Reducing COPD Readmissions and Implications for Pulmonary Rehab

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Statement of Disclosure

I have no disclosures.
The opinions expressed are my own.
Objectives

1. Identify the impact of pulmonary rehab on patients with AECOPD.
2. Discuss factors associated with patient adherence to treatment recommendations.
3. Discuss the discharge plan of care for COPD patients hospitalized with acute exacerbations.
Acute Exacerbation of COPD

Definition:
An acute event characterized by a worsening of the patient’s respiratory symptoms that is beyond normal day-to-day variations and leads to a change in medication.

Indications for Hospital Admission:
- Marked increase in intensity of symptoms
- Severe underlying COPD
- Onset of new physical signs
- Failure to respond to initial medical management
- Frequent exacerbations
- Older age
- Insufficient home support

Global Initiative for Obstructive Lung Disease (GOLD), 2013
ATS/ERS Statement: Key Concepts and Advances in Pulmonary Rehab, 2013

1. Pulmonary rehab is effective when started at the time or shortly after a hospitalization for AECOPD

2. Pulmonary rehab is an important component of integrated care of the chronic respiratory disease management

3. Pulmonary rehab has taken the lead in developing strategies for health behavior change in chronic care

Pulmonary Rehabilitation and AECOPD

- Severe AECOPD is associated with:
  - Decline in 6 minute walk distance (6MWD) by 72m with little recovery 6 months post-exacerbation
  - One month post-discharge, daily physical activity levels remained 44% lower than stable COPD patients of similar disease severity
  - Persistent inactivity post-discharge was shown to raise the likelihood of readmission with a subsequent exacerbation
  - Self-reported daily physical activity in patients with severe COPD was shown to be independently associated with hospitalizations for acute exacerbation of the disease

Pulmonary Rehabilitation and AECOPD

- Studies have shown ~1% decline in quadriceps strength per day during hospitalization → slower recovery
- Cause of the decrease in quad strength is multifactorial:
  - Physical inactivity/muscle disuse
  - Systemic inflammation
  - Systemic corticosteroids
  - Dietary intake

Evidence-based benefits of PR participation include clinical and statistical improvement in:

- Exercise capacity
- Health-related quality of life
- Dyspnea
- Hospitalizations (typically due to AECOPD)
- Days of hospitalization

Frequent AECOPDs are associated with a more rapid decline in FEV₁

If PR participation reduces exacerbation frequency, does PR influence disease progression?

PR in Acute COPD

- Increasing evidence of the benefit of PR in the acute setting, either during or shortly after hospitalization for AECOPD
  - Immediate post-hospitalization is a high-risk time for new exacerbation
  - 1/3 of all patients are readmitted within 90 days of discharge


- Post exacerbation pulmonary rehab (PEPR) defined in this study as PR beginning **within 1 week of discharge**
- Purpose: To determine whether OP PEPR could reduce subsequent hospital admissions

**Randomization at time of discharge**

N = 60

- Usual Care
- PEPR

Exclusion: Participation in a PRP within the last year
Definition of exacerbation:

- Any increase in breathlessness, cough or sputum production that led to prescription of oral steroids or antibiotic

Pulmonary Rehabilitation:

- Twice weekly exercise & education classes
- Exercise – limb strengthening & aerobic exercise

Results:

- Hospital admission for AE-COPD
  - Usual Care Group: 33%
  - PEPR Group: 7%

- Days from discharge to emergency department visit –
  - Usual Care Group: median of 16 days
  - PEPR Group: median of 48 days

- Incremental & endurance shuttle walk, quadriceps strength and quality of life (SGRQ & CRQ*)
  - Usual Care Group: No Change
  - PEPR Group: Significant improvement in all

*SGRQ: St. George’s Respiratory Questionnaire; CRQ: Chronic Respiratory Questionnaire

Impact of Comorbidities and COPD

- More is less!
  - The > the number of comorbidities, the lower the self-reported quality of life (QOL)
- The comorbidities most detrimental:
  - CHF
  - Diabetes
  - CAD
  - Arthritis
  - Asthma
  - Depressive symptoms
  - Obesity
  - Urinary Incontinence

Comorbidities, Patient Knowledge, and Disease Management in a National Sample of Patients with COPD

N = 1003

Median # of comorbidities = 9

Severity of Dyspnea by Number of Comorbid Conditions

Responses to “During the past 12 months, as a result of costs or lack of coverage have you …?”

How can Respiratory Therapists and Pulmonary Rehab staff best impact the care of people with COPD?
Team Work

1. Find out if there are efforts at your hospital to address readmission rates for patients with COPD
   a. If there are no plans, take the lead and ask to form a work group to assess the situation and develop a plan of action
2. Have a good understanding of who is at highest risk for admission/readmission to the hospital
3. Make sure Pulmonary Rehab is a part of the plan of action
4. Talk to COPD inpatients about the benefits of Pulmonary Rehab and recommend a referral prior to discharge
## GOLD Classification

<table>
<thead>
<tr>
<th>Stage</th>
<th>FEV&lt;sub&gt;1&lt;/sub&gt;/FVC</th>
<th>FEV&lt;sub&gt;1&lt;/sub&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>I - Mild COPD</td>
<td>&lt; 70%</td>
<td>FEV&lt;sub&gt;1&lt;/sub&gt; ≥80% predicted</td>
</tr>
<tr>
<td>II - Moderate COPD</td>
<td>&lt; 70%</td>
<td>FEV&lt;sub&gt;1&lt;/sub&gt; &gt;50% &amp; &lt;80% predicted</td>
</tr>
<tr>
<td>III - Severe COPD</td>
<td>&lt; 70%</td>
<td>FEV&lt;sub&gt;1&lt;/sub&gt; ≥30% &amp; &lt;50%</td>
</tr>
<tr>
<td>IV - Very Severe COPD</td>
<td>&lt; 70%</td>
<td>FEV&lt;sub&gt;1&lt;/sub&gt; &lt;30% OR &lt;50% with signs of chronic respiratory failure</td>
</tr>
</tbody>
</table>

Global Initiative for Obstructive Lung Disease

GOLD, 2011
GOLD Combined Assessment of COPD

Risk
GOLD Classification of Airflow Limitation

(C) (D)

(A) (B)

4
3
2
1

Symptoms
(mMRC or CAT score)

mMRC 0-1
CAT < 10

mMRC ≥ 2
CAT ≥ 10

≥ 2
1
0

Exacerbation history
Risk

Patient | Characteristic | Spirometric Class | Exacerbations/year | mMRC | CAT
---|---|---|---|---|---
A | Low Risk; < Sx | GOLD 1-2 | ≤ 1 | 0-1 | < 10
B | Low Risk; More Sx | GOLD 1-2 | ≤ 1 | ≥ 2 | ≥ 10
C | High Risk; < Sx | GOLD 3-4 | ≥ 2 | 0-1 | < 10
D | High Risk; > Sx | GOLD 3-4 | ≥ 2 | ≥ 2 | ≥ 10

GOLD, 2013
# Modified Medical Research Council Scale for Dyspnea (mMRC)

Please choose the one best response to describe your shortness of breath:

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>“I only get breathless with strenuous exercise”</td>
</tr>
<tr>
<td>1</td>
<td>“I get short of breath when hurrying on the level or walking up a slight hill”</td>
</tr>
<tr>
<td>2</td>
<td>“I walk slower than people of my same age on the level because of breathlessness or have to stop for breath when walking at my own pace on the level”</td>
</tr>
<tr>
<td>3</td>
<td>“I stop for breath after walking about 100 yards or after a few minutes on the level”</td>
</tr>
<tr>
<td>4</td>
<td>“I am too breathless to leave the house” or “I am breathless when dressing”</td>
</tr>
</tbody>
</table>

Public domain; http://copd.about.com/od/copdbasics/a/MMRCDyspneascale.htm
**COPD Assessment Test (CAT)**

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>I never cough</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>I cough all the time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have no phlegm (mucus) in my chest at all</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>My chest is completely full of phlegm (mucus)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My chest does not feel tight at all</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>My chest feels very tight</td>
<td></td>
<td></td>
</tr>
<tr>
<td>When I walk up a hill or one flight of stairs I am not breathless</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>When I walk up a hill or one flight of stairs I am very breathless</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am not limited doing any activities at home</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>I am very limited doing activities at home</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am confident leaving my home despite my lung condition</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>I am not at all confident leaving my home because of my lung condition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I sleep soundly</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>I don’t sleep soundly because of my lung condition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have lots of energy</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>I have no energy at all</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(<10=low impact; 10-20=medium; 21-30=high; >30=very high)  TOTAL SCORE
Evidenced-base care is important to decrease readmission rates

- What is “best practice” for:
  - Stable COPD
  - COPD exacerbations (AE-COPD)
  - Transition of care from hospital to home
<table>
<thead>
<tr>
<th>I: Mild</th>
<th>II: Moderate</th>
<th>III: Severe</th>
<th>IV: Very Severe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduction of risk factors(s); Influenza vaccination</td>
<td>Add regular treatment with $\geq 1$ long-acting bronchodilators</td>
<td>Add inhaled steroids, if repeated exacerbations</td>
<td>Add long-term oxygen if chronic respiratory failure Consider surgical treatments</td>
</tr>
<tr>
<td>Add short-acting bronchodilator when needed</td>
<td>Add pulmonary rehabilitation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
What is the Role of Pulmonary Rehab?

  - Hospitalization for AE-COPD can result in significant skeletal muscle weakness due to:
    - Systemic inflammation
    - Negative nutritional balance
    - Administration of CCS
    - Physical inactivity
Randomized controlled trial of usual therapy versus quadriceps resistance training during AE-COPD

- Usual therapy group – oral CCS, chest physiotherapy, breathing exercises
- Quad training group - usual care + daily quadriceps resistance training for 7 days on knee-extension chair
  - 3 sets of 8 repetitions at 70% of 1 Repetition Max with adjustment based on symptoms

Quad Training:
- Prevented muscle deterioration during hospitalization
- Significant increase in quad force which was still present 1 month post-hospitalization
- No adverse events and no evidence of increased inflammation as indicated by C-reactive protein levels

*Am J Respir Crit Care Med* 2010; 181:1072-1077.
What about other forms of exercise during hospitalization?

N=32 Inpatients with AE-COPD
Randomization

Control Group
Physical Therapy
Daily: sputum clearance, mobility assessments, & functional training

Low Intensity Exercise
40% maximum intensity

Moderate-High Intensity Exercise
70% maximum intensity

Inclusion criteria:
- Hospitalization for AE-COPD
- Could ambulate independently prior to admission
- Absence of ventilatory assistance
- Medical clearance

Study groups:
- All groups:
  - Day 1 (within 24 hours of admission): 3 minute walk test, muscle strength test of UE and LE, spirometry
  - Day 2 until discharge: Standard physical therapy treatment
- Exercise Groups:
  - Twice daily exercise sessions
Exercise Groups

- Walking
- Hip abduction
- Lunges
- Simulated lifting
- Chest press

**Progression:**
- Walking distance was increased by 10% when pt could complete walking distance at designated speed in 7.5 minutes with only a change in Borg score of 1-2.
- Stronger elastic band used when pt could complete 2 sets of the prescribed # reps.

### Primary Outcome: Adverse Events

**Events recorded as:**
- Serious
- Expected
- Study-related

<table>
<thead>
<tr>
<th>Vital Signs</th>
<th>Parameter for Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood pressure</td>
<td>An alteration in systolic blood pressure &gt; or &lt;20% of resting value</td>
</tr>
<tr>
<td>Heart rate</td>
<td>&gt;85% of estimated maximum heart rate calculated by taking 85% of 220 – age of patient</td>
</tr>
<tr>
<td>Oxygen saturation</td>
<td>Decrease in $\text{SpO}_2$ &gt;10% or a symptomatic decrease in $\text{SpO}_2$ that necessitated the cessation of treatment</td>
</tr>
<tr>
<td>Fall</td>
<td>Fall that has occurred during the treatment</td>
</tr>
<tr>
<td>Systematic signs</td>
<td>Breaking out into cold sweat, complaining of heart palpitations, increasing the rate of respiration to more than 25 breaths per minute</td>
</tr>
</tbody>
</table>

*Abbreviation: $\text{SpO}_2$, pulse oximeter oxygen saturation.*

*JCRP 2012; 32: 163-169*
Primary Outcome Measure: Adverse Events

- **Number of Events**
  - Total of 13 events in 6 of 32 patients
    - Control group (N=11): 2 events in 2 patients
    - Low-intensity exercise group (N=11): 4 events in 3 pts
    - Moderate-high intensity exercise group (N=10): 7 events in 1 patient
  - Type of events – No significant differences b/w groups
    - 1 serious study-related event – a-fib and chest pain in a patient with a previous history; resolved within 1 hr w/no treatment (low-intensity exercise group)
    - 7 nonserious, expected, study-related events
    - 5 nonserious, not expected, but study-related events

*Note:* Previous participation in pulm rehab – 45% in control; 72% of Low-Intensity; 80% of Moderate-High Intensity Groups
Primary Outcome Measure: Adherence

- Adherence defined as the percentage of scheduled sessions completed; no significant differences b/w groups
  - Control group: mean of 90% (43%-100%)
  - Low-intensity exercise group: mean of 78% (59%-100%)
  - Moderate-high intensity exercise group: mean of 71% (50-100%)

<table>
<thead>
<tr>
<th>Reasons for missing treatment sessions</th>
<th>Control Group</th>
<th>Low-Intensity Exercise Group</th>
<th>Moderate-High Intensity Group</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feeling unwell or fatigued</td>
<td>7</td>
<td>13</td>
<td>14</td>
<td>34</td>
</tr>
<tr>
<td>Medical rounds/procedure</td>
<td>0</td>
<td>6</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>Family interruption</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Patient absent from ward</td>
<td>0</td>
<td>8</td>
<td>3</td>
<td>11</td>
</tr>
</tbody>
</table>

Total # missed sessions = 60 out of 223 scheduled sessions
Secondary Outcome Measures

- Three Minute Walk Distance (3MWD)
- Upper and Lower Limb Strength measured with a manual muscle tester (dynamometry)
- Lung Function: FEV1 % predicted
- Barthel Index: measures activity status
- Length of Stay (LOS) in the hospital

JCRP 2012; 32: 163-169
Secondary Outcome Measures

- Significant improvement in 3MWD:
  - Low-intensity group - mean of 21 m improvement
  - Moderate to high-intensity group - mean of 31 m improvement
  - Control group - no improvement in distance

- The exercise program did not result in ↑ LOS therefore did not appear to negatively affect rate of recovery

- Most improvements overall were seen in the low-intensity group in upper limb strength, lung function, 3MWD, and length of stay (LOS)
  - Suggests low-intensity exercise may be optimal for patients hospitalized with AE-COPD

Outpatient Post-exacerbation Pulmonary Rehab (PEPR)

- Outpatient (OP) Pulmonary rehab within a week of hospital discharge has been shown to:
  - Improve exercise capacity
  - Reduce emergency department visits
  - Reduce hospital admissions
    \(^{15}\text{Man WD, Polkey MI, Donaldson N, et al. BMJ 2004; 329:1209}\)

- Review of 6 clinical trials showed PEPR:
  - Reduced risk for hospital admission
  - Reduced mortality
  - Improved quality of life
  - Improved exercise capacity.

Puhan MA, Scharplatz M, Troosters T, Steurer J. Respiratory Research 2005; 6:54
Think outside the box!

1. Schedule an initial evaluation after the patient has had time to recover from the hospitalization.
2. Wait until a new class is starting the PRP.
3. Do not start the patient until there are enough patients to start a group.
What prevents people with COPD from attending pulmonary rehabilitation?\textsuperscript{19}

- **Barriers:**
  - Disruption to usual routine
  - Influence of the referring doctor
  - Program timing
  - Poor access to transportation
  - Lack of perceived benefit of pulmonary rehabilitation.

- **Highest Non-completion Risk:**
  - Current smokers
  - Depression

Discharge Planning

- Survey of patients recently hospitalized to identify what was important to them
  - Identified feelings of isolation & lack of support post-discharge
  - Priority: regaining physical function

- The Discharge COPD Care Bundle
  - A list of evidence-based practices that should be delivered to all patients with AE-COPD

Discharge Care Bundle:

1. Notify respiratory clinical nurse specialist of all admissions
2. If patient is a smoker, offer smoking cessation assistance
3. Refer for assessment for pulmonary rehabilitation
4. Give written information about COPD, a self-management booklet, oxygen alert card and information about patient support groups
5. Demonstrate satisfactory use of inhalers
6. Follow-up appointment to be made with a specialist prior to discharge

Safe Discharge Checklist

We want to make sure you can manage safely at home. Before you go home you should go through this list with the discharge nurse and be able to check all the boxes. If there are any gaps, ask the nurse to help you with them.

<table>
<thead>
<tr>
<th>Check Here</th>
</tr>
</thead>
<tbody>
<tr>
<td>You should feel able to use your inhalers, and other medications including steroids properly.</td>
</tr>
<tr>
<td>The nurses have watched you use your inhalers, and spacer if appropriate, to make sure you are doing it correctly.</td>
</tr>
<tr>
<td>The benefits of pulmonary rehabilitation have been explained to you &amp; and you have been offered the chance to enroll in a course.</td>
</tr>
<tr>
<td>If you are a smoker you were offered assistance to quit.</td>
</tr>
<tr>
<td>You should know the plan for your follow up care.</td>
</tr>
<tr>
<td>You should have received written information explaining COPD.</td>
</tr>
</tbody>
</table>

Staff confidence in inhaler technique

- Hopkinson NS, et al. Thorax 2012:
  - Surveyed inpatient staff on a respiratory unit
  - Low levels of confidence regarding inhaler technique, smoking cessation and pulmonary rehabilitation
  - Staff education led to improved confidence

Knowledge of Inhaler Technique in the Inpatient Setting

- N=100 inpatient staff nurses
- Studied nurses’ perception of their knowledge of inhaler technique
- Observed performance of nurses’ inhaler technique

Knowledge of Inhaler Technique in the Inpatient Setting

Results:

- Misuse rates = 82% for MDI and 92% for Diskus
- Poor agreement b/w perceived ability & actual performance
- Most common errors –
  - Failure to breathe out fully prior to inhaling
  - Failure to keep Diskus horizontal
  - Failure to breathe in quickly with Diskus

Inhaler Mishandling

- Melani, et al. studied inhaler technique
  - N = 2288 uses of inhalers were studied
  - Critical mistakes observed:
    - 12% for MDIs
    - 35% for Diskus and Handihaler
    - 44% for Turbuhaler
  - Strongest association with misuse:
    - #1 – older age
    - #2 – lower education
    - #3 – lack of instruction provided

Inhaler Mishandling

- Inhaler misuse was associated with increased:
  - Risk of hospitalization
  - # emergency room visits
  - Courses of oral steroids
  - Courses of antimicrobials
- Rate of critical errors was NOT associated with:
  - FEV\textsubscript{1} or FEV\textsubscript{1}/FVC
  - Single inhaler use versus 2 or more inhalers
  - Modified Medical Research Council Scale for Dyspnea
  - SpO\textsubscript{2} value
- Subjects reporting little or no benefit from inhaler was associated with inhaler misuse

Inhaler Training Videos

http://use-inhalers.com/
Interactive videos with a webcam.

These videos can be downloaded on a hospital website at no cost

Contact:
Dr. Fiona Shetty
Program Director
Phone: 401 603 1984
Email: fiona.shetty@use-inhalers.com
Nonadherence to Medications in COPD

- Factors affecting adherence in this group:
  - COPD patients alter medications based on their symptoms, and to fit their lifestyle
  - Confusion about medications = less adherence
  - Greater understanding of illness = improved adherence & greater confidence that medications would keep their illness under control
  - Low satisfaction & faith in the treating physician = decreased adherence
  - Physically challenging & unpleasant medications = suboptimal adherence
  - Routinization – ability to fit a medication regimen in one’s daily routine = improved adherence

Nonadherence to Medications in COPD

- Non-predictors of adherence
  - Complexity of medication regimen
  - Cost of treatment

- Suboptimal adherence in this group of COPD patients = 63%, compared to different disease conditions = 50%

Summary

- Inpatient PR may prevent deterioration in exercise tolerance.
- Outpatient PR immediately following an AE-COPD can reduce the risk of re-exacerbation requiring hospitalization in the following 3 months.
- Exercise capacity & quadriceps strength are known to predict reduced health care utilization in stable disease, and can be improved by OP PR immediately following AE-COPD.
- Initiation of post-hospitalization PR is poor!

**Bottom line:** Evidence suggests that PR is an effective intervention for COPD patients both in the stable and acute setting, but there is a need for more robust studies to strengthen the evidence.
Considerations for Pulmonary Rehabilitation

- Phase I – Inpatient PRP offering aerobic & strengthening exercise
- Overhaul Phase II (Outpatient) Programs
  - Enroll patient’s into OP PR within 1 week of hospital discharge to have a positive impact on COPD readmissions
  - Consider altering program structure to allow brief initial evaluation of patients hospitalized with AE-COPD to eliminate delay in enrollment after discharge
  - Consider enrolling patients soon after referral, rather than once a month or once every two months

THINK OUTSIDE THE BOX!
Associations between Physical Activity and 30-Day Readmission Risk in COPD

- Does regular physical activity decrease the risk of 30-day all cause readmission in patients with COPD?
  - Retrospective review of 4,596 members of a large integrated health care system from 14 medical centers
  - Mean age = 72.3; Mean FEV1 57% predicted
  - In this sample, the 30-day readmission rate was 18% with 59% of readmissions occurring in the first 15 days.

Associations between Physical Activity and 30-Day Readmission Risk in COPD

All patients in this health system are routinely asked an exercise vital sign (EVS) at all outpatient visits:

- On average, **how many days per week** do you engage in moderate to strenuous (vigorous) exercise (like a brisk walk)? (0-7 days)
- On average, **how many minutes** do you engage in exercise at this level? (0, 10, 20, 30, 40, 50, 60, 90, 120, 150, or more)

The EMR software multiplies the 2 self-reported responses to display total minutes/week of moderate to vigorous physical activity (MVPA)

National Physical Activity Recommendations: 
≥ 150 minutes/week
Results

Patients who engaged in any level of moderate to vigorous physical activity prior to hospitalization had a 34% lower risk of being readmitted within 30-days of the index admission compared to inactive patients.

Conclusion

- Efforts to prevent 30-day readmission should be broadened beyond treating the AECOPD & its complications and addressing failures in the transitional care process.

- We need more proactive management of modifiable lifestyle behaviors to decrease the risk of hospitalization & optimize chances of successful recovery.