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Impact of an EHR-based tool on COPD Management in Primary Care

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Impact of an EHR-based tool on COPD Management in Primary Care

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Acknowledgements

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COPD was 3rd leading cause of death in US in 2012

Disease exacerbations hospitalization costs: $32.1 billion in 2010, $49 billion by 2020

Preventative measures, disease management key to reducing number of exacerbations
Chronic obstructive lung disease associated with smoking, environmental exposures and genetic traits

GOLD (Global Initiative for Obstructive Lung Disease) evidence-based guidelines recognized as standard for COPD treatment; use in clinical practice inconsistent

Primary Care providers 1st line in assessing/treating patients with respiratory symptoms
Increase provider awareness of GOLD (2017) treatment guidelines

Implement and assess impact of an EHR-based tool on use of GOLD guidelines during Primary Care COPD visits
Rationale

COPD patients seen by Primary Care and/or Pulmonologist

Barriers to GOLD use by providers identified: low familiarity, time constraints (Perez, 2011)

EHR-based tools/guidelines shown to improve outcomes among COPD and DM patients (Tersaki, et al., 2015; O’Connor, et al., 2011)
Ethical Considerations

**Autonomy:**
- decision making by provider maintained base on clinical evaluation of patient symptoms
- Delete/decline use of EHR-based tool

**Equity:**
- All patients at ATB with diagnosis of COPD are eligible to participate in the study.
Methods

Two pronged intervention

Education

EHR-based tool (aka SmartPhrase)

Identified 77 patients with COPD diagnosis (age > 18)

Primary Care office seeing adult patients with varying patient population in Burlington, Vermont over 90 days
Immunization History

<table>
<thead>
<tr>
<th>Administered</th>
<th>Date(s) Administered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tdap Vaccine</td>
<td>03/02/2006</td>
</tr>
<tr>
<td>Tetanus Vaccine, Adsorbed</td>
<td>06/17/2016</td>
</tr>
</tbody>
</table>

Spirometry results:

<table>
<thead>
<tr>
<th>Spirometry Smartform</th>
<th>4/12/2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spirometry Location</td>
<td>Adult Primary Care</td>
</tr>
<tr>
<td>FEV1 (pre-albuterol)</td>
<td>2.77</td>
</tr>
<tr>
<td>FEV1 % pred (pre-albuterol)</td>
<td>73.5</td>
</tr>
<tr>
<td>FVC (pre-albuterol)</td>
<td>4.92</td>
</tr>
<tr>
<td>FVC % pred (pre-albuterol)</td>
<td>97.5</td>
</tr>
<tr>
<td>FEV1/FVC (pre-albuterol) calculated</td>
<td>58.3</td>
</tr>
<tr>
<td>FEV1/FVC % predicted (pre-albuterol) calculated</td>
<td>75.2</td>
</tr>
<tr>
<td>FEV1 (post-albuterol)</td>
<td>2.55</td>
</tr>
<tr>
<td>FVC (post-albuterol)</td>
<td>5.18</td>
</tr>
<tr>
<td>FEV1/FVC (post-albuterol) calculated</td>
<td>49.23</td>
</tr>
<tr>
<td>FEV1 Change</td>
<td>-0.22</td>
</tr>
<tr>
<td>FEV1 % pred Change</td>
<td>-7.94</td>
</tr>
<tr>
<td>FVC Change</td>
<td>0.26</td>
</tr>
<tr>
<td>FVC % pred Change</td>
<td>5.28</td>
</tr>
</tbody>
</table>

GOLD Recommendations:

- Smoking cessation discussed? Yes
- Spirometry ordered? Comment: not today- will repeat with exacerbation or at one year
- Vaccinations up to date (influenza, PCV-13, PPSV23) No and Comment: will continue to discuss at ROV
- Screening required:
  - Lung Cancer: Yes and Comment: CT chest in April and CT PE protocol in Aug 2018
  - Osteoporosis: No and Comment: not at this time
- COPD Action Plan in place? Yes
- Pulmonary rehab referral made? No and Comment: discussed today, though pt declines at this time
- Referral to CHT (Smoking cessation, social worker) or Better Breathers? No and Comment: discussed today, though patient declines at this time
Methods

Primary Outcome:
- COPD Treatment practices
- EHR ease of use

Secondary Outcome:
- Immunization
- Spirometry
- Pulmonary Rehab
## Results

**Provider Survey**

<table>
<thead>
<tr>
<th>Spirometry Frequency</th>
<th>Increased frequency to Wellness and Exacerbation visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>COPD Action Plans</td>
<td>COPD Action plans: Increase frequency to Wellness and Exacerbation visits</td>
</tr>
<tr>
<td>Pulmonary Rehab Referrals</td>
<td>No significant change, resistance by patients to participate</td>
</tr>
</tbody>
</table>
| Smart Phrase Ease of Use | Easier Job: 28.5% to 75%  
Enhance Effectiveness: 42.8% to 75% |
Usability of EHR tool

- Accomplish tasks quickly
- Improve job performance
- Enhances effectiveness
- Job Easier
- Useful in job

Before
After
### Results

#### Chart Review

- **51/77 pts seen**
- **109 visits**
- **23 COPD visits**

#### Immunizations

<table>
<thead>
<tr>
<th>Immunization</th>
<th>%pts seen/n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza</td>
<td>37.2% (19)</td>
</tr>
<tr>
<td>PCV13</td>
<td>1.9% inc (1)</td>
</tr>
<tr>
<td>PPSV23</td>
<td>1.9% inc (1)</td>
</tr>
</tbody>
</table>

#### Spirometry Rates

- **3.9% inc (2)**

**Note:** not including 17 results acquired from chart review prior to EHR integration

#### Pulmonary Rehab referrals

- **3.9% inc (2)**
Change in spirometry rate/accessibility noted during quarters spanning 90 day period of intervention

COPD focused annual visit

Research to identify barriers to Pulmonary Rehab

PNA Vaccination program
Limitations

- Small population and short-duration limits generalizability
- Vaccination rates may not reflect vaccinations received out-of-state and/or not reflected in EHR immunization history
- Variable provider schedules: “drop in” lunch hours for support
- Pt identification for MAs; weekly review of scheduled patients.
Conclusions

EHR-based tool beneficial tool for providers with possible expansion to other chronic diseases (HTN, DM)

Educational Videos potential use:
- Home Health/Visiting Nurse organizations
- New providers/students at practice
- Case Management, ACO (OneCare)

