Objectives

- What is the link between COPD and Patient Safety
- National statistics from the CDC
- COPD risk for falls
- Air travel and the COPD patient
- Benefits of exercise program and their precautions
- Memory loss and the COPD patient
- The workplace for the COPD patient
- Home oxygen therapy precautions
- Home safety tips
- Complications that arise with COPD patients

Stats on COPD in The USA

- Mortality
  - Third leading cause of death in the USA
  - 155,460 lives lost in 2009
- Prevalence
  - 12.7 million U.S. adults
  - 14 million have evidence of impairment and may be under diagnosed
  - 10 million have chronic bronchitis (affects all ages)
  - 4.7 million have emphysema (~32% are over 45 years old)
Stats on COPD in The USA

- **Gender differences**
  - 10th year in a row where women exceed men attributable deaths
  - Women are twice as likely to get bronchitis
  - Historically men get emphysema more than women
  - Since 2011 that is not true anymore

- **Causes**
  - Smoking (attributable to 85-90% of COPD deaths)
  - Females have a 13 times greater risk of dying if they smoke versus non-smokers

Stats on COPD in The USA

- **Burden**
  - 715,000 hospital discharges in 2010
  - 51% say that it limits their ability to work
  - Limits normal physical exertion, house hold chores, social activities, and disturbed sleeping patterns
  - Cost to nation is around 50 billion dollars
  - 8 billion in morbidity cost
  - 12.4 in direct mortality

COPD patients are at risk for falls

- Direct correlation between falls and COPD patients
- COPD patients face many non-respiratory manifestations that affect both function and mobility
- Possible relationships between pathophysiological changes observed in COPD and common risk factors for falls
- Well-established fall risk factors in people with COPD include
  - Lower limb muscle weakness
  - Impaired activities of daily living
  - Gait and balance deficits
  - Nutritional depletion and malnutrition
  - Depression and cognitive impairments
COPD patients are at risk for falls

- Muscle endurance has been found to be reduced in people with COPD compared to healthy subjects
- Side-effects of corticosteroid use has a direct effect on muscle weakness and vision
- Increased muscle fatigueability
- Impaired postural control and balance
- Walking distance tests such as the six-minute walk test (6MWT) provide a good estimate of endurance/aerobic capacity
- Promote exercise with weights to build bone density and endurance

Air Travel and Chronic Obstructive Pulmonary Disease

- Increase in air travel by elderly with COPD
- Patients with chronic pulmonary or cardiovascular disease may present a problem due to high altitudes when flying
- Ambient pressure in the plane is usually equivalent to an altitude of 8000 feet above sea level (this is what airline normally set their cabin pressure to)
  - Corresponds to a P O 2 of about 110 mm Hg as opposed to about 145 mm Hg at sea level
- Oxygen supplementation can sometimes be provided by air carriers if needed
- High-altitude simulation test (HAST) in which the subject breathes a gas with low oxygen concentration, 15% O 2 , which is equivalent to an altitude of about 8000 feet

Benefits of exercise programs for COPD

- Inactivity and COPD
- Shortness of breath experienced by COPD patients at rest and/or during activities of daily living can lead to:
  - Increasingly sedentary lifestyle
  - Progressive deterioration in functional capacity
  - Muscle atrophy and reduced endurance
  - Possible isolation at home
  - Lead to depression?
Benefits of exercise programs for COPD

- Progressive inactivity
  - Decreased cardiovascular function and skeletal muscle mass decline
- Deterioration in aerobic fitness and strength
  - Leads to greater breathlessness with exertion
  - Muscular fatigue
  - Loss of functional independence
  - Depression
- A major goal of pulmonary rehabilitation exercise programs is, therefore, to reverse the physical disability resulting from inactivity

Benefits of exercise programs for COPD

- Many physiological and psychological benefits
- Increased physical capacity
- Decreased anxiety about breathlessness
- Greater independence in daily activities
- Reduced fatigue and improved quality of life
- Fights depression

COPD Exercise Precautions

- Check with your doctor before exercise program
- Changes in medication
- Don’t overdo it
- Do not exercise if feeling tired
COPD Exercise Precautions

- Avoid push-ups, sit-ups, and isometric exercises
- Avoid short periods of bed rest after exercise
- Avoid exercising outdoors
  - Too cold, hot, or humid
- Avoid extremely hot and cold showers or sauna baths after exercise
- Do not go up steep hills during your activity
- Do not exercise if you are not feeling well or have a fever
- Do not ignore pain

Memory Loss and the COPD Patient

- A study reported by the Mayo Clinic in 2013
  - COPD are about twice as likely to develop mild cognitive impairment and memory loss irrespective of age
- Fact: Around 40% of people with COPD are depressed
- Low blood PA02 may play a role
- Communication strategies
  - Structured communication
- Create routines
- Pain management
  - Can result in increased agitation and aggression

COPD and the workplace- improving the safety of employees

- Workplace exposures
  - A proportion of the total ‘COPD burden’ is caused by airborne occupational exposures in addition to cigarette smoking
  - The magnitude of this effect is known to be in the order of 15% of all COPD
  - It is called “population attributable risk fraction”
  - New evidence: one-eighth of the total burden of COPD cases would have occurred because of harmful workplace exposures
  - Symptoms of COPD (breathlessness, cough, phlegm production, chest tightness and wheezing) occur on the job
COPD and the workplace- improving the safety of employees

- So- what can be done to improve their safety on the job?
- Enforce a smoking ban around building entrances and gathering points or implement a smoke-free workplace campus
- Offer rewards for participation and compliance in tobacco cessation programs with targeted incentives for employees diagnosed with COPD
- Install HEPA air filters- especially in the work areas of individuals diagnosed with COPD
- Bring your bronchodilator to work with you
- Include on-site COPD screening in your annual health fair activities

Home Oxygen Therapy

Safety Tips for COPD Patients

- Many COPD patients are on oxygen therapy
- Potential for a fire hazard around oxygen is well-known
- Oxygen canisters should be kept at least 5-10 feet away from gas stoves, lighted fireplaces, wood stoves, candles or other sources of open flames
- Do not use electric razors while using oxygen
- Do not use oil, grease or petroleum-based products on the equipment
- Avoid petroleum-based lotions or creams, like Vaseline, on your face or upper chest
- Consider using cocoa butter, aloe vera or other similar products
- Lubrication or rehydration of dry nasal passages, use water-based products not petroleum based

Home Oxygen Therapy

Safety Tips for COPD Patients

- Post signs in every room where oxygen is in use
- Make sure that absolutely NO SMOKING occurs in the home or in the car when oxygen is in use
- Secure an oxygen cylinder to a solidly fixed object to avoid creating a missile
- Use caution with oxygen tubing so you do not trip over it or become entangled in furniture
- Be familiar with the equipment and the safety checks established by the medical equipment provider
- Keep their contact telephone numbers for oxygen provider equipment
Home Oxygen Therapy
Safety Tips for COPD Patients

- Do not try to repair broken equipment on your own. Request this service from your oxygen provider.
- Make sure smoke detectors in the home are working
  - Have fresh batteries installed
  - Perform monthly checks
- Have a fire extinguisher available in the home as well. (Use type ABC.)
- Create and practice an escape and rescue plan in the event of a fire.
  - Notify the local fire department, gas and electric companies and telephone company when home oxygen therapy is started. Request a "priority service listing.”
  - This is for those times when there is a power or telephone failure or repairs are needed on any utility.

Home Safety Tips To Help Make Living With COPD Easier

- Accidents among people with COPD can be particularly serious
- According to a review of cases published in the *Journal of Burn Care & Research*
  - People who had been burned because they smoked while using oxygen at home
  - Another problem
  - Unable to return to living at home after their burn treatment
- Falls among elderly adults with COPD are a concern due to loss of balance and muscle fatigue
- Measures must be taken to reduce these accidents

- Live on the first floor
  - Taking the stairs is good exercise, but you shouldn’t be in a situation where you have to navigate them several times a day
- Think safety first when buying shoes
  - Comfortable, supportive, lace-up shoes are a wise investment for home safety
  - Wearing sandals, flip-flops, or clogs is discouraged
- Pick up clutter
  - Greater risk for falling due to decreased ability to stay balanced
  - Throw rugs are a tripping hazard and should be removed
- Tie up loose cords and wires
  - Tidy up all connections on electrical equipment in your home in places such as offices and entertainment centers.
Home Safety Tips To Help Make Living With COPD Easier

- Be aware of your oxygen cord
  - Some people on oxygen for COPD put their oxygen concentrator in one room and then move around the rest of the house, trailing the cord behind them.
  - Stairs and locations near the top and bottom of stairs are big issues.
- Install grab bars and handrails
  - Stairs and inclines pose some of the biggest dangers.
  - Grab bar is helpful for getting in and out of the bathtub or shower and on and off the toilet.
- Put in hard floors
  - Wear oxygen in the shower.
  - Using oxygen can help you avoid fatigue while you complete what could be a strenuous bathing experience.
- Put a fan in the bathroom
  - When people with COPD take a shower or a bath, it can be difficult to be closed up in a hot, humid environment.
  - Exhaust fans are good to help control mold, but you'll need a stronger fan to move humid air out.
- Buy a shower chair
  - Allow you to sit down while you bathe, helping you to conserve energy and avoid falls.
- Avoid open flames
  - Cook with a microwave if you can.
  - Take your oxygen off while you cook.
- Don't smoke!
- Wear oxygen during activities.
  - Many people with COPD take off their oxygen when they climb stairs or walk to the mailbox.

Complications of COPD

- REDUCED QUALITY OF LIFE AND MOOD
  - Nearly half of patients with COPD report a limitation in daily activities.
  - Walking up stairs or carrying even small packages.
  - Around 50% of patients have insomnia and sometimes OSA.
  - Such impairment in quality of life can negatively affect mood.
  - Greater than 50% of patients with COPD have anxiety, depression or another psychiatric disorder impair mental function and short-term memory.
  - Psychological interventions may be particularly helpful for people with COPD.
Complications of COPD

- MALNOURISHMENT
  - People with COPD often lack good nutrition
  - Patients with chronic bronchitis tend to be obese
  - Patients with emphysema tend to be underweight
  - Loss of weight and muscle mass is associated with a poor outcome in COPD
  - Good nutrition improves the ability to exercise
  - Obese patients with COPD who lose weight sleep better

Summary

- Patient safety is paramount
- Statistics show that COPD is on the rise
- Be mindful of the physical limitations of the COPD patient
- Medications can have adverse reactions at times
- Promote good nutrition and physical exercise
- Home safety tips are important

References
