PILOT™ Education Transforming PULMONARY CARE

Practical Issues: Patient Education, Adherence, Inhaler Technique, and Pulmonary Rehabilitation

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Introduction to Pulmonary Rehab
COPD Case Study

Pulmonary Rehabilitation

COPD Case Study

- 61-year-old male with COPD w. 2 block exercise tol
- 58 pk/yr smoke. Hx, quit '05
- C/C DOE, worsening over the past year
- Dyspnea: mMRC scale 3

  Stops for breath after walking about 100 yards or after a few minutes on level ground
- Hospitalizations: 1 ED: 1 x
- Exacerbations: 3 x w. steroids/antibiotics
- Comorbid Conditions – HTN, GERD3 x w. steroids/antibiotics
- Meds – SABA, LABA, LAMA, Metoprolol for HTN, Omeprozole for GERD
- ADLs – uses a shower stool, alt. QOD too fatigued
- Nutrition – BMI 22

Can Pulmonary Rehabilitation…

- Improve physical functioning?
- How?
- What education opportunities exist?
- What more would to like to know?

  PFTs

  6 MWD

  Oxygenation parameters

ATS/ERS 2013 Definition

"Pulmonary rehabilitation is a comprehensive intervention based on a thorough patient *assessment* followed by patient-tailored therapies that include, but are not limited to, *exercise training, education* & *behavior change*, designed to improve the physical & psychological condition of people w. chronic respiratory disease and to promote the long-term adherence to health-enhancing behaviors."

Spruit M, et al. *Am J Respir Crit Care Med*. 2013;188(8):e13-64.

Goals of Pulmonary Rehabilitation

- Control & alleviate symptoms
- Improve activity tolerance
- Promote self-reliance & independence
- Decrease need for acute resources
- Improve quality of life
- Improve treatment adherence and acute exacerbation prevention

Evidenced Based Guidelines

- 6-12 weeks, longer is often better
- Sessions should occur 2-3 x weekly
- 20 sessions – may include unsupervised exercise as well
- Education should be tailored to individual needs and be disease specific
- Exercise training should include aerobic and resistance training
- Most guidelines support training to 70–80% of maximum workloads
- Maintain oxygenation at least to 90% with exercise

Spruit M, et al. *Am J Respir Crit Care Med*. 2013;188(8):e13-64.
Garvey C, et al. *J Cardiopulm Rehabil Prev*. 2016;36:75-83.
Nici L, et al. *Am J Resp Crit Care Med*. 2006;173:1390-1413.

Core Components

- Assessment
- Intervention

  EDUCATION- for skill building and to entice behavioral changes that lead to a more active, healthier lifestyle

  EXERCISE – Remain and/or gain independence w. ADLs

  NUTRITION – support for making behavior changes that improve ventilatory efficiency

  PSYCHOSOCIAL support for feelings of depression, fear, loss, isolation and progressive disability

  OXYGEN ASSESSMENT

- Reassessments to monitor progress & modify therapy & training when warranted
- Outcomes and follow-up

More Evidence

- ATS/ERS Statement on Pulm Rehab (2014)
- GOLD Guidelines COPD (2019)
- ESC/ERS, CHEST Guidelines for PAH (2015, 2019)
- Cochrane Review (2007)
- Puhan et al. (2014)

Quality of evidence is high for patient-centered outcomes such as health-related quality of life & exercise capacity in stable patients.

Pulmonary rehabilitation following a COPD exacerbation has strong effects, & evidence for most outcomes demonstrates moderate to high quality of evidence.

Spruit M, et al. *Am J Respir Crit Care Med*. 2013;188(8):e13-64.
GOLD 2019 Report. http://goldcopd.org/
Klinger JR, et al. *CHEST*. 2019 January 17. [Epub ahead of print]
Galie N, et al. *Eur Heart J*. 2016;37:67-119.
Lacasse Y, et al. *Euro Medicophys*. 2007;43:475-485.
Puhan MA, et al. *Clin Chest Med*. 2014;35:295-301.

Official IPF ATS/ERS/JRS/ALAT

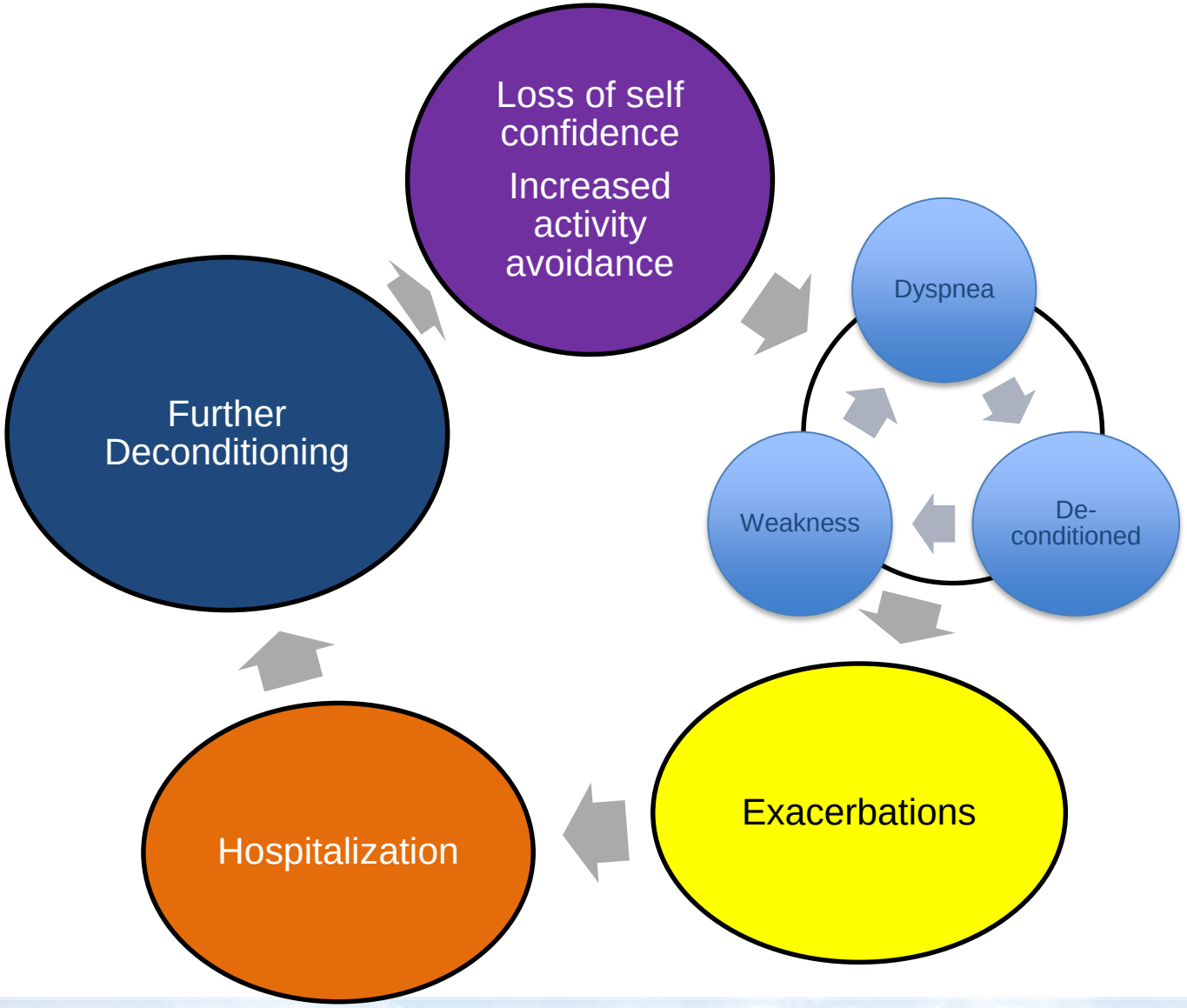
Non-Pharmacologic Therapies:

- Pulmonary Rehabilitation (PR) Recommendation – “The majority of patients with IPF should be treated with PR, but PR may not be reasonable in a minority (weak recommendation, low quality evidence)
- Values – High value on moderate-quality data demo. Improvement in functional status and patient-centered outcomes and a low value on cost and uncertain regarding duration of benefit
- Remarks – Components need to be tailored to population

Raghu G, et al. *Am J Respir Crit Care Med*. 2011;183:788–824.

Swigris – (IPF) 6-8 wks 60 % max *Resp Care*. 2011;56:783-789.	↑ Functional capacity and fatigue
Nishiyma – (IPF) 10 wks 80% max *Respirology.* 2008;13:394-399.	6 MWD ↑ 46 M
Huppman P – (ILD) 2013 *Eur Resp J.* 2013;42:444-453.	6 MWD ↑ 46 M, no change in dyspnea ratings, improved QOL
Holland AE – (ILD/IPF) *Cochrane Database Syst Rev*. 2014:CD006322.	6 MWD ↑ 44 M on average Max exercise capacity, shortness of breath and QOL
Vainshelboim B – (IPF) 12 wks *Arch Phy Med Rehabil*. 2016;97:788-797	Endurance training improves exercise tolerance, functional capacity, pulmonary function, dyspnea and QOL in patients with IPF, suggesting a short-term treatment efficacy for clinical improvement, and should be considered the standard care for IPF.
Perez-Bogerd S – (ILD) *Respir Res*. 2018;19:182.	Improved exercise tolerance, health status and muscle force in ILD. Benefits maintained up to 1 year

Do you think our COPD patient is represented here?



Exercise Reconditioning

Limitations to consider

- Circulatory, Gas Exchange Impaired, **Hypoxemia**
- Skeletal Muscle Dysfunction and Fatigue
- Exertional Dyspnea
- IPF/ILDs -- Coughing → Desaturation → Exhaustion
- Follow ATS/ACCP/AACVPR Guidelines – UE and LE resistance and endurance training

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Exercise Components

- Upper/Lower Extremity Strength Training
- U/LE Endurance Training
- Flexibility & Stretching
- Oxygen in those with SpO_2 < 88%
- Implementation of the Home Exercise Program (HEP)

- Mode
- Intensity
- Duration
- Frequency
- Plan for progression

Skills Training Topics

- Breathing Techniques
- LTOT Use – Self Monitoring & Titration
- Home Exercise Program
- Energy-Saving techniques
- *Exacerbation Recognition/Action Plan*
- Secretion Management
- Anxiety/Fear – Stress Management
- Nutrition, Advanced Directives and Travel

What do ILD patients want from PR clinicians?

- Disease-specific content
- End-of-life planning
- Honesty about their future and to listen to their concerns
- Education on treatment modalities needs to be relevant

Holland AE, et al. *Chronic Respir Dis*. 2015;12:93-101.

Losses and Uncertainty

- Overwhelmed
- Sad
- Worried
- Scared about disease progression
- Uncertain

IPF Patients are…
- Often referred when disease is advanced
- Frustrated – unknown cause for deterioration in health

Some may have to make big decisions re: lung transplantation w/o fully being able to adjust to major lifestyle changes

Image: Clipart Panda

Important Areas for Assessment

The individual patient's ability to:

- Understand disease and treatments
- Ability to adhere to recommended treatments
- Ability to cope – depression and anxiety are common
- Dyspnea is strongly correlated with depression and functional status

Ryerson CJ, et al. *Chest.* 2011;139(3):609-616.

Facilitating Emotional Support

- Group Support
- Okay to include COPD and ILD patients
- Provides opportunity for patients to disclose and discuss fears
- Can help significant others as well
- Referrals for individual counseling may be needed
- Evaluations by psychiatrist in some
- Possible treatment for depression and anxiety
- Goals include improve ability engage in own care and to make informed decisions about care

Respiratory Care Plan Considerations

What you can do…

- Respect the journey
- Identify most limiting symptoms
- Lead with the positive
- Invite family & caregivers per patient choice

Help manage:

- Dyspnea
- Cough
- Support to navigate life w. supplemental oxygen
- Prevent hypoxemia
- Pulmonary Rehab
- Improve daily activity

Convey competence, compassion and understanding

Care of the ILD Patient

- Symptom Management – Dyspnea
- Cough – Benzonatate
- Fatigue
- Severe Exertional Hypoxemia – O_2
- Exacerbations
- Support for transplant
- Palliative care and hospice

Disease Specific Exercise Considerations

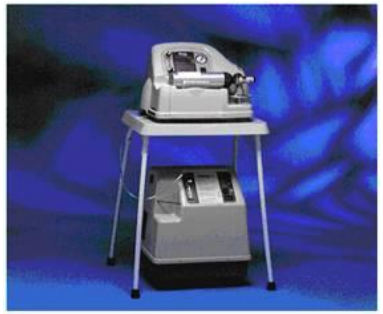
- COPD – dyspnea, oxygen needs, SABA pre-exercise
- Asthma – SABA pre-exercise, warm-up & cool down
- RA, Systemic Sclerosis, Lupus, Scleroderma and Sarcoidosis
- Joint and muscle pain
- ROM limitations
- IPF severe activity related hypoxemia and cough

POCs

Compressed Gas

Pulse Dose Devices

Transfillable Concentrators



Continuous Flow

LOX

Transportable POCs

LTOT Storage Options

- **Cylinders** – gas (need 2 regulators, 2 cylinder cart capacity for high flow uses ≥6 LPM)
- **Liquid** – Few DMEs providing service, higher costs, diminishing reimbursement from CMS
- **Concentrators** – standard up to 5 lpm,High flow 10 lpm in those w. HF needs
- **Portable & Transportable Concentrators** – continuous flow 3 lpm, Pulse 6

Patient Perceptions Of Supplemental O_2 Therapy USE

- 1,926 Survey respondents
  - 44% of COPD patients had problems with oxygen therapy
  - 51% of ILD patients had problems with oxygen therapy
- More than 50% of users experienced numerous & varied problems mainly having restricted mobility (38%) and isolation
- Equipment malfunctions
- Lack of testing and education
- Economic restraints were common

Jacobs S, et al. *Am Thorac Soc*. 2018;15(1):24-32.

Educating Patients

- Unclear prescriptions – patients are often unable to articulate their prescriptions for rest, sleep and activity
- Assess patient expectations for reducing dyspnea
- Address underlying myths about O2: closer to death, now grounded to home
- Public embarrassment
- The logistics of storage and portage and the worries about running out of gas

Patient Education and Acceptance

- Provide information about **why** oxygen therapy is needed
- Provide written prescriptions
- Use rehab exercise sessions to help demonstrate use and benefits
- Be supportive, for many this is a difficult reality and often very embarrassing
- Be a resource on delivery options such as POCs

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Can Pulmonary Rehabilitation…

- Improve physical functioning?
- How?
- What education opportunities exist?
- What more would to like to know?
  - PFTs
  - 6 MWD
  - Oxygenation parameters
  - How is our patient coping?
  - Skills and abilities to administer inhaled meds?

Objective Findings

- PFTS
- FVC 3.75 L 72% predicted
- ***FEV_1 1.17 L 30% predicted***
- FEV_1/FVC 31
- TLC 9.10 L 125%
- RV 4.80 L 189%
- DLCO 16.4 56% predicted
- FEV_1 post BD 1.44 L for 23% improvement for 37% pred. FEV_1
- Six Minute Walk Test –Pre PR
- HR 60 SPO_2 99% on RA
- SPO_2 97% at the end
- WD: 365 meters
- Moderate breathlessness & slight fatigue
- No rests and no pain
- Used SABA BD prior to testing

What Happened with PR Exercise Training ?

Six Minute Walk Test – Pre PR

HR 60

Pre: SPO_2 99% resting on RA

Post: SPO_2 97%

Walk Distance: 365 meters

Averaging 2.2 mph

Breathing: moderate dyspnea Fatigue: slight

No rests and no pain

TM- 1.0 x 8 min improved to 2.1 x 30 m.

Strength: 8 reps w. 3/2#, graduated to 4/4 for 2 sets of 12

Six Minute Walk – Post PR

Rest: HR 57 SPO_2 97% RA

SPO_2 98% @ the end

Walk Distance: 405 m

Averaging 2.5 mph

Symptoms:

Breathing: very slight breathlessness

Fatigue: none

40 m increase - exceeding MID

In Summary

Pulmonary Rehabilitation through a comprehensive evaluation and an individualized program can …

- Control & alleviate symptoms
- Improve activity tolerance
- Promote self-reliance & independence
- Decrease need for acute resources
- Improve treatment adherence and acute exacerbation prevention
- ***Improve quality of life***