AACVPR Guidelines for Pulmonary Rehabilitation Programs (4th Edition)

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DISCLOSURE INFORMATION
Session Description

• This session will provide a review of the 4th edition of the recently published Pulmonary Rehabilitation (PR) Guidelines and evidence-based outcomes for PR.
Objectives

- Identify the changes in the pulmonary rehabilitation guideline recommendations
- Describe how evidence-based outcomes can be applied to PR programming
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• Interdisciplinary group of writers: Physicians, Nurses, Physical Therapists, Respiratory Therapists, Exercise Physiologists
• Nationally recognized experts in the field of Pulmonary Rehabilitation
• A primary author navigated each chapter revision or writing
• All chapters reviewed by the writing committee and several outside reviewers
• Writing committee met on 5 occasions over 2 years to complete the book
Chapter 1: Overview of PR

• Definition of PR
• ACCP/AACVPR Evidence-based PR Guidelines summary
• History of Pulmonary Rehabilitation
Chapter 2: Selecting and Assessing the PR Candidate

- Conditions appropriate for PR
- Patient assessment:
  - Interview
  - Medical history
  - Diagnostic tests
  - Symptom assessment
  - Musculoskeletal and exercise assessment
  - Pain assessment
  - ADL assessment
  - Nutrition assessment
  - Educational assessment
  - Psychosocial assessment
- Goal development and rehabilitation potential
Chapter 2: Common Conditions Leading to PR Referral

- Dyspnea, fatigue, and chronic respiratory symptoms
- Impaired health-related quality of life
- Decreased functional performance
- Decreased occupational performance
- Difficulty performing ADLs
- Difficulty with medical regimen
- Psychosocial problems related to underlying respiratory illness
- Nutritional depletion
- Increased use of medical resources: hospitalizations, ED, MD visits
- Gas exchange abnormalities including hypoxemia
Chapter 3: Collaborative Self-Management Education

- Developing an individualized educational program
- Educational content
  - Useful internet web site addresses
  - Sample document for self-management education
  - Sample of COPD action plan
  - End of life planning
Chapter 3: Sample Educational Topics

- Normal physiology/pathophysiology
- Medical test interpretation
- Breathing strategies
- Secretion clearance
- Medications (including oxygen)
- Respiratory devices
- Benefits of exercise
- ADLs
- Nutrition
- Irritant avoidance
- Exacerbation recognition and management
- Leisure activities
  - Travel and oxygen
  - Sexuality
- Coping with chronic disease
- End of life planning
Chapter 4: Exercise Assessment and Training

- Types of exercise tests
- Testing forms
- Exercise assessment equipment
- Functional performance assessment
- Mechanisms of exercise intolerance in chronic respiratory disease
- Rationale for exercise training in chronic respiratory disease
- Emergency procedures
- Documentation
- Preparing the home exercise program
Chapter 4: Exercise Assessment

• Goal:
  – Quantify exercise capacity before beginning program
  – Establish baseline for outcomes
  – Helps to determine patient-specific goals
  – Exercise prescription
  – Detect exercise-induced hypoxemia; O2 titration
  – Evaluate for non-pulmonary exercise limitations
  – Detect underlying cardiac abnormalities
  – Screen for exercise-induced bronchospasm
Chapter 4: Assessment Tests

- Walk distance tests
  - 6MW
  - Shuttle walk
- Incremental maximal test
- Submaximal exercise test
- Functional performance assessment
Chapter 4: Incremental Maximal Exercise Test

- Performed on treadmill or stationary bicycle
- Ramped or incremental increases in exercise load (i.e. 15-25 watts/min)
- Symptom-limited testing criteria:
  - Ventilatory limits
  - Gas exchange limits
  - Cardiovascular limits
  - Other limits
    - Musculoskeletal, metabolic, peripheral vascular, psychological
Chapter 4: Exercise Training

- Skeletal muscle dysfunction is a key factor in exercise intolerance
- Physical deconditioning is consequence of more sedentary lifestyle to avoid dyspnea
  - Leads to downward spiral
- Rationale of exercise addresses the skeletal muscle dysfunction
  - Supervised exercise addresses patient’s fear of dyspnea
Chapter 4: Principles of Exercise

- Encompass both upper-extremity and lower-extremity endurance training
  - Aerobic exercise at high or low intensity
- Strength training
- Respiratory muscle training

- Duration, frequency, intensity of exercise should be included in exercise prescription
  - 3-5 times/week for 4-12 weeks
  - Ultimate goal of 30 minutes endurance exercise within couple weeks of beginning program
Chapter 4: Exercise Types

• Upper- and lower-extremity training
  – Need to exercise muscles used in ADLs
  – Lower-extremity training involves large muscle groups
    • Walking, stationary bike, stair climbing, swimming
    • Improves ambulatory stamina, balance and ADL performance
  – Upper-extremity training improves arm muscle endurance and strength
    • Support (arm ergometry) or unsupported (dowel rod)
    • Can trigger dysynchronous breathing
    • Caution in patients with osteoporosis (increased risk for thoracic vertebrae fracture) and post-thoracic surgery patients (usually none before 6 weeks post-operatively)
Chapter 4: Exercise Types

• Strength training improves muscle strength
  – Examples:
    • Hand and ankle weights, free weights, machine weights, elastic resistance, and own body weight (stair climbing, squats)
  – Start with lower weights and higher repetitions
  – Cautious progression in weights for safety

• Flexibility, posture and body mechanics
  – Goal to increase range of motion, improve balance

• Respiratory muscle training
  – Not supported by ACCP/AACVPR Guidelines as essential to PR
  – Types include flow resistive devices, threshold loading training, and isocapneic hyperventilation
Chapter 5: Psychosocial Assessment and Intervention

- Prevalence of psychosocial concerns in the chronic respiratory disease population
- Assessment of psychosocial concerns
  - Screening for depression and anxiety
- Motivation
- Self-efficacy
- Interventions for psychosocial concerns
  - Building support system
- Section addressing smoking cessation
  - Pharmacology and nicotine replacement therapies
Chapter 5: Psychological Assessment Tools

- **Depression**
  - Geriatric Depression Scale (GDS)
    - 15 item tool, yes/no questions, 5 or greater triggers further evaluation
  - Center for Epidemiological Studies Depression Scale (CES-D)
    - 20-item tool, 0 (rarely) to 3 (most of the time) scale, score < 16 normal, 16-24 indicates borderline depressive symptoms, > 24 triggers immediate referral

- **Anxiety:** Frequently present with depression
  - General anxiety disorder 7 (GAD-7)
    - 7-item tool, 0-3 scale; 8th question re: distress of symptoms; ≥ 5 indicates mild anxiety, ≥ 10 triggers referral
  - Penn State Worry Questionnaire (PSWQ-A)
    - 16-item tool, 1-4 scale; ≤ 30 normal for 16 item version

- **Cognitive impairment**
  - Mini-mental state examination
Chapter 6: Patient Centered Outcomes

- Outcome areas for pulmonary patients
- Timing and analyzing outcomes
- Common outcome measurement tools
- Table of dyspnea measures
- Table of HRQoL measures
- Other possible outcome measures
  - Functional performance and home-based activity
  - Patient adherence
  - Weight modification
  - Mortality
  - Health care utilization
  - Patient satisfaction
# Chapter 6: Outcome Examples

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Areas Measured</th>
<th>Types of Measures</th>
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<tbody>
<tr>
<td>Exercise capacity</td>
<td>Distance walked</td>
<td>6MW</td>
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<tr>
<td></td>
<td>Oxygen consumption</td>
<td>Shuttle walk</td>
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<td></td>
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<td>Exercise stress test</td>
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<tr>
<td>Symptoms</td>
<td>Dyspnea</td>
<td>Symptom-specific questionnaires</td>
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<tr>
<td></td>
<td>Fatigue</td>
<td>Domains of HRQoL or functional status questionnaires</td>
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<tr>
<td>Health-related quality of life</td>
<td>Several domains, varies by questionnaire (physical function, emotional function, mastery or impact and symptoms)</td>
<td>Generic questionnaires</td>
</tr>
</tbody>
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# Chapter 6: Outcome Tool Examples

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Tool Examples</th>
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</thead>
<tbody>
<tr>
<td>Dyspnea</td>
<td>BDI/TDI, Borg, UCSD SOBQ, VAS</td>
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<tr>
<td>Fatigue</td>
<td>Borg, CRQ fatigue subscale, PFSDQ-M subscale, VAS</td>
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<tr>
<td>HRQoL (Disease-specific)</td>
<td>CRQ, SGRQ, SOLQ</td>
</tr>
<tr>
<td>HRQoL (Generic)</td>
<td>SF-36</td>
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Chapter 6: Other Outcomes

- Home-based activity
- Psychological outcomes
- Patient adherence
- Knowledge and self-efficacy
- Smoking cessation
- Weight modification
- Health care utilization
- Mortality
- Patient satisfaction
Chapter 7: Disease-Specific Approaches in PR

• Conditions other than COPD PR indications
  – Asthma
  – Cystic fibrosis
  – Interstitial lung disease
  – Obesity-related respiratory disease
  – Pulmonary hypertension
  – Chest wall and neuromuscular disorders
  – Lung cancer
  – The surgical patient
    • Lung volume reduction surgery
    • Lung transplantation
  – Co-existing cardiac disease
Chapter 7: Examples of Program Modifications

- **Asthma**
  - Adherence to therapy focus, proper inhaler technique
  - Warm-up with beta-agonist bronchodilator

- **Cystic fibrosis and bronchiectasis**
  - Airway clearance techniques
  - Nutritional education
  - Antibiotics use

- **Interstitial lung disease**
  - More exercise intolerance, more hypoxemia
  - Focus on oxygen therapy and medications
Chapter 7: Examples of Program Modifications

- Obesity-related respiratory disorders
  - Need for bariatric assistive equipment (walkers, scales, weight equipment)
  - Wide, armless chairs to accommodate obese patients
  - Nutritional referral, low-impact exercise alternatives

- Pulmonary Hypertension
  - Close supervision of exercise, assess/teach symptoms (dizziness, palpitations, change in BP)
  - No disruption of IV vasodilators
  - Many programs use telemetry for these patients
Chapter 7: Examples of Program Modifications

- Chest wall and neuromuscular disorders
  - Example diseases:
    - Restrictive chest wall disease (kyphoscoliosis, pneumoplasty)
    - Neuromuscular disease with respiratory involvement
    - Muscular dystrophy
    - Parkinson’s disease
    - Multiple sclerosis
    - Myasthenia gravis
    - Amyotrophic lateral sclerosis
  - Shorter training sessions, careful strength training (increased risk for muscle injury), orthotics, airway clearance, energy conservation techniques
Chapter 7: Examples of Program Modifications

- Lung cancer
  - Deconditioning worse with chemo/radiation therapy
  - Fatigue significant symptom
  - Nutritional instruction re: cachexia

- Surgical patients
  - Lung volume reduction
    - PR required before and after MC approved surgery
  - Lung transplant
    - Pre-transplant vs. post-transplant
  - Analgesia before exercise early post-op, no strenuous upper extremity exercise x 6 weeks
Chapter 8: Program Management

- Interdisciplinary team
- Physician’s role in PR
- Staffing requirements
- Staff competencies and responsibilities
- Program content and structure
  - Facilities and equipment
  - Emergency procedures and equipment
  - Program performance measures
  - Documentation
- Reimbursement
- Strategies for program success
Chapter 8: Core PR Team

- Medical director
- PR Coordinator
  - Physical therapist (PT)
  - Nurse (RN)
  - Respiratory Therapist (RT)
- PR Specialist
  - PT, RN, RT
  - Exercise physiologist

- Other resource professionals
  - Clinical psychologist
  - Dietitian or nutritionist
  - Social worker
  - Pharmacist
  - Recreational therapist
  - Nurse practitioner
  - Chaplain
Chapter 9: AACVPR PR Certification

• Resources for certification
  – Certification Center 1- (312) 321-5146
  – AACVPR.org website

• Certification process

• Staffing ratios

• Documentation overview
  – In program management
  – Initial assessments
  – Outcomes

• Required data
AACVPR Certification

- Achievement of:
  - Quality
  - Performance
  - Outcomes
  - Safety
Resources for Certification

- *PR Guidelines 4th Edition*
- AACVPR Clinical Competency Guidelines for PR Professionals. *JCRP, 2007; 27: 355-358*
- *ACSM Guidelines for Exercise Testing and Prescription, 8th Edition*
- Pulmonary Rehabilitation: Joint ACCP/AACVPR Evidence-based Clinical Practice Guidelines. *CHEST, 2007; 131 (5 supp): 4S-42S*
AACVPR Outcome Changes for 2012

- Evolving to an evidence-based model
- Requirements will change from “domains” to evidence-based outcomes including:
  - Function/exercise capacity
    - 6MW pre- and post- PR program
  - Quality of life
    - See validated tools in resource section
  - Symptoms
    - Dyspnea
- Service requirement unchanged
- Programs need to start to use this model January 2011
- Education/resources to help transition to new outcomes
Manual available at: