REDUCING HOSPITAL READMISSIONS WITH COPD

LISA ALEXANDER, PT, DPT, CCI, GCS
RHONDA SCHNABL, PT, DPT, CCI, GCS

PROVIDER DISCLAIMER

- Allied Health Education and the presenter of this webinar do not have any financial or other associations with the manufacturers of any products or suppliers of commercial services that may be discussed or displayed in this presentation.
- There was no commercial support for this presentation.
- The views expressed in this presentation are the views and opinions of the presenter.
- Participants must use discretion when using the information contained in this presentation.

INTRODUCTIONS
<table>
<thead>
<tr>
<th>LISA ALEXANDER, PT, DPT, CCI, GCS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Education</strong></td>
</tr>
<tr>
<td>- Bachelor of Science in Education</td>
</tr>
<tr>
<td>- The University of Kansas, Lawrence, Kansas - 1994</td>
</tr>
<tr>
<td>- Bachelor of Science with Honors in Physical Therapy</td>
</tr>
<tr>
<td>- The Robert Gordon University, Aberdeen, Scotland - 1998</td>
</tr>
<tr>
<td>- Doctor of Physical Therapy with Distinction</td>
</tr>
<tr>
<td>- Northern Arizona University / Northern Arizona - 2008</td>
</tr>
<tr>
<td><strong>Certifications</strong></td>
</tr>
<tr>
<td>- Gerontological Clinical Instructor</td>
</tr>
<tr>
<td>- Board Certified Clinical Specialist in Geriatric Physical Therapy</td>
</tr>
<tr>
<td>- American Board of Physical Therapy Specialties, 2019</td>
</tr>
<tr>
<td><strong>Current Employment</strong></td>
</tr>
<tr>
<td>- Director of Rehab for a high-volume SNF in Western Arizona.</td>
</tr>
<tr>
<td>- Has worked in the SNF setting since 2007 as a clinician, supervising therapist, or evaluating therapist.</td>
</tr>
<tr>
<td><strong>Clinical Focus</strong></td>
</tr>
<tr>
<td>- Nutritional and physical therapy for cognitively impaired individuals, and quality assurance.</td>
</tr>
<tr>
<td><strong>Academic Appointments</strong></td>
</tr>
<tr>
<td>- Associate and Clinical Faculty for Mohave Community College Physical Therapist Assistant Program</td>
</tr>
<tr>
<td>- Clinical Faculty for The University of Missouri Doctor of Physical Therapy Program</td>
</tr>
<tr>
<td>- Clinical Faculty for Midwestern University Doctor of Physical Therapy Program</td>
</tr>
<tr>
<td>- Clinical Faculty for University of Findlay Doctor of Physical Therapy Program</td>
</tr>
<tr>
<td>- Professional Advisory Committee Member for Mohave Community College Physical Therapist Assistant Program</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RHONDA SCHNABL, PT, DPT, CCI, GCS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Education</strong></td>
</tr>
<tr>
<td>- Bachelor of Science in Health Promotion and Wellness</td>
</tr>
<tr>
<td>- University of Wisconsin - Eau Claire/ Kohler, Wisconsin - 1989</td>
</tr>
<tr>
<td>- Master of Education in Exercise Science</td>
</tr>
<tr>
<td>- University of Georgia - Athens, Georgia - 1991</td>
</tr>
<tr>
<td>- Master of Physical Therapy</td>
</tr>
<tr>
<td>- Medical College of Georgia - Augusta, Georgia - 1998</td>
</tr>
<tr>
<td>- Doctor of Physical Therapy</td>
</tr>
<tr>
<td>- A.T. Still University - Mesa, Arizona - 2012</td>
</tr>
<tr>
<td><strong>Certifications</strong></td>
</tr>
<tr>
<td>- Gerontological Clinical Instructor</td>
</tr>
<tr>
<td>- American Physical Therapy Association, 2005</td>
</tr>
<tr>
<td>- Board Certified Clinical Specialist in Geriatric Physical Therapy</td>
</tr>
<tr>
<td>- American Board of Physical Therapy Specialties, 2016</td>
</tr>
<tr>
<td><strong>Current Employment</strong></td>
</tr>
<tr>
<td>- Clinical Supervisor for a high-volume SNF in Western Arizona.</td>
</tr>
<tr>
<td><strong>Clinical Focus</strong></td>
</tr>
<tr>
<td>- Staff and program development for patients with cardiac and pulmonary dysfunction</td>
</tr>
<tr>
<td><strong>Academic Appointments</strong></td>
</tr>
<tr>
<td>- Adjunct Faculty for Mesa University Doctor of Physical Therapy Program</td>
</tr>
<tr>
<td>- Clinical Faculty for Mohave Community College Physical Therapist Assistant Program</td>
</tr>
<tr>
<td>- Clinical Faculty for The University of Missouri Doctor of Physical Therapy Program</td>
</tr>
<tr>
<td>- Clinical Faculty for Midwestern University Doctor of Physical Therapy Program</td>
</tr>
<tr>
<td>- Clinical Faculty for University of Findlay Doctor of Physical Therapy Program</td>
</tr>
<tr>
<td>- Professional Advisory Committee Member for Mohave Community College Physical Therapist Assistant Program</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OBJECTIVES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discuss the pathology and stages of COPD.</td>
</tr>
<tr>
<td>Stratify SNF residents based on level of function, and identify treatment strategies for these patients.</td>
</tr>
<tr>
<td>Identify the clinimetric properties of selected outcome measures.</td>
</tr>
<tr>
<td>Discuss selected case studies.</td>
</tr>
</tbody>
</table>
Background and Anatomy and Physiology Review
Pathology and Stages of COPD
Patient Stratification and Treatment Strategies
Clinimetric Properties of Selected Outcome Measures
COPD Education Series
Case Studies
Questions – throughout and at end

Hospital Readmission Reduction Program (HRRP)

- HRRP requires Centers for Medicare and Medicaid Services (CMS) to reduce payments to hospitals within 30 days of discharge for certain conditions.
- “What Every Health Care Provider Should Know About Health Care Reform” webinar by Elizabeth Koyle.
In 2008, COPD was one of the top 20 most expensive conditions treated in hospitals. (NQMC, 2015)

In 2009, the 30-day readmission rate was 22.6%, which accounted for 4% of all 30-day readmissions. (Jencks, et al., 2009)

In 2010, direct and indirect projected care costs were nearly $50 billion. (NQMC, 2015)

Problems:
- Unresolved exacerbations at time of discharge
- Disjointed patient management across the continuum of care
- Inadequate patient training
- Lack of follow-up care
- Inadequate home equipment
- Lack of Rapid Action Plan

Tiep, et al., 2015

Causes of High Readmission Rate:

Exacerbation Resolution Takes Time:

Twenty-five percent of patients take at least 35 days to recover.

Shah, et al., 2015.
EXACERBATION AFFECTS MORE THAN THE LUNGS

“... the exacerbation has a substantial negative effect on physical activity ... from which it takes weeks to recover.”

Chawla, et al., 2014

COPD REHOSPITALIZATION CALL TO ACTION

- Ambulatory-care-sensitive condition
- A need for developing strategies to reduce readmissions exists
- A need to reduce subsequent costs associated with COPD readmissions exists
- In general, readmission rates in the geriatric population can be reduced through interventions after a hospitalization

NQMC, 2015

COPD REHOSPITALIZATION SOLUTION

- Resolve exacerbations by discharge
- Cross-continuum of care delivery
- Adequate patient training
- Follow-up by next level of care
- Proper equipment
- Rapid Action Plan

Tiep, et al., 2015
PATHOLOGY AND STAGES OF COPD

WHAT IS COPD?

- Chronic and progressive lung disease
- Acute exacerbations (flare-ups) that occur with increasing frequency and intensity
- Chronic airflow limitation, and not fully reversible
- Asthma, chronic bronchitis, emphysema, and obstructive bronchiolitis
- Almost always caused by exposure to environmental irritants
- Usually manifests at age 55 to 60 years
- Physical exam and PFT.

Goodman, et al., 2012

CHRONIC BRONCHITIS
EMPHYSEMA

ACUTE EXACERBATION CYCLE

Stage 1
- Very mild COPD with FEV1 about 80% or more of normal

Stage 2
- Moderate COPD with FEV1 between 50-80% of normal.

Stage 3
- Severe COPD with FEV1 30-50% of normal.

Stage 4
- Very severe COPD with a lower FEV1 than Stage 3, or
- Those with with Stage 3 FEV1 and low blood oxygen levels.

GOLD STAGING SYSTEM

Tiep, et al 2015

GOLDcopd.org
PATIENT STRATIFICATION

APTA CLINICAL SUMMARY

- **Systemic Effects**
  - Weakness in BUE and BLE
  - Change in muscle fiber type from I to IIb
  - Reduced muscle mass
  - Decreased capillary density of muscle

  Jewell and Schworm, 2015

HOSPITALIZATION LEADS TO IMPAIRMENTS

- **Muscle Strength**
  - Quadriceps
    - Surrogate marker for reduced generalized performance status.
  - Handgrip

- **Functional Capacity**
  - 2-minute step-in-place test
    - Useful alternative to 6-minute walk test

- **Postural Steadiness**
  - One-leg stance

  Torres-Sánchez, et al., 2017
Patients with COPD who were non-ambulatory within 24 hours of discharge were twice as likely to be readmitted within 30 days compared to patients who were able to walk 50 feet. 

Nguyen, et al., 2014

Functional status should be used to risk stratify patients for more intensive supportive interventions after discharge.

- Current Level of Function
  - Level I: bed bound
  - Level II: able to sit
  - Level III: can stand
  - Level IV: walks less than 50 feet
  - Level V: walks more than 50 feet

Nguyen, et al., 2014

- Level 1: Hemodynamically Intolerant
- Level 2: Bed bound
- Level 3: Chair bound
- Level 4: Walks less than 50 feet
- Level 5: Walks 50+ feet

Nguyen, et al., 2014
LEVEL 1: HEMODYNAMICALLY INTOLERANT

A. SUPINE INTERVENTION
   1. OK - go to B
   2. Not OK - go to E

B. STATIC SITTING INTERVENTION
   1. OK - go to C
   2. Not OK - go to E

C. SEATED THER EX INTERVENTION
   1. OK - go to C
   2. Not OK - go to E

D. STANDING INTERVENTION
   1. OK - proceed to level __
   2. Not OK - go to E

E. RECOVER/RECHECK
   1. OK - proceed to level __
   2. Not OK - Proceed with HITS Protocol

F. RECOVER / RECHECK AFTER HITS PROTOCOL
   1. OK - break up treatments, promote OOB, advance as tolerated
   2. Not OK - Report to appropriate provider

LEVEL 2: BED BOUND

- Endurance training
- Strength training
- Inspiratory muscle training
- Airway clearance techniques
- Balance training
- Prevention and Wellness Strategies

**OUTCOME MEASURES:**
- DEMMI
- FIST
- Functional reach test
- KUBS
- MMRC Dyspnea Scale

Jewell and Schworm, 2015
### LEVEL 3: CHAIR BOUND

- Endurance training
- Strength training
- Inspiratory muscle training
- Airway clearance techniques
- Balance training
- Prevention and Wellness Strategies

**OUTCOME MEASURES:**
- DEMMI
- FIST
- FTSST
- Functional reach test
- KUBS
- MMRC Dyspnea Scale

### LEVEL 4: WALKS LESS THAN 50 FEET

- Endurance training
- Strength training
- Inspiratory muscle training
- Airway clearance techniques
- Balance training
- Prevention and Wellness Strategies

**OUTCOME MEASURES:**
- 2-min step test
- Berg
- DEMMI
- FTSST
- MMRC Dyspnea Scale
- PAVS
- RPE
- TUG

### LEVEL 5: WALKS 50+ FEET

- Endurance training
- Strength training
- Inspiratory muscle training
- Airway clearance techniques
- Balance training
- Prevention and Wellness Strategies

**OUTCOME MEASURES:**
- 6 min walk test / 2 min walk test
- Berg
- DEMMI
- FTSST
- MMRC Dyspnea Scale
- PAVS
- RPE
- TUG
CLINIMETRIC PROPERTIES OF SELECTED OUTCOME MEASURES

COPD-SPECIFIC HISTORY QUESTIONS

- Has there been exposure to risk factors such as smoking (PPY), secondhand/passive smoking, other environmental or occupational exposures?
- Is there a history of hospitalizations due to exacerbation of the disease?
- What exacerbates or relieves the symptoms?
- Are co-morbidities present?

Putcha, Han & Martinez, 2014

IMPACT OF COMORBIDITIES ON COPD

<table>
<thead>
<tr>
<th>6MWT</th>
<th>DYSPNEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart failure</td>
<td>Heart failure</td>
</tr>
<tr>
<td>Obesity</td>
<td>Obesity</td>
</tr>
<tr>
<td>Sleep apnea</td>
<td>Sleep apnea</td>
</tr>
<tr>
<td>PVD</td>
<td>Osteoporosis</td>
</tr>
<tr>
<td>CHD</td>
<td>Stroke</td>
</tr>
<tr>
<td>Osteoporosis</td>
<td>GERD</td>
</tr>
<tr>
<td>DM</td>
<td>Stomach ulcers</td>
</tr>
<tr>
<td>OA</td>
<td>-36 ft</td>
</tr>
</tbody>
</table>

Putcha, Han & Martinez, 2014
**BODY FUNCTIONS AND STRUCTURES**

**PULMONARY**
- Lung auscultation – abnormal or adventitious breath sounds (wheezing, crackles)
- Single expiratory wheeze
- Multiple wheezes
- Crackles, mid to late inspiratory
- Crackles, early inspiratory
- Cough – strength of cough and quantity/quality of secretions produced
- Lung percussion – tympanic sounds due to hyperinflation of the lungs
- Overall breathing pattern, including paradoxical movements of the chest/abdomen, recruitment of accessory muscles, diaphragmatic movement, and chest wall excursion/expansion.

**PULMONARY**
- Modified MRC dyspnea scale
- Borg Rating of Perceived Exertion
- Visual Analog Scale

**CARDIOVASCULAR**
- 6 Minute Walk Test
- 2 Minute Walk Test**
- 2 Min Stop Test**

**MUSCULOSKELETAL**
- Strength and/or MMT
- Sit<>stand test
- Chair rise test

---

**Health-related QoL**
- Assess disability
- More relevant to health and psych status than FEV1.
- Increased mMRC score indicates a decline in HRQOL
- Better discriminative capacity than GOLD staging and SGRQ in HRQoL

---

**MODIFIED MEDICAL RESEARCH COUNCIL (MMRC) DYSPNEA SCALE**

**Grade 0** – I only get breathless with strenuous exercise.
**Grade 1** – I get short of breath when hurrying on the level or walking up a slight hill.
**Grade 2** – I walk slower than people of the same age on the level because of breathlessness, or I have to stop for breath when walking on my own pace on the level.
**Grade 3** – I stop for breath after walking about 100 meters (328 feet) or after a few minutes on the level.
**Grade 4** – I am too breathless to leave the house, or I am breathless when dressing or undressing.

---

Jewell and Schworn, 2015

Hsu, Lin, Lin, et al., 2013
BORG RATE OF PERCEIVED EXERTION

- 0: No exertion at all
- 1: Slight
- 2: Slight
- 3: Slight
- 4: Slight
- 5: Light
- 6: Light
- 7: Slight
- 8: Slight
- 9: Mild
- 10: Mild
- 11: Mild
- 12: Mild
- 13: Mild
- 14: Mild
- 15: Mild
- 16: Mild
- 17: Mild
- 18: Mild
- 19: Mild
- 20: Mild

PULMONARY VISUAL ANALOG SCALE

- 10 cm line
- Horizontal vs vertical
- Level indicated by marking the line at the level of dyspnea
- Anchors to indicate extremes of a sensation
  - No breathlessness
  - Intolerable breathlessness

6 MINUTE WALK TEST AND COPD

- Submaximal test of aerobic capacity/endurance
- MDC=54 meters (177 feet)
- MCID= 54 meters
- Average distance walked: 380 m
- Distance<200 m is predictive of hospitalization or mortality
- 6 MWD declines as healthy adults age increases
**2 MINUTE WALK TEST**

- Used for pts with moderate to severe COPD
  - (FEV1 42% pred)
- Leung (2006) compared 2min walk test with 6 MWT, VO2\textsubscript{max} and VO2\textsubscript{max}/kg, and Watts (W\textsubscript{max}).
  - Very high correlation with 6 MWT.
  - Moderate correlations with VO2\textsubscript{max} and VO2\textsubscript{max}/kg.
- Responsive to pulmonary rehab (17.2 m ± 13.8m)
- Reliable and reproducible
- Valid as a test for exercise capacity
- pts with moderate to severe COPD

---

**2 MINUTE STEP IN PLACE TEST**

- Inter-rater Reliability:
  - .90 in Community-dwelling older adults (Rikli,1999)
- Criterion Validity:
  - Moderate correlation
    - .73 with 1 mile walk in Comm Dwelling older adults (Dugas, 1996)
    - .74 with time on TM to 85% max HRin comm dwelling older adults (Johnston, 1998)
- SEM, MDC, MCID – not researched yet

---

**FUNCTIONAL STRENGTH**

- **30 sec chair stand**
  - Correlated with 6mwd
  - Can be used to evaluate exercise tolerance in pts with COPD
  - Kato, 2014

- **5x sit<>stand**
  - Excellent reliability
  - Correlates with exercise capacity(6 mwt) and lower limb strength
  - Responsive to pulmonary rehab
  - MCID 1.7 sec
  - Jones, 2013
ACTIVITY LIMITATIONS AND PARTICIPATION RESTRICTIONS

- **BALANCE**
  - Berg Balance Test
  - Timed-Up and Go
  - DEMMI**

- **PARTICIPATION RESTRICTION**
  - Chronic Respiratory Questionnaire (CRQ)
  - St George Respiratory Questionnaire (SGRQ)
  - COPD Assessment Test (CAT)**

Jewell and Schwann, 2015

BERG BALANCE TEST AND COPD

- 2016 Berg Balance test was found to be a valid, reliable and valuable test to differentiate fall status in patients with COPD. Jacome 2016
- Sensitivity 73% and Specificity 77%
- Moderate to good relative intrarater reliability (Icc=.52)
- MDC95 was 5.9 (SEM=2.1, MDC% =11.1%)
- BBS high ceiling effect
  - Alternative tests with lower ceiling effects was the Brief-BESTest, following by the BESTest and Mini-BESTest.
- Good convergent and concurrent validity

TIMED UP AND GO AND COPD

- Excellent RELIABILITY for inter-rater and intra-rater
- SEM was .97 sec (exact) and .66 sec (mean)
- MDC95 was 2.68 sec (exact) and .84 sec (mean) (marquest, 2015)
- Responsive to pulmonary rehabilitation
  - Did not change significantly over one year
  - Significant weak to strong correlations were found between TUG and other health outcomes, but the strongest correlation was found with a 6 MWD.
  - Valid for the assessment of functional performance in patients with COPD. (mesquite, 2014)
**DEMORTON MOBILITY INDEX**

- Predictive utility for falls
- 9 min to administer
- No special equipment
- Rasch analysis
- MDC90 = 9 pts
- MCID10 = 10 pts

DEMORTON MOBILITY INDEX: www.demmi.org.au

**CHRONIC RESPIRATORY QUESTIONNAIRE**

- 20 items across 4 dimensions - dyspnea, fatigue, emotional function and mastery
- COPD MCID change of .5 per item;
- QoL score
  - MDC .5 on 7 point scale clinically significant small change
  - MDC 1.0 reflects a moderate change
- QoL MCID change of .5 per item
- COPD
  - Excellent test re-test reliability for COPD, all four dimensions
  - Excellent internal consistency for all four dimensions
  - Adequate construct validity with SGR
  - Poor correlations between CRQ and lung function
  - Poor correlations between CRQ and exercise capacity

**ST GEORGE RESPIRATORY QUESTIONNAIRE**

- St. George Respiratory Questionnaire (disease specific questionnaire)
  - HRQOL for patients with asthma and COPD
  - 76 item questionnaire classified into 3 domains that measure:
    - symptoms,
    - activity limitations, and
    - psychological impact of specific disease of COPD.
- each domain is scored with a preset formula that individually weights each option.
  - a total score sums the 3 domains with a score between 0-100.
  - Higher scores indicated poorer health status.
- mMRC correlates with activity domains
COPD ASSESSMENT TEST

- 8 question item
- 2-3 min to fill out
- MCID = -2
- Responsive to effects of pulmonary rehab
- Responsive to recovery from admission to hospital for acute exacerbation of COPD.
  (Kon, Canavan, Jones, et al., 2014)

PROGNOSIS

- Tool that helps predict mortality in patients with COPD
- Points are assigned to each category with a total of 10 possible points.
- Higher the score the higher the risk of mortality
  - also higher risk for hospital readmission (LEAP)
- BODE INDEX components
  - Body Mass Index (B)
    - BMI (kg/m²)
  - Airflow Obstruction (O) based on FEV1
    - % predicted
  - Dyspnea (D) as measured by the mMRC dyspnea scale
    - 0-4
  - Exercise capacity (E)
    - 6 minute walk test distance in meters

Jewell and Schwann, 2015
BODE INDEX

<table>
<thead>
<tr>
<th></th>
<th>0 points</th>
<th>1 point</th>
<th>2 points</th>
<th>3 points</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Body Mass Index (kg/m²)</strong></td>
<td>&lt; 21 kg/m²</td>
<td>≥ 21 kg/m²</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>FEV₁% Predicted After Bronchodilator</strong></td>
<td>≥65%</td>
<td>50-64%</td>
<td>36-49%</td>
<td>≤35%</td>
</tr>
<tr>
<td><strong>MMRC Dyspnea scale</strong></td>
<td>0-1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td><strong>6 Minute Walk Distance (m)</strong></td>
<td>≥350 m</td>
<td>250-349 m</td>
<td>150-249 m</td>
<td>&lt;149 m</td>
</tr>
</tbody>
</table>

Jewell and Scherm, 2015

BODE INDEX FOR COPD SURVIVAL PREDICTION


PEARL

- Simple tool that can effectively stratify patients’ risk of 90-day readmission or death
- Discriminative and accurate
- Higher PEARL scores were associated with a shorter time to readmission.

- **P**=previous admissions
- **E**=eMRCD score
- **A**=Age
- **R**=Right sided HF
- **L**=Left sided HF
REDUCING HOSPITAL READMISSION THROUGH EDUCATION

- BLOCK 1 DISEASE MANAGEMENT
  - COPD pathophysiologies/risk factors
  - Oxygen Management
  - Pursed Lip Breathing
  - Airway Clearance
- BLOCK 2 DAILY ROUTINE MANAGEMENT
  - Daily Checklist
  - Medication Management
  - Avoidance Behaviors
  - Exacerbation Prevention
- BLOCK 3 PREVENTION MANAGEMENT
  - Risk factors for HOSPITAL READMISSION
  - Active Lifestyle
  - Rapid Action Plan
  - Self-Management and Self-Monitoring

COPD PATHOPHYSIOLOGY AND RISK FACTORS

- Helping patients to understand the disease process is the goal. Many do not understand how to manage their chronic illness, much less how to PREVENT an exacerbation.
- Help them to understand what the precipitating factors may have been.
- Find out what their signs and symptoms have been.
The LOTT study revealed that oxygen has a benefit in those who wear for longer than 15 hours per day. Oxygen helps with vital signs, activity tolerance, and helps pts to remain alert. COPD people generally have SpO2 between 88-92%. Oxygen has been shown to improve long-term survival AND it decreases the risk of not only being admitted to the hospital, but also decreases the length of time pts need to be in the hospital.

ROLE OF OXYGEN

- Controlled exhalation used to do the following:
  - Improve ventilation
  - Released trapped air in the lungs
  - Keeps airways open longer and decreased the work of breathing
  - Prolongs exhalation to slow down respiratory rate
  - Improves breathing patterns by moving old air out
  - Relieves shortness of breath
  - Causes general relaxation

PURSED LIP BREATHING

- This is used to clear the airways of mucus, sputum or phlegm.
- Recurrent chest infections have been shown to contribute to worsening lung function and ongoing inflammation.
  - This is DIRECTLY related to the rate of hospital admission.
- Airway clearance techniques can keep the risk of chest infections down to a minimum thus leading to less hospital days.
- Airway clearance is use with people with COPD who have a moist productive cough when they have an infection and in those who cough up sputum daily.

AIRWAY CLEARANCE TECHNIQUES
When patients are consistent in their daily activities, it is easy to spot a change for the worse in performance of those daily activities. They will use those changes as an early indicator to seek medical attention.

Key components to preventing rehospitalization include:
- Being consistent from day to day using a daily checklist.
- Having access to their PCP when they need it most.
- Participating in education sessions to help them better understand their chronic condition.

An important part of medication management is making sure the patient is taking the medicine as the doctor has prescribed it. Many medications have side effects such as nausea, vomiting, confusion or dizziness. Prescriptions can become confusing, especially when you don’t feel good.

Research has shown that avoiding smoking and people who smoke (second-hand smoke) is the best way to delay the progression of COPD at all stages. Perfumes and chemicals are toxic to people who have COPD. They are a primary reason for exacerbations. Avoiding people and places with perfumes and chemical will help avoid a hospital admission. Bacterial and viral infections are major causes of exacerbations. These may contribute to the development of COPD and/or the progression of COPD.
EXACERBATION PREVENTION

- See healthcare professional at regularly scheduled appointments – even if feeling fine.
- Get a flu shot every year.
- Check if due for pneumonia and pertussis shots.
- Wash hands often for 20 seconds with warm water and mild soap.
- Carry a small bottle of hand sanitizer for when times are desperate.
- Avoid touching mouth, eyes, and nose in public to help prevent germs from entering the body.
- Stay away from crowds, especially during cold and flu season.
- Use own pen – especially at the doctor’s office!
- Get plenty of sleep. When the body is tired, it is more likely to get sick.
- Drink plenty of water. Thick mucus is more likely to get stuck in the lungs and cause problems.

PREVENTION MANAGEMENT

- Preventing further progression of the disease and Avoiding future hospitalizations.
- Transitional Care Plans
- PAVS – walking <50 feet at discharge
- Review Risk Factors of REHOSPITALIZATION
  - Exacerbations (episodes where your breathing becomes worse) which are not fully resolved at the time of hospital discharge.
  - COPD management from more than one doctor and poor communication between doctors.
  - Incorrectly taking medication or Improper or insufficient use of oxygen
  - Return to smoking or Return to an inactive lifestyle
  - Missing follow-ups with the doctor or lack of a rapid action plan
  - Inadequate or heavy equipment (including oxygen tanks)

ACTIVE LIFESTYLE

- Benefits of walking and physical activity:
  - Research has shown that being able to walk a minimum of 50 feet reduces the risk for re-hospitalization within the first 30 days after discharge.
  - In addition, tolerating walking a minimum of 16 minutes daily, every day, reduces the risk for re-hospitalization.
  - Daily activity promotes positive effects to your mood for anxiety and depression sufferers.
  - Improved stamina for activities of daily living.
  - Improved strength of muscles and bones for other functional tasks.
  - Maintain healthy weight.
  - Improve balance and coordination.

Get Up and Get Moving!
The American Lung Association has a hand out to take to the doctor that will help to guide your management plan. You will need to find out from the doctor what he/she wants you do when your symptoms don’t improve.


RAPID ACTION PLAN

SELF MANAGEMENT AND SELF MONITORING

SELF-MANAGEMENT and SELF-MONITORING
MEDICATION MANAGEMENT
COMMUNICATION and CARE COORDINATION
TIMELY FOLLOW-UP BY THE HEALTH CARE TEAM
ASK QUESTIONS!

CASE STUDIES
**A FISH (OUT OF WATER) CALLED WANDA**

- 74 y/o female admitted following COPD exacerbation with PMH of COPD, debility and anxiety. O2 dependent on 3 lpm 24/7.
- Lives with daughter in a motel room on the ground floor with 4 cats and 2 dogs. Her daughter is a smoker and wears perfume.
- Upon examination, she could not get her breath. Short, fast breaths with paradoxical movements of the chest/abdomen. Heavy use of accessory muscles, with poor chest wall excursion. Demonstrating increased RR (28) and WOB.
- Vitals: BP 160/70 HR 107 SpO2 96% on 3 lpm O2 via nc
- Everything she does is fast!

**WANDA EXAMINATION**

- Strength: MRC-SS 40/60;
- 5x sit<>stand: 0 – unable to perform
- Kansas University Balance scale: 1/5 for sitting/standing
- Gait: unable to perform
- Step Test: 0 - to lift knees to required height.
- MMRC – (dyspnea) Grade 4
- DEMMI 8/100

**WANDA TREATMENT**

**First Month**
- Seated ther ex to work on LE strength, activity tolerance, transfer training, and gait training.
- After 10 days, she stopped gait training at her request for 12 days. Restarted in the parallel bars
- 2 weeks:
  - 2 min step test completed: 14 steps in 1 min 4 sec.
  - DEMMI 27/100
  - did not test
  - RPE 6 at rest/11 with activity

**Second Month**
- Started COPD education series
  - eager to learn more
  - doing homework/practice
- Wheelchair protocol for aerobic conditioning
- Week 6 still in parallel bars.
  - Educated on risk of rehospitalization if walking <50 ft daily
  - Started walking with walker 50/62/80 ft distances
  - DEMMI 48/100
  - RPE 9 with activity
WANDA DISCHARGE

- Took 8 weeks to get her ready to complete 6mwt=49.68 m
- MRC-SS 46/60
- DEMMI 48/100
- Gait distance 150+ feet x3 reps each one session with sitting rest breaks between sessions.
- Education:
  - Understanding her disease process, triggers, and role of oxygen.
  - Able to perform PLE and has multiple ways to assist with airway clearance.
  - She developed a daily checklist and an plan with her doctor to avoid exacerbations
  - She understands the role of her meds and the role of activity in avoiding exacerbations.

BETTY BLUE

- 76 y/o female admitted following COPD exacerbation after her concentrator burned up.
- PMH of COPD, severe pulmonary HTN, CAD, mild pulmonary edema, and protein calorie malnutrition. O2 dependent on 8 lpm 24/7 via facemask.
- Lives with daughter in a trailer with 3 steps to enter. Multiple adult smokers in the home. Resident wants to live on her own.
- Upon examination, she was calm and in no apparent distress. Vitals: BP 120/70 HR 85 SpO2 87% on 8 lpm O2 via facemask
- Takes 5-6 min to recover SpO2 to 90% after walking to the bathroom.
  - Visibly cyanotic in hands with complaints of pain across the collar bones secondary to hypoxia.

BETTY BLUE EXAMINATION

- Strength: MRC-SS 55/60;
- 5x sit<>stand: 0 – unable to perform
- Kansas University Balance scale: 2/5 for sitting/1+ for standing
- Gait: FIM 1 with SPO2 dropping to 87% after 10 steps.
- 6 min walk test: refused during examination
- 2 min walk test: 4 days later 22.5 meters 88%
- DEMMI 30/100
- MMRC Grade 4
Resident was noncompliant with treatment protocols
- Emotional, unrealistic about discharge planning
- COPD Education Series – completed 8/12 sessions
  - Felt she learned some new things despite being on O2 for >6 years.
  - Education on using RPE as a means to determine workload instead of cyanosis.
- 2 min walk test as a form of exercise
  - Walking scores kept declining so aerobic conditioning was performed using wheelchair mobility for 2 min bouts with improved hemodynamics.
- Seated therapy deferred for functional activities.

Left building early in order to avoid paying co-pay
- risk factor for readmission
- DEMMI 48/100
- TINETTI 26/28
- 6mwt - unable to perform
  - 2mwt - 24.4 m (130 m was average performed in study)
- COPD Education Series – completed 8/12 topics
  - Missed BLOCK 3 – Prevention Management including:
    - risk factors for hospital admission,
    - active lifestyle,
    - rapid action plan and
    - self-management and self-monitoring.

Lisa Alexander - alexanderpt@gmail.com
Rhonda Schnable - schnablept@gmail.com