

## Pulmonary Rehabilitation Part Two

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This Presentation is Approved for  
2 CRCE Credit Hours

### Learning Objectives:

- Integrate pharmacological agents into pulmonary rehabilitation (PR)
- Integrate oxygen therapy into a PR program
- Integrate ventilatory muscle training for PR patients
- Integrate general exercise training for PR patients
- Describe PR for patients with conditions other than obstructive disease
- Assess outcomes for PR patients
- Explain the implications of special issues associated with PR, such as patient adherence, ethical issues and social support

## Rehabilitation Interventions Overview

### Interventions by Respiratory Care

- Education on Respiratory Care (RC) topics
  - Dyspnea management
  - Pharmacotherapy
  - Oxygen therapy
  - Inspiratory muscle training
  - Exercise training
  - Smoking cessation
  - Sleep assessment and therapy
- FYI see link below for AARC CPG Pulmonary Rehabilitation

### Interventions (non-RC)

- Occupational therapy
- Physical therapy
- Nutritional support
- Psychosocial support, including end-of-life care
- Alternative medical support

### Initiation of Rehabilitation

- After first exacerbation
- During intensive care
- Before and after surgical procedures (e.g. lung volume reduction surgery [LVRS])
- When the patient is ready

## Duration of Rehabilitation

- 6-12 weeks

## Pharmacological Therapy

## Components of COPD

- Airflow obstruction – decreased FEV<sub>1</sub>
- Hyperinflation - increased IC/TLC
- Inflammation
- Systemic manifestations, due to oxidative stress, immunopathology result in
  - ❖ decreased free fat mass
  - ❖ impaired muscle function
  - ❖ dyspnea, etc.

## Medication Types for COPD

- Immunizations: influenza, pneumococcus
- Bronchodilators
- Corticosteroids
- Combination therapy
- Mucolytics
- Antibiotics

## Bronchodilators

- Benefits
  - ❖ decrease airway resistance
  - ❖ decrease hyperinflation
  - ❖ decrease dyspnea - may be due to decreased resistance and/or decreased hyperinflation
  - ❖ note - patients may improve symptoms, although FEV<sub>1</sub> remains unchanged.

## Bronchodilators

- Short-acting beta-agonist (SABA)
  - ❖ albuterol, as needed
  - ❖ all stages

## Bronchodilators

- Long-acting beta-agonists (LABA) moderate-to-severe COPD
  - ❖ salmeterol (Serevent)
  - ❖ formoterol (Foradil)
  - ❖ indacaterol (Arcapta Neohaler)
    - once daily
    - FDA approved in July, 2011
    - better than tiotropium for COPD??

## Bronchodilators

- Short-acting anticholinergic ipratropium (Atrovent)
- Long-acting anticholinergic tiotropium (Spiriva)
  - ❖ moderate-to-severe
  - ❖ improves lung function
  - ❖ decreases dyspnea
  - ❖ daily - increases adherence

## Bronchodilators

- Non-specific phosphodiesterase (PDE) inhibitors (e.g. theophylline)
  - ❖ high risk/benefit ratio – adverse effects
  - ❖ low cost
  - ❖ reserved for patients who cannot use aerosols

## Bronchodilators

- PDE4 inhibitors (e.g. roflumilast [Daliresp])
  - ❖ included in Global Initiative for Chronic Obstructive Lung Disease (GOLD) guidelines for severe COPD
  - ❖ daily tablet
  - ❖ bronchodilator
  - ❖ decreases inflammation
  - ❖ decreases exacerbations

See link below for information on PDE4 inhibition  
FYI see link below to download an article on PDE4 inhibition

## Bronchodilator Combinations

- Moderate-to-severe
- Beta-agonist and anticholinergic - greater response than either one, alone
  - ❖ formoterol and tiotropium persistent symptoms
  - ❖ albuterol and ipratropium intermittent symptoms

FYI see link below to download GOLD COPD guidelines

## Corticosteroids

- Oral corticosteroids (e.g. prednisone)
  - ❖ exacerbations
- Inhaled corticosteroids (ICS)
  - ❖ severe-to-very severe COPD
  - ❖ not recommended as monotherapy

FYI see link below to download GOLD COPD pocket guide

## Combined Steroid and LABA

- Indication - in addition to tiotropium for severe and very severe COPD
- Benefits
  - ❖ decreased exacerbations – cost effective
  - ❖ improved symptoms and HRQoL
  - ❖ decreased mortality
- Preparations
  - ❖ formoterol/budesonide (Symbicort)
  - ❖ salmeterol/fluticasone (Advair)

## Mucolytic Agents

- Oral n-acetylcysteine (COPD)
  - ❖ may improve pulmonary function
  - ❖ may reduce risk of hospitalization
  - ❖ effects may be due to antioxidant activity
- No evidence supporting nebulized n-acetylcysteine
- No evidence supporting nebulized Pulmozyme for COPD

## Mucolytic Agents

- Oral mucolytics available outside the U.S.A. (not FDA-approved)
  - ❖ carbocysteine
  - ❖ ambroxol

## Antibiotics

- Indication - evidence of bacterial infection
- Recurrent infections indicate prolonged courses
- Not for routine prophylaxis

See link below for review and meta-analysis of prophylactic antibiotics in COPD and/or chronic bronchitis

## Medications and Rehabilitation

- Instruction and monitoring medication self-administration is integral to rehabilitation
- Selection of specific agent(s) should be based on
  - ❖ patient response
  - ❖ cost
  - ❖ patient's ability to self-administer

FYI see link below to download GOLD therapy-by-stage

## Medications and Rehabilitation

- Adherence can be problematic – it does affect outcomes
- Non-adherence may be due to
  - ❖ memory impairment
  - ❖ cost
  - ❖ perceived difficulty (too much stuff)
  - ❖ perception on ineffectiveness

## Medications and Rehabilitation

- Encouraging adherence
  - ❖ memory aids
  - ❖ cheaper drugs
  - ❖ assistance with payment
  - ❖ patient education on expectations
  - ❖ drugs with lesser frequency
  - ❖ follow-up

## Oxygen Therapy

## Indications for O<sub>2</sub> Therapy

- Manage hypoxemia at rest and during exercise
- Increase exercise capacity for patients without hypoxemia during high-intensity training

## Benefits of O<sub>2</sub> Therapy

- Prolongs survival for patients with severe COPD and resting hypoxemia
  - ❖ long term oxygen therapy (LTOT) ≥ 15 hours/day

## Benefits of O<sub>2</sub> Therapy

- Increases endurance during high intensity exercise
  - ❖ permits greater exercise intensity
  - ❖ decreases respiratory rate
  - ❖ decreases dynamic hyperinflation
  - ❖ decreases leg fatigue
- Prevents nocturnal desaturation

## Nocturnal O<sub>2</sub> Therapy

- COPD - may desaturate at night and require more O<sub>2</sub>
- COPD + OSA (overlap syndrome)
  - ❖ polysomnography needed for suspected patients
  - ❖ managed by OSA guidelines

## Adverse Effects

- **O<sub>2</sub> tissue toxicity** - not at low FiO<sub>2</sub>
- **Oxygen-induced hypoventilation**
  - ❖ very rare
  - ❖ during exacerbations
  - ❖ high FiO<sub>2</sub>
- **Accidents**
  - ❖ smoking with O<sub>2</sub>
  - ❖ cylinder mishaps
  - ❖ liquid O<sub>2</sub> spills

See link below to an abstract on oxygen induced hypercapnia in COPD: myths & facts

## Physiological Criteria for Home O<sub>2</sub>

- **Continuous O<sub>2</sub>**
  - ❖ PaO<sub>2</sub> ≤ 55 mm Hg or SaO<sub>2</sub> ≤ 88% OR
  - ❖ PaO<sub>2</sub> = 56-59 mm Hg or SaO<sub>2</sub> = 89% AND
    - dependent edema from CHF OR
    - pulmonary hypertension
  - ❖ Desaturation within first minute of six minute walk test (6 MWT) - suggested by study

## Physiological Criteria for Home O<sub>2</sub>

- **Nocturnal O<sub>2</sub> only** - PaO<sub>2</sub> ≤ 55 mm Hg or SaO<sub>2</sub> ≤ 88% during sleep OR drop in SaO<sub>2</sub> > 5%
- **Exercise O<sub>2</sub> only** - PaO<sub>2</sub> ≤ 55 mm Hg or SaO<sub>2</sub> ≤ 88%

## Prescription for LTOT

- **Prescribe O<sub>2</sub> for PaO<sub>2</sub> ≥ 60 mm Hg or SaO<sub>2</sub> ≥ 90%**
- **Add 1 L/min additional during exercise and for rest after exercise OR titrate O<sub>2</sub> flow for PaO<sub>2</sub> ≥ 60 mm Hg or SaO<sub>2</sub> ≥ 90%**
- **If the hypoxemia is identified during exacerbation, recheck ABGs 30-90 days to determine need for LTOT**

## Home O<sub>2</sub> Systems

- **Compressed gas cylinder systems**
  - ❖ require no electrical power
  - ❖ limited duration
  - ❖ limited portability
- **Liquid O<sub>2</sub> systems**
  - ❖ require no electrical power
  - ❖ long duration (860:1)

See link below to view various liquid O<sub>2</sub> systems

## Home O<sub>2</sub> Systems

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- **Liquid O<sub>2</sub> systems**
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  - ❖ long duration (860:1)
- **Concentrators**
  - ❖ require electrical power
  - ❖ portable units available

See link below to view various O<sub>2</sub> concentrators

## Home O<sub>2</sub> Devices

- Standard nasal cannula "nose-hose"
- Reservoir nasal cannula
  - ❖ bolus of O<sub>2</sub> during inspiration
  - ❖ conserves O<sub>2</sub> supply
- Pulsed flow cannula
  - ❖ O<sub>2</sub> flow during inspiration, only
  - ❖ conserves O<sub>2</sub> supply
  - ❖ increased comfort (less drying)

See links below to view a reservoir device and pulsed flow device

## Home O<sub>2</sub> Devices

- Transtracheal oxygen therapy (TTOT)
  - ❖ aesthetically desirable – psychosocial benefits
  - ❖ permits more active lifestyle
  - ❖ lesser flow rate - conserves O<sub>2</sub>
  - ❖ can combine with pulse delivery device

See links below to view a TTOT device, for more information on a TTOT device, and to view an animated illustration and clinician page.

## Home O<sub>2</sub> Devices

- Transtracheal device (TTOT)
  - ❖ aesthetically desirable – psychosocial benefits
  - ❖ permits more active lifestyle
  - ❖ lesser flow rate - conserves O<sub>2</sub>
  - ❖ can combine with pulse delivery device
  - ❖ less discomfort - increases adherence
  - ❖ treats OSA
  - ❖ requires special knowledge and skills
  - ❖ requires minor surgery

Up next: Video of TTOT oxygen insertion

## Patient Education on O<sub>2</sub> Therapy

- Topics
  - ❖ devices
  - ❖ device usage - how & when
  - ❖ troubleshooting
  - ❖ contacts for devices & supplies
- Competency-based evaluations
  - ❖ knowledge - examinations
  - ❖ procedures – performance checklists

## Patient Adherence to LTOT

- LTOT adherence is 45 - 70%
- Reasons for non-adherence
  - ❖ hassle & expense of supplies
  - ❖ limitation of mobility
  - ❖ nasal irritation
  - ❖ embarrassment
  - ❖ fear of dependence

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- LTOT adherence is 45 - 70%
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  - ❖ limitation of mobility
  - ❖ nasal irritation
  - ❖ embarrassment
  - ❖ fear of dependence
  - ❖ inadequate communication
  - ❖ perception of no benefit
  - ❖ desire for freedom to smoke

## Methods to Improve Adherence

- Instruction on need & benefits
- Regular follow-up
- Family instruction & social support
- Portable delivery systems - small and light

## Methods to Improve Adherence

- Instruction on need & benefits
- Regular follow-up
- Family instruction & social support
- Portable delivery systems - small and light
- Concentrators - avoid problems with refills and deliveries
- TTOT - decreases embarrassment
- Smoking cessation, fire safety

Up next: Video on smoking with O<sub>2</sub> (1.2 min)

## Travel With O<sub>2</sub>

- Important enabler for rehab patients
- Commercial aircraft pressurized to 8,000 ft
- O<sub>2</sub> required for patients with
  - ❖ sea level RA PaO<sub>2</sub> < 73
  - ❖ FEV<sub>1</sub> < 1.5 (maybe)
- Altitude simulation test may be needed

## Travel With O<sub>2</sub>

- Check with airline before flight
- Airline security must be notified
- Liquid oxygen (LOX) systems may NOT be carried on an aircraft (store with luggage)

FYI see link below for an article for patients traveling with O<sub>2</sub>

## Travel With O<sub>2</sub>

- Check with airline before flight
- Airline security must be notified
- Liquid oxygen (LOX) systems may NOT be carried on an aircraft (store with luggage)
- Portable O<sub>2</sub> concentrator is best, but requires approval by airline
- CPAP devices require external power source
- Some airlines provide O<sub>2</sub> source for a fee

## Pulse Oximetry

- Oximeters are available at Walmart
- Two-edged sword - patient requires thorough instruction
- Purposes
  - ❖ home O<sub>2</sub> monitoring
  - ❖ sleep apnea monitoring
  - ❖ monitoring patients with congenital heart disease
  - ❖ high altitude travel & activities



## Pulse Oximetry

- Insurers recognize oximetry to
  - ❖ determine appropriate home oxygen liter flow
  - ❖ monitor patients on home ventilators
  - ❖ adjust for change in the patient's condition
  - ❖ wean patients from home oxygen

FYI see link below for patient information on pulse oximetry

## Inspiratory Muscle Training

## Concepts

- Weakness - reduced force that is not changed by rest
- Fatigue - reduced force that changes with rest (occurs in normals)
- Strength - maximum force generated ( $PI_{MAX}$ )

FYI see link below for ATS respiratory muscle testing statement

## Concepts

- Weakness - reduced force that is not changed by rest
- Fatigue - reduced force that changes with rest (occurs in normal patients)
- Strength - maximum force generated ( $PI_{MAX}$ )
- Endurance
  - ❖  $PI$  sustainable over time inspiratory muscles
  - ❖ maximum voluntary ventilation (MVV) - inspiratory and expiratory muscles

## Rationale for IMT

- COPD patients typically have weak inspiratory muscles
- Exercises intend to increase the strength and/or endurance of ventilatory muscles, thereby
  - ❖ decreasing breathlessness
  - ❖ increasing ventilatory muscle efficiency
  - ❖ increasing exercise capacity - effective, even for normal individuals

## Conditions That May Benefit

- Asthma
- Heart failure rehabilitation
- Bariatric surgery - preoperatively
- Thoracic restrictive disease
- Failure to wean from mechanical ventilation

## Conditions That Benefit

- Selected COPD patients
  - ❖ moderate-to-severe; but, not end-stage
  - ❖ exertional dyspnea
  - ❖ decreased  $PI_{MAX}$  (>80 cm H<sub>2</sub>O excludes weakness)
  - ❖ motivated - will adhere to training

## Exercise Techniques

- Types
  - ❖ sustained hyperpnea
  - ❖ inspiratory resistance
- Intended goals
  - ❖ strength - high workload, few repetitions
  - ❖ endurance - moderate workload, many repetitions

## Exercise Devices

- Threshold resistors (preferred)
- Flow restrictors - patient can reduce load by decreasing flow
- Incentive spirometers - ineffective

See links below to view a Respirationics Threshold IMT™ device and a Powerbreathe™ device

## Exercise Prescription

- Frequency ≥ 5 days/week
- Duration 30 min/day, continuous or divided into two sessions
- Intensity > 30% initial  $PI_{MAX}$  (adjusted as tolerated)

## Measured Outcomes

- $PI_{MAX}$
- Dyspnea (e.g. by BDI/TDI indexes)
- Health status (e.g. by SGRQ)
- Exercise performance (e.g. by 6 MWD)

## General Exercise Training

## Physical Reconditioning Exercises

- Rationale - to reverse the effects of inactivity that are due to dyspnea
- The most important factor in pulmonary rehabilitation for symptomatic respiratory disease
- Beneficial to almost everyone, except
  - ❖ pure cardiac pump failure
  - ❖ degenerative neuromuscular diseases

## Chronic Disease Cascade



## Benefits of Reconditioning Exercises

- Increased  $VO_{2MAX}$
- Increased muscle strength and endurance
- Improved muscle coordination
- Increased muscle mass, decreased adipose tissue
- Improved sense of well-being
- Improved chance of survival (possibly)

## Regimen Benefits

- Aerobic training – increases endurance
  - ❖ lower extremities
  - ❖ upper extremities
- Strength training - increases muscle strength and muscle mass
  - ❖ lower extremities
  - ❖ upper extremities

## Regimen Benefits

- Aerobic training
  - ❖ high-intensity exercise - exercise at levels near individual peak capacity produces greatest physiological benefit; however,
  - ❖ both low and high-intensity exercises produce clinical benefits

## Exercises

- Leg exercises
  - ❖ walking
  - ❖ treadmill walking
  - ❖ cycle ergometer
  - ❖ stair climbing
- Arm exercises
  - ❖ arm ergometer
  - ❖ weights
  - ❖ elastic resistance bands

## Exercise Prescription

- Developed by
  - ❖ MD, and/or
  - ❖ Physical therapist (PT) – essential for targeting muscle groups for strength training and/or
  - ❖ Exercise physiologist and/or
  - ❖ RCP
- Implemented by
  - ❖ PT and/or
  - ❖ RCP and/or
  - ❖ Rehab RN

## Exercise Implementation

- Recommended frequency and duration - 3 times/week; 8-12 weeks??
- Increase intensity as tolerated
- Monitoring
  - ❖ pulse oximetry - SpO<sub>2</sub> and heart rate
  - ❖ respiratory rate
  - ❖ reported dyspnea

See link below to view an exercise prescription table

## Maintenance Program

- Training effects can be lost after one month without exercise
- Maintenance programs
  - ❖ Home exercise program
  - ❖ Monthly outpatient exercise program

FYI see link below to view examples of training programs

## Adjunctive Therapeutics

- Supplemental oxygen
- Noninvasive positive pressure ventilation (NPPV)
  - ❖ better than O<sub>2</sub>? (small study)
  - ❖ nocturnal - effects carry over to day time
  - ❖ during exercise
    - uncomfortable
    - unwieldy

## Adjunctive Therapeutics

- Heliox
  - ❖ low density gas decreases WOB
  - ❖ collective evidence does not support effectiveness with PR
- Neuromuscular electric stimulation (NMES) - low voltage stimulation of motor nerves
  - ❖ increases recovery of muscle strength
  - ❖ more research needed
  - ❖ muscles without exercise??

FYI see link below for an article on NMES and COPD

## Rehabilitation for Miscellaneous Conditions

## Conditions That May Benefit

- Obstructive conditions
  - ❖ asthma
  - ❖ cystic fibrosis
  - ❖ diffuse bronchiectasis
- Restrictive conditions
  - ❖ pulmonary fibrosis
  - ❖ sarcoidosis
  - ❖ ARDS survivors
  - ❖ collagen vascular diseases
  - ❖ thoracic restriction (e.g. kyphoscoliosis)

## Conditions That May Benefit

- Neuromuscular disease (e.g. Guillain-Barre syndrome)
- Pulmonary vascular disease -pulmonary hypertension
- Lung cancer
- Recovery from thoracic surgery:
  - ❖ transplants
  - ❖ lung volume reduction surgery (LVRS)

## Non-COPD Programs

- Same goals as for COPD
  - ❖ improve HRQoL
  - ❖ increase exercise capacity
- Different program content
  - ❖ instruction on different medications
  - ❖ disease-specific physical and occupational therapy
  - ❖ exercises focusing on different muscle groups

## Asthma Program

- Patient groups
  - ❖ adults, including pregnant women
  - ❖ children (K+)
  - ❖ parents
- Instructional delivery
  - ❖ certified asthma educator
  - ❖ computer-based programs
  - ❖ asthma camps

FYI see link below for the National Asthma Education Certification Board website

## Asthma Program

- Educational topics
  - ❖ asthma pathophysiology
  - ❖ asthma triggers
  - ❖ early warning signs
  - ❖ PEF monitoring
  - ❖ medications & self-administration techniques

## Asthma Program

- Exercise
  - ❖ warm up - important
  - ❖ self-monitor for exercise-induced bronchospasm
  - ❖ submaximal exercises
    - aerobics
    - walking
    - yoga

## Cystic Fibrosis Program

- Education topics
  - ❖ lung clearance techniques
  - ❖ medications & self-administration techniques
  - ❖ nutrition
  - ❖ infection control

## Cystic Fibrosis Program

- Exercise precautions
  - ❖ may require supplemental O<sub>2</sub>
  - ❖ avoid hot environments - sweating
  - ❖ maintain hydration with electrolytes
  - ❖ maintain nutrition

## Restrictive Lung Disease

- Education topics
  - ❖ disease pathophysiology
  - ❖ energy conservation
  - ❖ oxygen therapy
  - ❖ relaxation techniques
  - ❖ medications
  - ❖ nutrition
  - ❖ breathing retraining - pursed lip breathing????

## Restrictive Lung Disease

- Exercise training
  - ❖ may not tolerate
  - ❖ may not benefit - desaturate with exercise
  - ❖ supplemental oxygen may be required
  - ❖ NPPV may be required

## Neuromuscular Disease

- Education topics
  - ❖ pathophysiology
  - ❖ medications
  - ❖ cough assist (e.g. mechanical in/ex sufflator)
  - ❖ NPPV devices & procedures

## Neuromuscular Disease

- Exercise training - condition specific
  - ❖ strength and endurance training
  - ❖ respiratory muscle training
- Exercise precautions
  - ❖ some patients do not benefit (e.g. spinal/bulbar muscular atrophy)
  - ❖ avoid IMT in patients with hypercapnea

## Special Issues

## Issues

- > Outcome assessment
- > Patient adherence
- > Ethical & end-of-life issues
- > Social & recreational support

## Outcome Assessment

- > Components
  - ❖ Clinical
  - ❖ Behavioral
  - ❖ Health
  - ❖ Service

FYI see link below to view the AACVPR statement on outcome assessment

## Outcome Assessment

- > Clinical component
  - ❖ overall management
    - BODE index
    - ADL assessment
  - ❖ exercise testing and training
    - maximal & submaximal exercise test
    - heart rate
    - SpO<sub>2</sub>

See link below to view BODE index scoring

## Outcome Assessment

- > Clinical component
  - ❖ strength & flexibility training
  - ❖ nutrition & weight management
    - body mass index
    - nutritional biochemical markers
  - ❖ psychosocial management
    - mood
    - cognitive function
  - ❖ smoking cessation

## Outcome Assessment

- > Behavioral component
  - ❖ overall management
    - knowledge and self-care actions
    - medication adherence
    - supplemental O<sub>2</sub> adherence
  - ❖ exercise testing & training
    - exercise compliance
    - energy expenditure

## Outcome Assessment

- Behavioral component
  - ❖ breathing retraining - effectiveness
  - ❖ bronchial hygiene – mucus clearance
  - ❖ nutrition & weight management
    - diet & exercise adherence
    - physical activity logs

## Outcome Assessment

- Behavioral component
  - ❖ breathing retraining - effectiveness
  - ❖ bronchial hygiene – mucus clearance
  - ❖ nutrition & weight management
    - diet & exercise adherence
    - physical activity logs
  - ❖ psychosocial management
    - coping mechanisms
    - social support network
  - ❖ smoking cessation - stage of change

## Outcome Assessment

- Health component
  - ❖ healthcare utilization
  - ❖ adverse events during sessions
  - ❖ HRQoL
- Service component
  - ❖ patient satisfaction
  - ❖ performance measures
    - cost per patient
    - program cost
    - completion rate

## Patient Adherence

- Extent of problem
  - ❖ 50% of all patients adhere to treatment recommendations
  - ❖ 37% of patients with lung disease adhere to treatments
- Components of problem
  - ❖ medications
  - ❖ oxygen therapy
  - ❖ exercise
  - ❖ NPPV

## Patient Adherence

- Reasons for non-adherence
  - ❖ forgetting
  - ❖ inadequate communications from physicians/other caregivers
  - ❖ medication side effects
  - ❖ perception that interventions do not work
  - ❖ cost of medications
  - ❖ inconvenience

## Patient Adherence

- Measures to improve adherence
  - ❖ reminders - telephone, e-mail
  - ❖ enhanced physician communications
  - ❖ set realistic goals for exercise
  - ❖ establish rewards for desirable behaviors
  - ❖ focus on positive outcomes
  - ❖ telemonitoring - there's an 'app'

FYI see link below for a Smartphone article



## Ethical & End-of-Life Issues

- After acute exacerbations of COPD
  - ❖ median survival = 2 years
  - ❖ readmission within 6 mo. = 50%
- Pulmonary rehabilitation patients are receptive to end-of-life planning, assisted by rehabilitation educators

## Ethical & End-of-Life Issues

- Patients want information, e.g.
  - ❖ nature of disease process
  - ❖ role and limitations of treatments
  - ❖ prognosis for survival and QoL
  - ❖ planning for future care, including exacerbations

## Ethical & End-of-Life Issues

- Discussions on advance planning
  - ❖ are improved by ambulatory setting
  - ❖ are improved by skilled communicators
  - ❖ should incorporate a team-based approach (including lawyer)

## Social & Recreational Support

- Purposes:
  - ❖ decrease anxiety
  - ❖ decrease loneliness, sense of isolation
  - ❖ improve self-image
  - ❖ extend benefits of PR program
- Patient support group (e.g. Better Breathers Club [BBC] is an instrumental medium)

FYI see link below for an article on patients' experiences with PR

## Social & Recreational Support

- Support for BBC
  - ❖ home care, durable medical equipment (DME) companies
  - ❖ American Lung Association
  - ❖ hospital - social services department
- Location for meetings
  - ❖ must be accessible
  - ❖ must accommodate special needs

FYI see link below for an article on starting and running a BBC

## Social & Recreational Support

- Publicity for meetings, especially the first one, is necessary
- Monthly meeting days/times -midweek, midday
- Meetings provide
  - ❖ name tags & introductions
  - ❖ speakers - stimulating
  - ❖ beverages, snacks

## Social & Recreational Support

- Organization - patient board of directors
- Funding
  - ❖ no dues
  - ❖ fundraising activities
- Social events - aim for fun
  - ❖ birthdays
  - ❖ holidays
  - ❖ picnics
  - ❖ group trips

## Social & Recreational Support

- Encourage wellness & physical activities during and in addition to the events, e.g.
  - ❖ walks
  - ❖ swimming outings
  - ❖ dancing
  - ❖ aerobics
  - ❖ cooking classes
- Encourage social networking, e.g. Facebook, etc.

## Summary & Review

- Pharmacotherapy - lesser frequency gets greater adherence
  - ❖ immunizations
  - ❖ bronchodilators
  - ❖ corticosteroids
  - ❖ combined medications
  - ❖ mucolytics

## Summary & Review

- Oxygen therapy
  - ❖ indications
  - ❖ benefits of LTOT – prolonged survival & increased exercise endurance
  - ❖ physiologic criteria
  - ❖ prescription
  - ❖ home O<sub>2</sub> systems & devices - competency-based education
  - ❖ travel with O<sub>2</sub>

## Summary & Review

- Respiratory muscle training
  - ❖ conditions that benefit – selected COPD patients
  - ❖ strength & endurance
  - ❖ exercise prescription
  - ❖ exercise techniques
  - ❖ exercise devices
  - ❖ measured outcomes

## Summary & Review

- General exercise training
  - ❖ rationale - reverse effects of inactivity
  - ❖ benefits - increased exercise capacity
  - ❖ regimens - aerobics, strength training
  - ❖ exercises - legs and upper extremities
  - ❖ prescription
  - ❖ implementation
  - ❖ adjuncts - NPPV, O<sub>2</sub>, heliox, NMES

## Summary & Review

- PR for non-COPD
  - ❖ conditions that may benefit
  - ❖ goals - same as for COPD
  - ❖ program content - specific for disease and patient
  - ❖ programs for
    - asthma
    - cystic fibrosis
    - restrictive lung diseases
    - neuromuscular diseases

## Summary & Review

- Special issues
  - ❖ outcome assessment - matrix
  - ❖ patient adherence, including improvement methods
  - ❖ ethical and end-of-life issues - advance planning
  - ❖ social & recreational support – better breathers

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