Best Practices in the Prevention & Management of COPD

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Objectives

• Discuss evidence-based guidelines for diagnosis and treatment of COPD
• Identify COPD treatment strategies, and discuss benefits and challenges
• Examine practice strategies to treat COPD and reduce COPD exacerbations
• Describe the role of patient education in COPD therapy adherence
Importance of COPD

- 3rd leading cause of death in U.S.
- 1 person dies every 4 minutes in U.S.
- Increasing morbidity and mortality worldwide
- Prevalence and burden often underestimated
- Economic burden: $50B in direct and indirect cost in U.S.
- 2/3 COPD cost driven by exacerbations

Definitions and Pathophysiology

- COPD is a common preventable and treatable disease
- Persistent, progressive airflow limitation
- Extrapulmonary effects and comorbidities
- Airway inflammation and fibrosis
- Parenchymal tissue destruction
- Risk factors: smoking, dust, biomass
- COPD Exacerbation: acute worsening of symptoms beyond day-to-day variation, requiring a change in medication
GOLD COPD Guidelines

- **GOLD** = **G**lobal initiative for chronic **O**bstructive **L**ung **D**isease
- The dominant, evidence-based guideline for COPD diagnosis and treatment
- First report in 2001
- Revisions in 2006 and 2011
- Newly released 2013 update
  “You are more than your FEV1”

Diagnosis of COPD

- Dyspnea, cough, and sputum with hx of appropriate exposure
- Spirometry *required* but underutilized in primary care
- Severity and treatment based on lung function and symptom burden
Diagnosis of COPD

- Post-bronchodilator spirometry
- FEV1/FVC < 0.7 defines persistent airflow limitation
- Airflow severity based on post-bronchodilator FEV1 % predicted
  - GOLD 1 >= 80% Mild
  - GOLD 2 50-80% Moderate
  - GOLD 3 30-50% Severe
  - GOLD 4 < 30% Very Severe
- 2013 GOLD update recognized HRQOL correlates poorly with FEV1

Validated COPD Instruments

- Modified Medical Research Council (mMRC)
  - Severity of dyspnea, grade 0-4
  - Score >= 2 indicates high level of dyspnea

- COPD Assessment Test (CAT)
  - 8 items – more comprehensive assessment
  - Score >= 10 indicates high level of symptoms
Goals of COPD Treatment

Reduce Impairment
• Relieve symptoms
• Improve exercise tolerance
• Improve quality of life

Reduce Risk
• Prevent disease progression
• Prevent and treat exacerbations
• Reduce mortality

Bronchodilator Therapy

• Central to symptom management
• Long-acting agents preferred
• Choice of agent:
  – Individual response
  – Adverse effects
  – Availability
Inhaled Corticosteroids in COPD

- Improve QOL, FEV1, symptoms
- *May* reduce COPD exacerbations
  - ISOLDE\(^1\) – ICS + LABA decreases exac
  - WISDOM\(^2\) – no effect when ICS withdrawn
- Possible increased risk of pneumonia?\(^3\)
- Continue ICS for improved symptoms more than to reduce exacerbations

3. Calverley PMA et al, NEJM 2007;356:775-89

PDE-4 Inhibitors

- Indicated for severe or very severe COPD with poorly controlled chronic bronchitis on maintenance therapy
- Modest reduction in exacerbations
- Expensive
- AE’s: diarrhea, weight loss
- Consider for GOLD D
  - LAMA + ICS/LABA + PDE4
  - LAMA + PDE4
Preventing COPD Exacerbations

- Why the focus on exacerbations?
  - Cost
  - Risk
  - 30-day re-admission rule
- Smoking cessation
- Adherence to maintenance therapy
- Patient education
- Immunizations: flu, pneumococcus

Preventing COPD Exacerbations

- Role of ICS waning?
- Role of LAMA waxing?
- PDE-4 inhibitors
- Pulmonary rehabilitation
- Long-term macrolide therapy unproven
- D/C planning, disease management
- Triggering events: hand washing (viral URI), identify and treat GERD/aspiration
Non-Pharmacologic Management

Put Down the Prescription Pad: Medications Only Get You Halfway
Pulmonary Rehabilitation

- **Indication:** breathlessness walking at own pace, or recent exacerbation
- Improves exercise capacity (A)
- Improves HRQOL (A)
- Reduces hospitalizations for COPD (A)
- Reduces anxiety and depression (A)
- Improves recovery after hospitalization (A)
- Improves survival (B)

Long-Term Oxygen Therapy

- Resting $P_AO_2 < 55$ or $SpO2 < 88$
- Survival benefit in COPD

http://www.drtompetty.org/
**Surgical Interventions for COPD**

- Lung volume reduction surgery (LVRS)
  - Survival benefit for severe upper lobe emphysema and low exercise capacity
- Lung transplant – improves QOL
- Bullectomy
- Endobronchial interventions under investigation
  - Endobroncial valves
  - Endoscopic LVRS

**Other Interventions for COPD**

- Smoking cessation
  - Combined pharmacologic intervention
- Influenza vaccine
  - Survival benefit in COPD
- Pneumococcal vaccine
  - Age 65 and older
  - Younger patients with comorbidities
  - CAP reduction with FEV1 < 40%, age < 65
Treating Co-Morbidities in COPD

- Vicious cycle of anxiety, dynamic hyperinflation, and dyspnea
- Depression
- Osteoporosis
- Skeletal muscle dysfunction
- Caloric imbalance
- Lung cancer screening

Palliative Care

- Mortality following a COPD exacerbation can range 25-80%
- Palliative approaches significantly improve QOL and help caregivers
- Discuss end of life care with all patients
- An undesired ICU stay:
  - Harms the patient
  - Harms family / caregivers
  - Unnecessarily drives up health care cost
COPD: Barriers to Patient Adherence

- Educational deficits
- Short-term thinking
- Medication complexity
- Medication cost
- Medication adverse effects
- Poor access to care
- Goals of care not aligned

“Not everything that counts can be measured.

Not everything that can be measured counts.”
COPD Quality Metrics
PQRS and MU CQM Measures

- NQF 0028 Tobacco screening/cessation
- NQF 0577 Spirometry to confirm dx
- NQF 0091 Spirometry evaluation
- NQF 0102 Bronchodilator therapy
- NQF 0041 Influenza vaccination
- NQF 0043 Pneumococcal vaccine >=65
- NQF 0080 Oxygen saturation annually
- NQF 0700 Rehab improving HRQOL

Outpatient Care: Barriers to Quality

- Care occurs across time
- Care occurs in different locations
- Documentation not structured
- Outcomes not clear-cut
  - Absence of rare adverse event
  - Patient-reported outcomes
- Traditional measures do not allow for real-time intervention (QA)
COPD: Barriers to Quality

- Misdiagnosis
- Access to spirometry
- Care fragmentation – who is accountable?
- Patient adherence
- Provider knowledge / guideline adoption
- Disease heterogeneity
- Evidence not baked into workflow and care delivery system

A Vision for a COPD Quality Program

- Aligned incentives
- Dynamic patient registry
- Objectively proven definition of COPD
- Capture key measures discretely
- Thoughtful workflow integration
- Real-time, automated info at POC
- Timely patient and provider reports
- Control charts
### Data Collection for Stable COPD Visit

<table>
<thead>
<tr>
<th>Data Element</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoking status (pk-yr)</td>
<td>Quality, risk for CT screening</td>
</tr>
<tr>
<td>Spirometry</td>
<td>Quality, GOLD grade</td>
</tr>
<tr>
<td>CAT or mMRC</td>
<td>GOLD grade, billing</td>
</tr>
<tr>
<td>SpO2 and O2 usage</td>
<td>Quality, adherence</td>
</tr>
<tr>
<td>Medication adherence</td>
<td>Adherence</td>
</tr>
<tr>
<td>Exercise status</td>
<td>Should be on med list!</td>
</tr>
<tr>
<td>Vaccination status</td>
<td>Quality</td>
</tr>
<tr>
<td>Interval exacerbations</td>
<td>GOLD grade</td>
</tr>
<tr>
<td>Bone density status</td>
<td>Comorbidity</td>
</tr>
<tr>
<td>Advanced directives</td>
<td>Quality, comorbidity</td>
</tr>
<tr>
<td>Mental health screen</td>
<td>Quality, comorbidity</td>
</tr>
</tbody>
</table>

### COPD QA Report Card

<table>
<thead>
<tr>
<th>Deficiency</th>
<th>Real-Time Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active smoker</td>
<td>Counseling documented, Rx</td>
</tr>
<tr>
<td>No O2 assessment 12 mo</td>
<td>MA takes SpO2</td>
</tr>
<tr>
<td>No spirometry 12 mo</td>
<td>MA performs spirometry</td>
</tr>
<tr>
<td>No A1AT level</td>
<td>Lab ordered upstream of MD</td>
</tr>
<tr>
<td>Not exercising</td>
<td>Educate, pulm rehab</td>
</tr>
<tr>
<td>Recent exacerbation</td>
<td>Pulm rehab referral</td>
</tr>
<tr>
<td>No GOLD-guided Rx</td>
<td>Suggest Rx change to MD</td>
</tr>
<tr>
<td>Vaccine deficiency</td>
<td>Give upstream of MD visit</td>
</tr>
<tr>
<td>Needs DEXA / OP no Rx</td>
<td>Alert to MD for orders</td>
</tr>
<tr>
<td>No advanced directive</td>
<td>Educate, enable, notify MD</td>
</tr>
<tr>
<td>Lung CA screen eligible</td>
<td>Educate, enable, notify MD</td>
</tr>
</tbody>
</table>