THE O’DONOHUE MEMORIAL LECTURE

Walter J. O’Donohue, Jr., MD was a charter member of NAMDRC. Prior to his death in July 2002, Dr. O’Donohue served on NAMDRC’s Board of Directors, and was President from 1995-97. Throughout his career in pulmonary medicine, Dr. O’Donohue worked tirelessly to remove the bureaucratic obstacles that impeded quality patient care. His efforts shaped the goals and mission of NAMDRC, and his many contributions epitomized the professionalism, leadership, and ethics to which everyone in pulmonary medicine should aspire.

- The O’Donohue Lecture is dedicated to Walter’s leadership in communicating the importance of participation in public policy debate.

- O’Donohue Lecturers include:
  - Atul Grover, MD 2004
  - The Honorable Duncan Hunter (R-CA) 2005
  - Dennis Doherty, MD, FCCP 2006
  - The Honorable Norman Y Mineta 2007
  - Neil R MacIntyre, MD, FCCP 2008
  - Dennis Doherty, MD, FCCP & Kent Christopher, MD 2009
  - Richard Casaburi, PhD, MD 2010
  - Donald Mahler, MD 2011
  - Christine Garvey, FNP, MSN, MPA, FAACVPR 2012
  - Frank L. Powell, PhD 2013
  - Neil R. MacIntyre, MD 2014
  - Peter C. Gay 2015
  - Andrew L. Ries, MD, MPH 2016
Andrew L. Ries, MD, MPH is a Professor in the Department of Medicine in the Division of Pulmonary and Critical Care Medicine and the Department of Family Medicine and Public Health in the Division of Preventive Medicine. He has had training in epidemiology and biostatistics and extensive experience in clinical research in chronic lung diseases including pulmonary rehabilitation, evaluation of health outcomes (e.g., dyspnea, health related quality of life), pulmonary/exercise physiology, behavioral issues in lung disease, sleep disordered breathing, and cross-cultural health. He has conducted several NIH-funded, landmark studies in pulmonary rehabilitation and led efforts to develop evidence-based guidelines that have helped establish rehabilitation as an effective treatment option for patients with disabling chronic lung diseases. He has also been involved in several multicenter NHLBI studies including NETT (LVRS in emphysema, clinical center PI); FORTE (retinoids in emphysema, clinical center co-PI; SOL (Study of Latinos, co-I); and LOTT (long-term oxygen therapy trial, DSMB member).

Dr. Ries is also committed to and experienced in mentoring students, trainees, and junior faculty in clinical research and fostering careers in academic medicine. As Associate Vice Chancellor for Academic Affairs, he is responsible for overseeing all faculty appointments and academic reviews for advancement in Health Sciences. In this capacity he has published two manuscripts evaluating the effects of a structured junior faculty development program on faculty retention and future success in academic medicine.

Dr. Ries has worked closely with Dr. Powell for many years and Dr. Malhotra since his arrival at UCSD and fully support their efforts to strengthen UCSD in translational pulmonary research and provide guidance to trainees serious about pursuing research-based careers in academic medicine. I am committed to supporting the Pulmonary/Critical Care & Physiology T32 training grant which is critical to our current and future efforts to develop the next generation of leaders in academic medicine in our fields.
OBJECTIVES:
Participants should be better able to:

1. Describe the key components of a comprehensive pulmonary rehabilitation program;

2. Identify at least three benefits of pulmonary rehabilitation for patients with chronic lung diseases;

3. Identify appropriate patients to refer to pulmonary rehabilitation;

4. Understand the qualifications and competencies of a core pulmonary rehabilitation team member.
Perspectives on Pulmonary Rehabilitation

Andrew Ries, MD, MPH
Professor of Medicine and
Family Medicine and Public Health
Associate Vice Chancellor, Academic Affairs
University of California, San Diego

NMDRC 2016
March 5, 2016

Dr. Ries serves as a consultant for Alere Inc., but this does not create a conflict related to the following presentation.
Life must be lived forward, but can only be understood backwards

• Why am I interested in pulmonary rehabilitation?

• Why should you be interested in pulmonary rehabilitation?
• Why am I interested in pulmonary rehabilitation?
  • How (on earth) did I become interested in pulmonary rehabilitation?
1961: 23 consecutive losses
1964: "The Collapse" (6.5/12 games)
Kenneth M. Moser, M.D.

Founder and Director
Division of Pulmonary and Critical Care Medicine
University of California, San Diego
1968 - 1997
• Why am I interested in pulmonary rehabilitation?
  • How (on earth) did I become interested in pulmonary rehabilitation?

• Why should you be interested in pulmonary rehabilitation?

• Why should you be interested in pulmonary rehabilitation?
  • Chronic lung diseases are a big problem
<table>
<thead>
<tr>
<th>Cause of Death</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Heart Disease</td>
<td>596,339</td>
</tr>
<tr>
<td>2. Cancer</td>
<td>575,313</td>
</tr>
<tr>
<td>3. Respiratory Diseases (COPD)</td>
<td>146,382</td>
</tr>
<tr>
<td>4. Cerebrovascular disease (stroke)</td>
<td>128,931</td>
</tr>
<tr>
<td>5. Accidents</td>
<td>122,777</td>
</tr>
<tr>
<td>6. Alzheimers</td>
<td>84,691</td>
</tr>
<tr>
<td>7. Diabetes</td>
<td>73,282</td>
</tr>
<tr>
<td>8. Pneumonia and Influenza</td>
<td>53,567</td>
</tr>
<tr>
<td>9. Nephritis</td>
<td>45,751</td>
</tr>
<tr>
<td>10. Suicide</td>
<td>38,285</td>
</tr>
<tr>
<td>All other causes of death</td>
<td>650,475</td>
</tr>
</tbody>
</table>
The Mountain of COPD

Cigarette Consumption

COPD Deaths

1900 1940 1980 2000

New Albany, Indiana
Why should you be interested in pulmonary rehabilitation?
- Chronic lung diseases are a big problem
- PR can help and support MDs in managing a challenging group of patients
Natural History of COPD

Non-smoker

Smoker

Symptoms

Disability

Death

0 20 30 40 50 60 70 80

50

25

75

0
The Changing Picture of COPD

COPD: Goals of Rx

- Prevention
  - Slow progression
  - Maintain function
  - Minimize complications
- Reduce symptoms
- Improve function
Treatment of COPD

- Stop smoking
- Medications
- Oxygen
- Vaccination
- Rehabilitation
- Surgery: LVRS, Transplant

Pulmonary Rehabilitation

... an individually tailored, multidisciplinary program ... which through accurate diagnosis, therapy, emotional support and education, stabilizes or reverses both the physio- and psychopathology of pulmonary diseases ...

ACCP, 1974
Pulmonary Rehabilitation

Goal

Restore the patient to the highest level of independent function i.e., improve disability from disease, not necessarily change disease process

UC San Diego Health Sciences
Program Content

- Initial evaluation
- Education
- Chest Physiotherapy
- Psychosocial support
- Exercise

Patient Selection

- Chronic lung disease
  - Not just COPD (e.g., ILD, CF, Asthma, PH, CA, LVRS, Trans, NM, Bronchiectasis)

- Symptomatic, stable
  - After exacerbation - reduced hosp admissions/ mortality
  - After critical illness - hastens recovery, reduces decline

- Motivated – active participant in care
- Realistic goals
- Earlier the better
  - Benefits for patients with less severe disease
• Why should you be interested in pulmonary rehabilitation?
  • Chronic lung diseases are a big problem
  • PR can help and support MDs in managing a challenging group of patients
  • It’s an interesting model to study health outcomes for chronic disease

Is It Worth It?
Which of the following improvements from pulmonary rehabilitation has NOT been well established?

A. Lung function  
B. Symptoms (dyspnea)  
C. Exercise tolerance  
D. Hospitalizations

Which of the following improvements from pulmonary rehabilitation has NOT been well established?

A. Lung function  
B. Symptoms (dyspnea)  
C. Exercise tolerance  
D. Hospitalizations

81%  
19%  
0%  
0%
The benefits from participation in a pulmonary rehabilitation typically last:

A. 3-6 months
B. 6-12 months
C. 12-18 months
D. 18-24 months
Pulmonary Rehabilitation

- Symptoms
- Knowledge
- Exercise
- ADLs
- PFTs
- Survival
- Hospitalizations
- Quality of Life
Why should you be interested in pulmonary rehabilitation?

- Chronic lung diseases are a big problem
- PR can help and support MDs in managing a challenging group of patients
- It’s an interesting model to study health outcomes for chronic disease
- It works!

Pulmonary Rehab in COPD Practice Guidelines

- WHO/NHLBI GOLD (2001)
- ATS (1995)
- ERS (1995)
- CTS (Canada) (1992)
- Others (1994-99): Arg, Nor, Aust/NZ, Ger, Spa, Swi, Pol, Fre, BTS, SAfr, Chile, Fin
ACCP/AACVPR 1997 Pulmonary Rehab Guidelines
Evidence Grade: A B C

Components:
- Lower extremity exercise
- Upper extremity exercise
- Ventilatory muscle training (no)
- Psychosocial

Outcomes:
- Dyspnea
- Quality of life
- Health care utilization
- Survival
- Psychosocial

Pulmonary Rehab PubMed Citations (English)
ACCP/AACVPR 2007 Pulmonary Rehab Guidelines

- Literature search 1996 – 2004
  - 928 abstracts, 202 articles, 81 in evidence tables
  - Studies graded 0 – 5
  - Selected articles added in text from 2005-06

- Recommendation grading
  - Strength of evidence: A, B, C
  - Balance of benefits to risks/burdens:
    - 1: Certainty of imbalance
    - 2: Evenly balanced/uncertain

ACCP/AACVPR 2007 Pulmonary Rehab Guidelines

- Outcomes of Comprehensive PR
  - LE exercise, dyspnea, HRQOL, hosp/health care utilization, cost-effectiveness, psychosocial

- Duration of benefits

- Length of Rx

- Maintenance following PR

- Intensity of exercise training

- Upper extremity training

Chest 2007;131(5 Suppl):4S-42S
www.chestjournal.org
ACCP/AACVPR 2007 Pulmonary Rehab Guidelines

- Strength training
- Anabolic agents
- Inspiratory muscle training
- Education, collaborative self-management
- Psychosocial Rx
- Supplemental O2 with exercise
- Noninvasive ventilation
- Nutritional supplementation
- Chronic lung diseases other than COPD

Which of the following types of exercise training is NOT recommended for routine use in the rehabilitation of patients with chronic lung disease?

A. Lower extremity endurance training
B. Lower extremity strength training
C. Upper extremity training
D. Inspiratory muscle training
Which of the following types of exercise training is NOT recommended for routine use in the rehabilitation of patients with chronic lung disease?

A. Lower extremity endurance
B. Lower extremity strength training
C. Upper extremity training
D. Inspiratory muscle training

ACCP/AACVPR 2007 Pulmonary Rehab Guidelines

1A Recommendations

- Outcomes of Comprehensive Pulmonary Rehab
  - Lower extremity training (muscles of ambulation)
  - Dyspnea: improved
  - HR-QOL: improved
  - Long-term: benefits in several outcomes from 6-12 weeks of PR decline gradually over 12-18 months

- Exercise training intensity: high & low beneficial
- Strength training: increased strength/muscle mass
- Upper extremity training: beneficial

Chest 2007;131(5 Suppl):4S-42S
www.chestjournal.org
**ACCP/AACVPR 2007 Pulmonary Rehab Guidelines**

1B Recommendations

- Exercise training intensity: greater physiologic benefits from higher intensity lower extremity training
- Inspiratory muscle training: no routine use
- Education: integral component of pulmonary rehab (collaborative self-management, prevention/treatment of exacerbations)
- Non-COPD: pulmonary rehab beneficial for some patients with chronic respiratory diseases other than COPD

**ATS/ERS Statement 2013: Key Concepts and Advances in Pulmonary Rehabilitation**

- Update of 2006 ATS/ERS Statement on PR
- Updated definition of PR, including effectiveness in acutely ill with COPD and other chronic respiratory diseases
- Important role of PR in chronic disease management
- PR within context of integrated care

Chest 2007;131(5 Suppl):4S-42S
www.chestjournal.org
New Definition of Pulmonary Rehabilitation

... a comprehensive intervention based on a thorough patient assessment followed by patient-tailored therapies which include, but are not limited to, exercise training, education and behavior change, designed to improve the physical and emotional condition of people with chronic respiratory disease and to promote the long-term adherence of health-enhancing behaviors.”

ATS/ERS 2012

ATS/ERS 2013 Statement

- PR implemented by a dedicated, interdisciplinary team, including physicians and other health care professionals (e.g., PT, RT, RN, Psych, RD, OT, ExP, etc)
- Individualized to the unique needs of the patient
- Integrated throughout the clinical course of patient’s disease
- May be initiated at any stage of disease – stable, during or after exacerbation
- Goals to minimize symptom burden, maximize exercise performance, promote autonomy, increase ADLs, enhance HR QOL, and effect long-term health-enhancing behavior
- PR within the concept of integrated care
• Why should you be interested in pulmonary rehabilitation?
  • Chronic lung diseases are a big problem
  • PR can help and support MDs in managing a challenging group of patients
  • It’s an interesting model to study health outcomes for chronic disease
  • It works!
  • Skills and expertise of PR staff can be valuable in other settings

Physician Centered Medical Care

- MDs
- RN
- RT
- PT
- Psych
- OT
- SW
- RD
- ? Rehab

Comorbidities
- Meds
- C2
- CPT
- Exercise
- ADLs
- Nutrition
- Psych
- Social

UC San Diego
Health Sciences

UC San Diego
Health Sciences
What do you mean you're out of breath?
I haven't switched it on yet.
The ideal model for team structure in pulmonary rehabilitation is?

A. Multidisciplinary
B. Interdisciplinary
C. Transdisciplinary
D. Huh?
Models of Team Structure

Multidisciplinary

Interdisciplinary

Transdisciplinary

Multidisciplinary Team
Medical Director
Core Members (RT, RN, PT)
Extended Members (MH, SW)

Evaluation (Set Goals)
- RT (O2, CPT, BRT)
- RN (Meds)
- PT (Exer, ADLs)
- MH (Psych)
- SW (Social)

Team Conference (Evaluate Progress)

Treatment
- RT
- RN
- PT
- MH
- SW
Interdisciplinary Team
Medical Director
Core Members (RT, RN, PT)
Extended Members (MH, SW)

Evaluation
RT (O2, CPT, BRT)
RN (Meds)
PT (Exer, ADLs)
MH (Psych)
SW (Social)

Team Conference
Set Goals
Evaluate Progress
Plan Treatment

Treatment
RT
RN
PT
MH
SW

Medical Director
Core Members (RT, RN, PT)
Extended Members (MH, SW)

Transdisciplinary Team

Evaluation
O2
CPT
BRT
Meds
Exer
ADLs
Psych
Social

Team Conference
Set Goals
Evaluate Progress
Plan Treatment

Treatment
O2
CPT
BRT
Meds
Exer
ADLs
Psych
Social
Chronic Lung Disease Patients

Pulmonary Rehabilitation Program

Mild (Dx, OPC)
Mod (Exac, Hosp)
Severe (ICU, Tx)

Pulmonary Rehabilitation Team Expertise

Severe (ICU, Tx)
Mod (Exac, Hosp)
Mild (Dx, OPC)
Summary

- Chronic lung diseases are a large and increasing problem in the world today.

- Comprehensive pulmonary rehabilitation is a well-established, effective treatment strategy that can help manage a challenging group of patients.

- The broad skills and expertise of pulmonary rehab staff members in evaluating and treating patients may be helpful in managing chronic lung disease patients in other settings and across the disease spectrum.