessing current smoking status in patients with COPD and history of recent smoking

- 81% assess smoking status
- 80% 100%
- 2% 12% 5% 1%
- 0% 20% 40% 60%
- <=25% 26% - 50% 51% - 75% 76% - 90% 91% to 100%

n = 170

Percent of time current smoking status is assessed
Smoking Cessation Intervention

Frequency of providing smoking cessation guidance to patients with COPD and recent smoking

Percent of time patients are provided smoking cessation guidance

n = 170
Treatment of COPD

Initial pharmacologic intervention for a patient with newly diagnosed COPD and associated symptoms

- Would not recommend any medication at this time: 14%
- Inhaled short-acting bronchodilator: 47%
- Oral theophylline: 0%
- Inhaled corticosteroid: 39%

n = 170
Treatment of COPD

Therapeutic recommendations for a patient who smokes with acute worsening of chronic productive cough and dyspnea

- **Empiric antibiotics**: 76% (n = 170)
- **Inhaled corticosteroid**: 73%
- **Long-acting bronchodilator inhaler**: 38%
- **Oral leukotriene modifier**: 23%
- **Short-acting bronchodilator inhaler**: 8%
Treatment of COPD

Management for a patient who smokes and has recent respiratory illness, now improved, but with persisting exertional dyspnea despite 2 weeks of short-acting beta-agonist therapy

Change to a short-acting anti-cholinergic: 1%  
Change to combination short-acting beta-agonist/anti-cholinergic: 12%  
Add a long-acting anti-cholinergic: 25%  
Add an inhaled steroid: 46%  
Add oral theophylline: 1%  
Maintain present regimen for now: 15%

n = 170
Immunization Strategy in COPD

Frequency of recommending annual flu vaccination in a patient presenting for routine COPD follow-up

- 2% of time annual flu vaccine recommended
- 88% of time annual flu vaccine recommended
- n = 170

- <=25%
- 26% - 50%
- 51% - 75%
- 76% - 90%
- 91% to 100%
Pneumococcus Immunization Status

Additional evaluation in a patient recently diagnosed with moderate COPD

- Review pneumococcal immunization status
- Place PPD test
- Order arterial blood gas
- Evaluate home exposure to pets and other allergens

n = 170
Exercise Training

Recommended non-pharmacologic intervention in a patient with recently diagnosed moderate COPD

- Use an air cleaner in the bedroom: 14%
- Increase dietary protein intake to at least 1.2 grams/kg: 2%
- Start exercise training: 84%
- Increase omega-3 fatty acid intake: 0%

n = 170
Confidence in diagnosing and managing COPD

- Counseling patients with COPD to quit smoking: 24% Not confident, 76% Very confident
- Adequately addressing COPD in patients with significant comorbidities: 33% Not confident, 67% Very confident
- Choosing an appropriate therapeutic regimen to treat persistent COPD symptoms: 40% Not confident, 59% Very confident
- Eliciting subtle respiratory symptoms suggestive of COPD in at-risk patients: 59% Not confident, 39% Very confident
- Interpreting pre- and post-bronchodilator FEV1 and FVC data: 7% Not confident, 59% Very confident
Barriers

Significance of various barriers in the effective management of COPD

- Presence of competing co-morbid conditions (CAD, DM, depression): 23% - Not significant (1-3), 50% - Somewhat significant (4-7), 27% - Very significant (8-10)
- Inadequate resources to support smoking cessation: 34% - Not significant (1-3), 48% - Somewhat significant (4-7), 18% - Very significant (8-10)
- Limited access to spirometry testing: 46% - Not significant (1-3), 39% - Somewhat significant (4-7), 15% - Very significant (8-10)
- Uncertainty about how to elicit subtle symptoms of COPD: 34% - Not significant (1-3), 52% - Somewhat significant (4-7), 14% - Very significant (8-10)
- Difficulty interpreting spirometry test results: 41% - Not significant (1-3), 48% - Somewhat significant (4-7), 12% - Very significant (8-10)
Summary

PERFORMANCE MEASURES

Spirometry in at-risk patient with COPD symptoms
- Spirometry is underutilized in at-risk patients with cardinal COPD symptoms
- Most physicians given spirometry data have difficulty gauging the severity and reversibility of pulmonary obstruction. Only 1 in 3 physicians is highly confident in interpreting spirometry data.

Respiratory Symptom Assessment
- During a routine COPD follow-up visit, 2 of 3 physicians consistently assess recent respiratory symptoms and only 1 in 3 assess current activity level and exercise tolerance.

Smoking Assessment and Intervention
- 8 in 10 physicians seeing a patient with COPD consistently assess current smoking status and advise the patient to quit smoking. Physicians are less consistent in providing smoking cessation guidance.

Use of Inhaled Bronchodilators
- For a patient with COPD and mild exertional dyspnea, 1 in 2 PCPs would choose a bronchodilator as initial therapy.
- More than 1 in 3 physicians consider inhaled steroids as first-line COPD therapy and as add-on therapy for COPD symptoms uncontrolled by a short-acting bronchodilator.
Summary

Immunization
- 9 of 10 PCPs consistently recommend annual flu vaccine at routine follow-up visits to patients with COPD. A majority would also assess pneumococcal status in a patient recently diagnosed with COPD.

OTHER ISSUES IN COPD CARE

Detecting Early COPD
- Few PCPs consider uncertainty about how to elicit subtle COPD symptoms to be a major barrier to effective management, yet only 1 in 3 PCPs feels highly confident in eliciting early COPD symptoms in at-risk patients.

COPD with Comorbidities
- Although most PCPs report high confidence in managing COPD in patients with comorbidities, 1 in 4 perceive competing comorbidities as a major barrier to effective COPD management.

Assessing Need for $O_2$ Therapy
- Only 1 in 3 PCPs would order an arterial blood gas for a patient with marked symptom progression, functional decline and worsening pulmonary function by spirometry.
Conclusions No. 3: Recommendations Inform Content Development

- Increase recognition among PCPs of the importance of spirometry in assessing all patients suspected of having COPD
- Provide further education on conducting and interpreting spirometry measurements
- Improve awareness among PCPs of the central role of bronchodilator medications in the symptomatic management of COPD
- Emphasize the benefit of intensive smoking cessation guidance for patients with COPD
- Enhance recognition among PCPs of symptoms indicating a possible need for long-term oxygen therapy
Educational Interventions

- 5 regional live workshops
- 5 web-based modules
- PI web-based tool
  - Self-assessment
  - Assessment in practice
  - Detailed feedback
  - Improvement plan
  - Interventions and Strategies for improvement, (new content, tools and resources)
- Reassessment
- Review of impact
- New improvement cycle
Content: 1st Developed-Live

- Epidemiology and Pathophysiology of COPD
- Clinical Performance Measures in COPD and Performance Improvement Overview
- Hands-On Spirometry: Preparation, Testing, and Interpretation
- Pharmacological and Non-Pharmacological Management of COPD
- Successful Smoking Cessation Strategies
Content: 2nd Developed-Online

- Epidemiology and Pathophysiology of COPD
- Spirometry: Preparation, Testing, and Interpretation
- Pharmacological and Non-Pharmacological Management of COPD
- Successful Smoking Cessation Strategies
- Pt-Physician Demonstration Case: Mild to Moderate COPD
- Pt-Physician Demonstration Case: Severe COPD
Content: 3rd Developed-PI EB Tools and Resources

- Within PI Part “B”
  - Guidelines
  - EB literature
  - Clinical Tools
  - Practice Management Strategies

- Based on measures and individual performance
Quality Indicators


<table>
<thead>
<tr>
<th>Clinical Recommendation</th>
<th>Performance Measure</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Spirometry - Spirometry should be performed in all patients suspected of COPD. This is necessary for diagnosis, assessment of severity of the disease and for following the progress of the disease.</td>
<td>Percentage of patients aged 18 years and older with a diagnosis of COPD who had spirometry results documented.</td>
<td>1,2</td>
</tr>
<tr>
<td>2. Assessment of symptoms - Symptoms and objective measures of airflow should be monitored for development of complications and to determine when to adjust therapy. Follow-up visits should include a discussion of new or worsening symptoms.</td>
<td>Percentage of patients aged 18 years and older with a diagnosis of COPD who where assessed for COPD symptoms at least annually.</td>
<td>1</td>
</tr>
<tr>
<td>3. Smoking Assessment - Periodic screening for tobacco use is recommended for all patients.</td>
<td>Percentage of patients aged 18 years and older with a diagnosis of COPD who were queried about smoking at least annually.</td>
<td>1,2</td>
</tr>
<tr>
<td>4. Smoking Cessation Intervention - Tobacco cessation counseling is recommended for all patients who smoke.</td>
<td>Percentage of patients aged 18 years and older with a diagnosis of COPD identified as smokers who received a smoking cessation intervention at least annually.</td>
<td>1,2</td>
</tr>
<tr>
<td>5. Inhaled Bronchodilator Therapy - Bronchodilator modifications are</td>
<td>Percentage of patients aged 18 years and older</td>
<td>1,2</td>
</tr>
</tbody>
</table>
COPD Evidence-based PIM - Add Chart

Patient ID: Please record this Patient ID to enable your access to this data for your use only.

1. Patient Eligibility Criteria
1a. Have you seen this patient two or more times in the last 12 months? Yes No
1b. Does this patient have a diagnosis of COPD? Yes No

2. Date of Last Office Visit

3. What is your role in managing this patient's COPD?
   - Sole or usual provider of COPD care
   - Co-manage COPD with other PCP
   - Co-manage COPD with NP or PA
   - Co-manage COPD with pulmonologist
<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. When were respiratory symptoms last documented on this patient?</td>
<td>Month, Year, Not Documented</td>
</tr>
<tr>
<td>At this visit, which symptoms had the patient been experiencing recently?</td>
<td>Yes, No, Not Documented</td>
</tr>
<tr>
<td>Dyspnea</td>
<td></td>
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<tr>
<td>Chronic cough and/or sputum production</td>
<td></td>
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<tr>
<td>Wheezing</td>
<td></td>
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<tr>
<td>Reduced exercise tolerance</td>
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<tr>
<td>Decrease in usual activities due to COPD symptoms</td>
<td></td>
</tr>
<tr>
<td>6. When was the patient last queried about smoking?</td>
<td>Month, Year, Patient Never Smoked, Not Documented</td>
</tr>
<tr>
<td>7. Does the patient currently smoke?</td>
<td>Yes, No, Not Documented</td>
</tr>
<tr>
<td>8. When was the patient last provided a smoking cessation intervention?</td>
<td>Month, Year, Never, Not Documented</td>
</tr>
<tr>
<td>9. When was spirometry last performed on this patient?</td>
<td>Month, Year, Not Documented</td>
</tr>
</tbody>
</table>
9. When was spirometry last performed on this patient? **Rationale**

<table>
<thead>
<tr>
<th>month</th>
<th>year</th>
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</table>

- **9a.** What is the patient's **FEV₁**?
- **9b.** What is the patient's **FEV₁/FVC**?
- **9c.** If spirometry not performed on this patient, which of the following best approximates this patient's COPD severity?

| Cough and/or intermittent symptoms that don't notably impair usual activities | ☐ |
| Cough and/or intermittent symptoms that don't notably impair usual activities | ☐ |
| Symptoms impair moderate activities (mowing lawn, brisk walking) | ☐ |
| Symptoms impair light activities (moderately-paced walking, housekeeping chores) | ☐ |
| Symptoms impair usual daily activities (dressing, bathing) | ☐ |

10. **Is the patient currently prescribed an inhaled bronchodilator?**
<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cough and/or intermittent symptoms that don't notably impair usual activities</td>
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<tr>
<td>Symptoms impair moderate activities (mowing lawn, brisk walking)</td>
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<tr>
<td>Symptoms impair light activities (moderately-paced walking, housekeeping chores)</td>
<td></td>
<td></td>
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<tr>
<td>Symptoms Impair usual daily activities (dressing, bathing)</td>
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<tr>
<td>10. Is the patient currently prescribed an inhaled bronchodilator?</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Rationale</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Did the patient receive a flu vaccine within the last 12 months?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rationale</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Was the patient's pneumococcus immunization status assessed within the last 12 months?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rationale</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. During the past 12 months, has room air oxygen saturation been measured on this patient when COPD was stable?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If yes, did the patient have an oxygen saturation &lt;= 88% and/or a PaO2 &lt;= 55 mm Hg?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If yes, has long-term oxygen therapy been prescribed for this patient?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rationale</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Was the patient recommended exercise therapy?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rationale</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Report Results - My Performance Summary - BASELINE**

Below are the results of your first chart abstraction. As you review this report, take particular note of any areas where you did not perform as well as expected or performed below your peers. You may want to specifically target these for improvement.

Click the DETAILED FEEDBACK link beside each measure to identify other potential influences on your performance. This information may suggest strategies for performance improvement.

You may click on the VIEW DETAILED REPORT tab for a comprehensive assessment.

<table>
<thead>
<tr>
<th>Clinical Recommendation</th>
<th>Performance Measure</th>
<th>Number of Charts Considered</th>
<th>My Practice Assessment (Chart Audit)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Spirometry</strong> - Spirometry should be performed in all patients suspected of COPD. This is necessary for diagnosis, assessment of severity of the disease and for following the progress of the disease.</td>
<td>Percentage of patients aged 18 years and older with a diagnosis of COPD who had spirometry results documented.</td>
<td>10</td>
<td><strong>My Data</strong> 50%, <strong>My Peers</strong> 65%</td>
</tr>
<tr>
<td>2. <strong>Assessment of symptoms</strong> - Symptoms and objective measures of airflow should be monitored for development of complications and to determine when to adjust therapy. Follow-up visits should include a discussion of new or worsening symptoms.</td>
<td>Percentage of patients aged 18 years and older with a diagnosis of COPD who were assessed for COPD symptoms at least annually.</td>
<td>10</td>
<td><strong>My Data</strong> 50%, <strong>My Peers</strong> 40%</td>
</tr>
</tbody>
</table>
Report Results - Detailed Feedback

Below is an analysis of the results from your self-assessment.

1. Spirometry - Self Assessment

<table>
<thead>
<tr>
<th>Spirometry to Confirm Diagnosis</th>
<th>Your Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Likelihood of ordering spirometry for 61-year-old at-risk man incidentally reporting chronic productive cough</td>
<td>Somewhat Likely (your rating 6 / 10)</td>
</tr>
</tbody>
</table>

**ASSESSMENT:** Patients with early COPD symptoms may not report them without clinician cueing. By obtaining spirometry on these patients you can facilitate early COPD detection and intervention.

<table>
<thead>
<tr>
<th>Evaluation of 48-year-old at-risk woman with chronic productive cough and exertional dyspnea</th>
<th>Peak flow measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ASSESSMENT:</strong> This patient's age, modest smoking history and potential occupation exposures in combination put her at risk for developing COPD if she is genetically susceptible. Given her chronic productive cough and exertional dyspnea, the diagnosis of COPD should be considered.</td>
<td></td>
</tr>
</tbody>
</table>

Spirometry is the optimal test to determine if COPD is present. Spirometry performed before and after bronchodilator administration helps distinguish COPD from asthma. Peak flow measurement is a reasonable rapid screen for low air flow, but is not diagnostic. The patient does not have any indications for chest CT.
## Intervention Strategies

### COPD Evidence-based PIM - Improvement Resources - Microsoft Internet Explorer

[Open link](http://www.copd-pilme.org/strategies.asp)

<table>
<thead>
<tr>
<th>Intervention Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Spirometry Testing and Interpretation</strong></td>
</tr>
<tr>
<td>Learn more about when and how to use spirometry to improve COPD care</td>
</tr>
<tr>
<td>Utilize screening questionnaires to facilitate detection of early COPD</td>
</tr>
<tr>
<td>Establish a lower threshold for spirometry testing when at-risk patients report early COPD symptoms</td>
</tr>
<tr>
<td>Refine spirometry interpretation skills</td>
</tr>
<tr>
<td>Purchase spirometer and begin in-office spirometry testing</td>
</tr>
<tr>
<td>Review or update in-office spirometry testing procedures</td>
</tr>
</tbody>
</table>

### Assessment of Symptoms

<table>
<thead>
<tr>
<th>Assessment of Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learn more about cardinal COPD symptoms and how to monitor them</td>
</tr>
<tr>
<td>Implement tools to assess COPD Symptoms i.e. Questionnaire, Checklist, Standing orders, BOOS</td>
</tr>
</tbody>
</table>

### Smoking Assessment and Cessation

<table>
<thead>
<tr>
<th>Smoking Assessment and Cessation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learn more about smoking cessation treatment</td>
</tr>
<tr>
<td>Refine smoking cessation counseling skills</td>
</tr>
<tr>
<td>Implement tools to support intervention planning during office visits</td>
</tr>
<tr>
<td>Treat smoking status as a vital sign</td>
</tr>
<tr>
<td>Implement flags for charts of current smokers</td>
</tr>
<tr>
<td>Change when and how smoking status and cessation is discussed with COPD patients</td>
</tr>
</tbody>
</table>
COPD - Develop/Approve Improvement Plan

Listed below are the Performance Measures you chose to target in your Improvement Plan. For each measure, enter a realistic goal that you would like to work toward.

You should then reflect on strategies to achieve your goals. It is suggested that you all or especially relevant portions of Name of UPenn COPD Program series as well as the case studies as part of your Improvement Plan. Ideas for additional strategies that you may want to incorporate are listed below.

If you do complete only a part of your improvement plan at this session, click the Save button at the bottom of the screen to save your work and complete the plan at a later time.

When you have completed your Improvement Plan, click the Submit Improvement Plan and begin implementing your selected course of action. You should repeat the self-assessment and chart audit within 3-6 months to gauge your progress.

You may view your Improvement Plan at any time to access the Name of COPD education program name as well as the many resources available with this program to help implement your plan.

1. Performance Measures Selected for Improvement:

<table>
<thead>
<tr>
<th>Quality Indicator</th>
<th>My Practice Assessment (Chart Audit)</th>
<th>My Peers' Data</th>
<th>My Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Spirometry</strong> - Spirometry should be performed in all patients suspected of COPD. This is necessary for diagnosis, assessment of severity of the disease and for following the progress of the disease. (Percentage of patients aged 18 years and older with a diagnosis of COPD who had spirometry results documented.) Detailed Feedback</td>
<td>30 %</td>
<td>43 %</td>
<td>[ ]</td>
</tr>
<tr>
<td><strong>2. Assessment of Symptoms</strong> - Symptoms and objective measures of airflow should be monitored for development of complications and to determine when to adjust therapy. Follow-up visits should include a discussion of new or worsening symptoms. (Percentage of patients aged 18 years and older with a diagnosis of COPD who were assessed for COPD symptoms at least annually.) Detailed Feedback</td>
<td>80 %</td>
<td>83 %</td>
<td>[ ]</td>
</tr>
</tbody>
</table>
Interventions Library

Assessment of Symptoms

2. Epidemiology and Pathophysiology of COPD. U-Penn - Dr. Gregory Timo. [Link]
3. Cases in COPD - Mild-moderate - U-Penn. [Link]
4. ATS/ERS Standards for the Diagnosis and Management of Patients with COPD. [Link]

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Smoking Assessment and Cessation

1. Successful Smoking Cessation Strategies - U-Penn - Dr. Frank Leame. [Link]
3. You Can Quit Smoking-Personalized Quit Plan. [Link]
4. Preventive Services - the Community Guide. [Link]
7. 5A’s Flow Chart. [Link]
Impact Statement

COPD - Develop/Approve Impact Statement

The information below represents aggregated data about your practice that you submitted throughout your participation in this project. Listed below are the Quality Indicators you chose to target in your Improvement Plan. For each measure, you entered a goal that you would like to work toward. Your initial assessment, your improved assessment:

1. Performance Measures Selected for Improvement:

<table>
<thead>
<tr>
<th>Quality Indicator</th>
<th>My Baseline Assessment</th>
<th>My Improved Assessment</th>
<th>My Goal</th>
<th>My Change</th>
<th>My Peers' Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Spirometry - Spirometry should be performed in all patients suspected of COPD. This is necessary for diagnosis, assessment of severity of the disease and for following the progress of the disease. (Percentage of patients aged 18 years and older with a diagnosis of COPD who had spirometry results documented)</td>
<td>70%</td>
<td>60%</td>
<td>60%</td>
<td>+30%</td>
<td>45%</td>
</tr>
<tr>
<td>2. Assessment of Symptoms - Symptoms and objective measures of airflow should be monitored for development of complications and to determine when to adjust therapy. Follow-up visits should include a discussion of new or worsening symptoms. (Percentage of patients aged 18 years and older with a diagnosis of COPD who are assessed for COPD symptoms at least annually)</td>
<td>80%</td>
<td>55%</td>
<td>63%</td>
<td>-20%</td>
<td>62%</td>
</tr>
<tr>
<td>3. Smoking Assessment - Periodic screening for tobacco use is recommended for all patients.</td>
<td>50%</td>
<td>55%</td>
<td>55%</td>
<td>0%</td>
<td>50%</td>
</tr>
</tbody>
</table>
First Outcomes Results:
Workshops Pre- and Post- Assessment
Matched Learners Analysis
## Use of Spirometry in COPD Diagnosis: Results

Which of the following would you include in your assessment of her respiratory complaints? (select only one)

<table>
<thead>
<tr>
<th></th>
<th>Pre</th>
<th></th>
<th>Post</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Peak flow measurement</td>
<td>9</td>
<td>18.4%</td>
<td>1</td>
<td>2.0%</td>
</tr>
<tr>
<td>Spirometry without bronchodilator administration*</td>
<td>5</td>
<td>10.2%</td>
<td>22</td>
<td>44.9%</td>
</tr>
<tr>
<td>Spirometry pre- and post-bronchodilator administration*</td>
<td>34</td>
<td>69.4%</td>
<td>26</td>
<td>53.1%</td>
</tr>
<tr>
<td>Chest CT</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Would not order additional studies at this time</td>
<td>1</td>
<td>2.0%</td>
<td>0</td>
<td>.0%</td>
</tr>
<tr>
<td>Total Respondents</td>
<td>49</td>
<td>100.0%</td>
<td>49</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

*p=.002*
Appropriate Therapeutic Approach: Results

Which of the following would you include in your therapeutic recommendations for this patient? (select **ALL** that apply)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Empiric antibiotics*</td>
<td>38</td>
<td>73.1%</td>
</tr>
<tr>
<td>Short-acting bronchodilator inhaler*</td>
<td>48</td>
<td>92.3%</td>
</tr>
<tr>
<td>Long-acting bronchodilator inhaler</td>
<td>24</td>
<td>46.2%</td>
</tr>
<tr>
<td>Inhaled corticosteroid</td>
<td>32</td>
<td>61.5%</td>
</tr>
<tr>
<td>Oral leukotriene modifier</td>
<td>6</td>
<td>11.5%</td>
</tr>
<tr>
<td><strong>Total Respondents</strong></td>
<td>52</td>
<td>--</td>
</tr>
</tbody>
</table>

p=.024
Confidence in Symptoms Assessment: Results

How confident do you feel in your ability to do each of the following? (select one number for each item)

<table>
<thead>
<tr>
<th>Eliciting subtle respiratory symptoms suggestive of COPD in at-risk patients</th>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not confident (Scale 1-3)</td>
<td>4 8.0% 0 .0%</td>
<td></td>
</tr>
<tr>
<td>Somewhat confident (Scale 4-7)</td>
<td>29 58.0% 21 42.0%</td>
<td></td>
</tr>
<tr>
<td>Very confident (Scale 8-10)</td>
<td>17 34.0% 29 58.0%</td>
<td></td>
</tr>
<tr>
<td>Total respondents</td>
<td>50 100.0% 50 100.%</td>
<td></td>
</tr>
</tbody>
</table>

Mean level of confidence 6.5 7.7

p=.001
Confidence in Spirometry Interpretation: Results

How confident do you feel in your ability to do each of the following? (select one number for each item)

<table>
<thead>
<tr>
<th>Interpreting pre- and post-bronchodilator FEV₁ and FVC data</th>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not confident (Scale 1-3)</td>
<td>13</td>
<td>3</td>
</tr>
<tr>
<td>Somewhat confident (Scale 4-7)</td>
<td>26</td>
<td>23</td>
</tr>
<tr>
<td>Very confident (Scale 8-10)</td>
<td>11</td>
<td>24</td>
</tr>
<tr>
<td><strong>Total respondents</strong></td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td><strong>Mean level of confidence</strong></td>
<td>5.3</td>
<td>7.1</td>
</tr>
</tbody>
</table>

*p=.001*
# Confidence in Therapeutic Management: Results

How confident do you feel in your ability to do each of the following? (select one number for each item)

<table>
<thead>
<tr>
<th>Choosing an appropriate therapeutic regimen to treat persistent COPD symptoms</th>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Count</td>
<td>Percent</td>
</tr>
<tr>
<td>Not confident (Scale 1-3)</td>
<td>3</td>
<td>5.9%</td>
</tr>
<tr>
<td>Somewhat confident (Scale 4-7)</td>
<td>23</td>
<td>45.1%</td>
</tr>
<tr>
<td>Very confident (Scale 8-10)</td>
<td>25</td>
<td>49.0%</td>
</tr>
<tr>
<td><strong>Total respondents</strong></td>
<td><strong>51</strong></td>
<td><strong>100.0%</strong></td>
</tr>
<tr>
<td><strong>Mean level of confidence</strong></td>
<td><strong>7.2</strong></td>
<td></td>
</tr>
</tbody>
</table>

$p=.001$
Results: Effect Size = 0.58

Paired Samples Statistics

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>N</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean_EBR</td>
<td>.6681</td>
<td>47</td>
<td>.19683</td>
<td>.02871</td>
</tr>
<tr>
<td>POSTMean_EBR</td>
<td>.7660</td>
<td>47</td>
<td>.18330</td>
<td>.02674</td>
</tr>
</tbody>
</table>

p=.007; ES=0.58
Summary

- Population health data used to assess needs at national, regional, state, county and individual learner level
- Outcomes will be measured on an individual learner pt population level, in addition to individual and regional competence and performance level
Questions

For questions please contact:

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Office of CME
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215-898-8872