Update on Pulmonary Rehabilitation Programme

HA Convention
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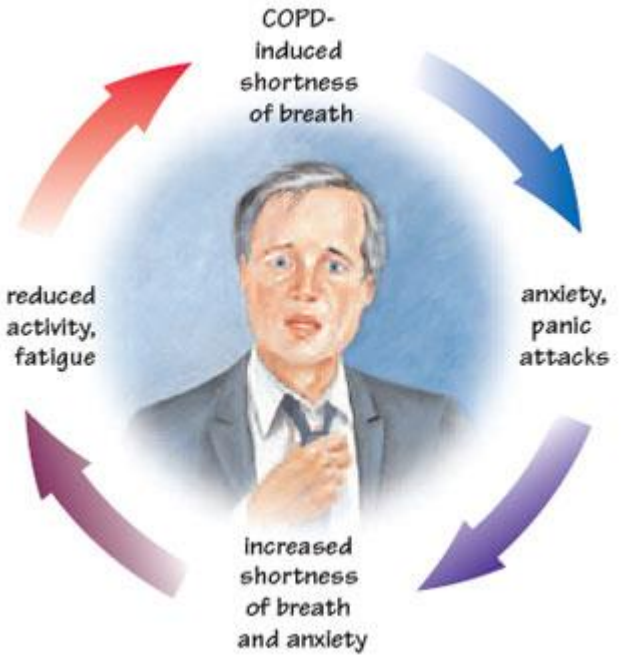
Haven of Hope Hospital
8 May 2018

Impacts of COPD to patients

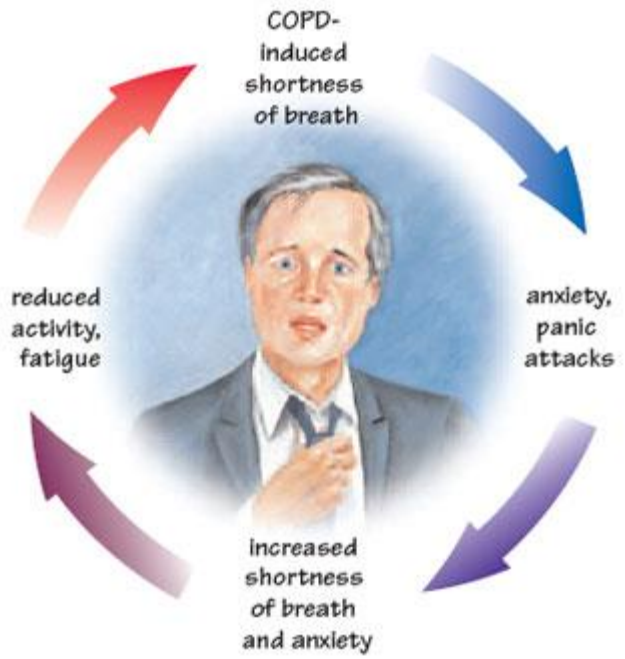
- Increase dyspnoea
- Limitation of activity
- Decrease quality of life (QoL)
- Feeling of depression or anxiety
- Develop exacerbation → increase risk of death



Source: Living well with COPD

GOLD 2018

Impacts of COPD to patients



Source: Living well with COPD

What is Pulmonary Rehabilitation ?

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

ATS/ERS guideline 2013

Duration :

- 6-12 weeks
- Min. 12 supervised sessions

Endurance training

- Lower limbs (cycling, treadmill, walking)
- Upper limbs

Strength training

Breathing exercise

BTS 2013

Mechanism of improvement in PRP

Training Mode

- High intensity endurance exercise
- Resistance training
- Breathing strategy

Physiological basis of improvement

- ↑ Skeletal muscle oxidative capacity
- ↑ Skeletal muscle strength
- ↑ Cardiovascular function
- ↑ Mechanical efficiency

Health Outcome

- ↓ Dyspnoea
- ↑ Exercise capacity
- ↑ HRQoL

Benefit of PRP for Stable COPD

COPD patients with no acute exacerbation within 4 weeks before commencing PR

- Improved exercise capacity and functional capacity
- Reduced symptoms of dyspnoea
- Improved health-related quality of life (HRQoL)
- Improved emotional function

Cochrane review 2015 on pulmonary rehabilitation (65 RCTs)

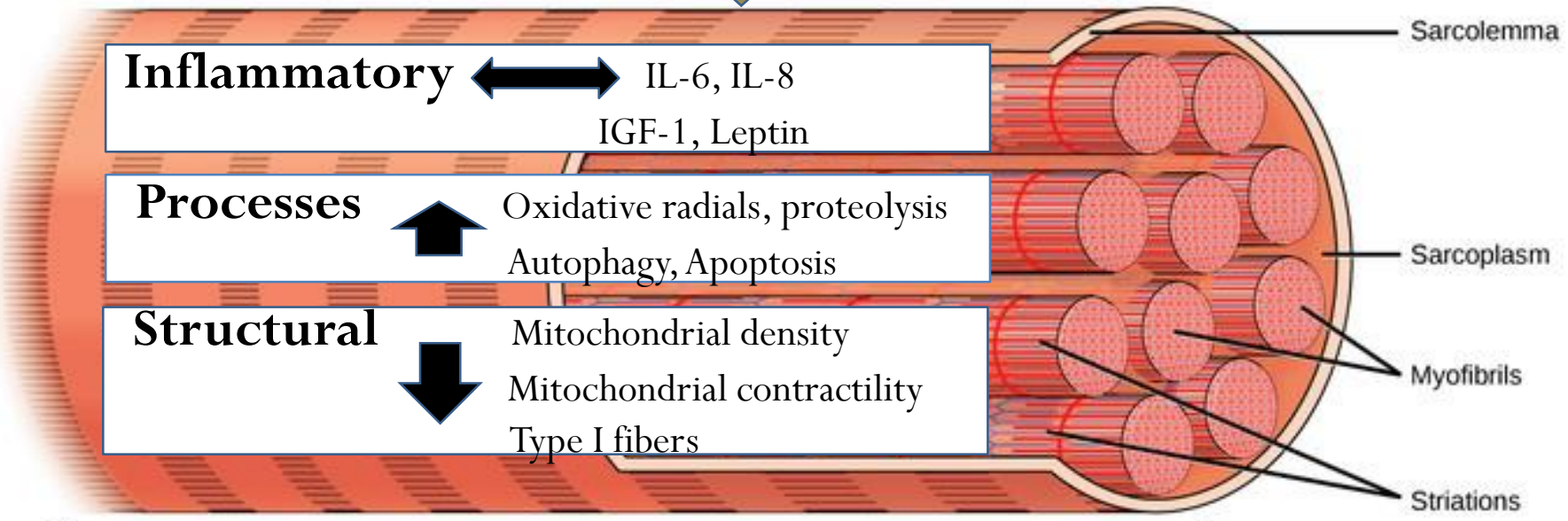
An official ATS/ERS Policy Statement: Enhancing Implementation, Use, and Delivery of Pulmonary Rehabilitation. AJRCC 2015;192:1373-1386

GOLD 2018

Deterioration of limb muscle function during Acute Exacerbation of COPD

Factors

Disuse Nutrition Hypercapnia
Hypoxemia Drugs Inflammation
Tobacco Comorbidities



Abdulai RM et al. Am J respir Crit Care Med 2018;197:433-449

Benefit of PRP for Post AE COPD

PR commence immediately after initiation of exacerbation treatment or within 3 weeks of initiation of exacerbation treatment

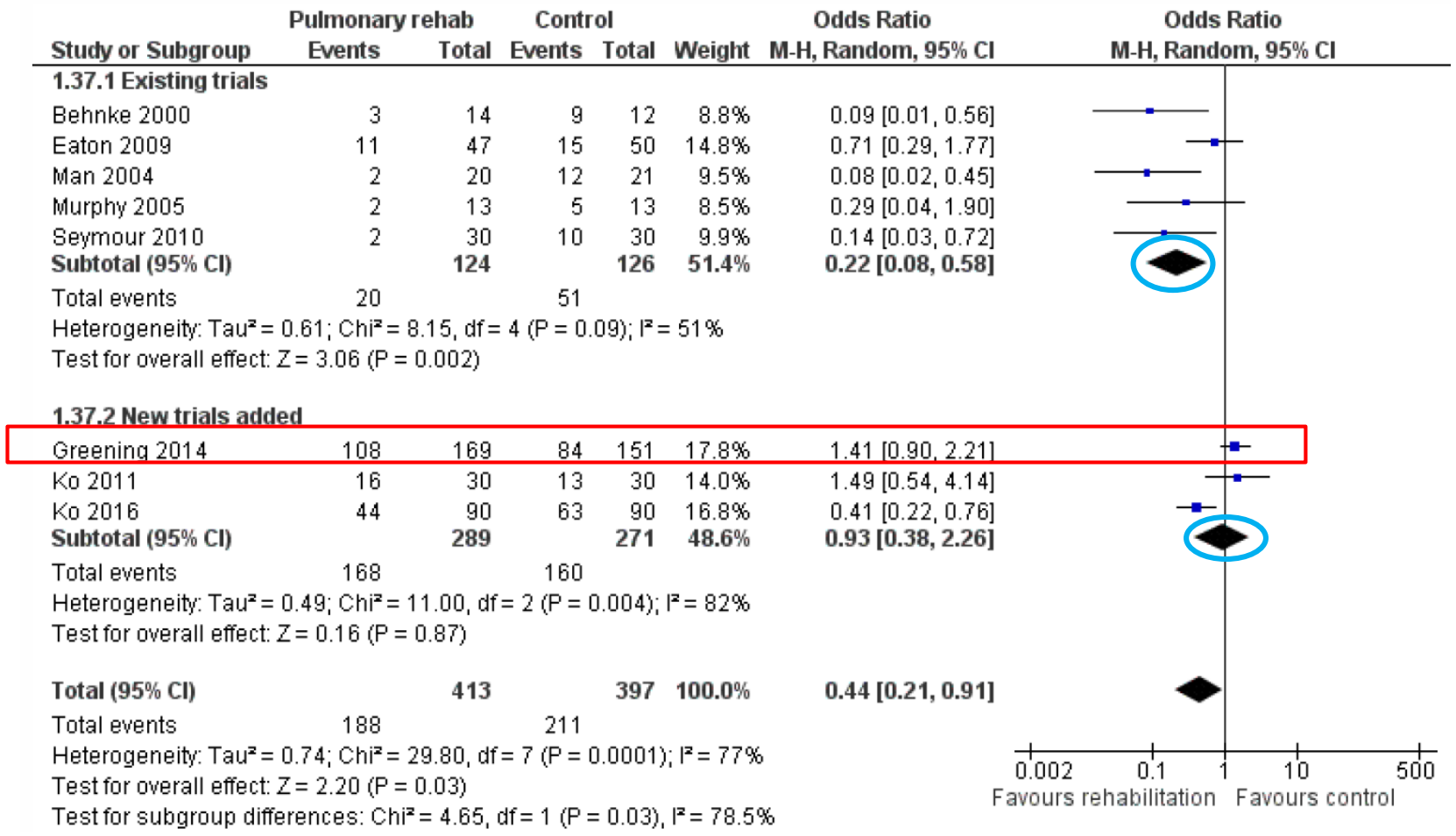
- Improved exercise capacity and functional capacity
- Improved health-related quality of life (HRQoL)
- Reduced hospitalization and unscheduled healthcare visits

Cochrane review 2016 on PR following exacerbation of COPD (20 RCTs)

PR following COPD exacerbation: mortality

Cochrane 2016

Greening NJ 2014
Median of 3 rehabilitative sessions during a median 5 day hospital stay, followed by a 6 week home based program



Authors concluded that:

- Some recent studies introduced heterogeneity on hospital readmissions and mortality as compared with the last update review on 2011
- The 8 trials that offered an extensive programme showed mostly large and consistent effects on readmissions, HRQoL and exercise capacity while also suggesting an effect on mortality

ERS/ATS guideline 2017 recommendation:

- For patients who are hospitalized with a COPD exacerbation, we suggest the initiation of PR within 3 weeks after hospital discharge

- For patients who are hospitalized with a COPD exacerbation, we suggest not initiating PR during hospitalisation

Respiratory Physicians response published in European Respiratory Journal

Spruit MA et al. ERJ 2018;51

- The recommendation is based on one single study
- The difference in mortality began > 5 months after intervention
- The per protocol analysis did not show a difference in mortality
- Recent RCTs have shown that rehabilitative interventions initiated during patients' hospital stay prevent a decline in lower limb muscle function, balance and exercise performance, and facilitates recovery afterwards

Evidence of cost effectiveness of PRP relative to other treatments for COPD Cost per quality-adjusted life year (QALY)

The pyramid of value for COPD interventions developed by the London Respiratory Network with the London School of Economics
https://www.networks.nhs.uk/nhs-networks/impress-improving-and-integrating-respiratory/documents/IMPRESS%20COPD%20Relative%20Value%20Main%20Report.pdf

PR in people with other chronic respiratory diseases

Non-cystic bronchiectasis 3 RCTs (135 patients)

- Increase Exercise capacity, HRQoL
- Included airway clearance technique

Interstitial lung disease (ILD) Cochrane review 2014 (9 RCTs)

- Increase exercise capacity, HRQoL, decrease dyspnoea

Pulmonary hypertension (PHT) Cochrane review 2017 (6 RCTs)

- Increase exercise capacity, HRQoL
- 14-20% adverse events including dizziness and syncope

Other diseases: Lung cancer, lung transplantation

Self Management as key component of pulmonary rehabilitation

COPD self management:

- Structured but **personalized** and often multi-component
- Goals of **motivating, engaging** and supporting the patients
- Positively adapt their health behaviours and develop skills to better **manage their disease**

Effing TW et al. ERJ 2016;48(1):46-54

- To be successful, a self-management intervention **has to lead to behavior change**

Bourbeau J et al. Semin RespirCrit Care Med 2015; 36:630–638

Never think it is simple
It is not only “what we have to do”
but “how we do it”

Dr. Bourbeau J

CC (COPD) training program on COPD Self management 23&24 Feb 2018

Strategies to expand the provision of PR to suitable individuals

Physician factors	• Increase awareness and knowledge of PR
Patient factors	• Increase awareness and knowledge of PR • Rehabilitation according to patient's need e.g. adding PR as a treatment option within existing general rehabilitation program
System factors	• Increase capacity • Geographic accessibility • Increase access to PR including repeated courses, non-COPD respiratory disorders

An official ATS/ERS Policy Statement:
Enhancing Implementation, Use, and Delivery of Pulmonary Rehabilitation Sept , 2015

Setting of Pulmonary Rehabilitation

Community based v.s. Hospital based exercise training

Wuytack F A systematic review and metaanalysis 2018 (3 RCTs)

- Similar effective in improving HRQoL and exercise capacity

Home based v.s. Hospital based exercise training

Australian and New Zealand PR guidelines 2017 (6 RCTs)

Wuytack F A systematic review and metaanalysis 2018 (7 RCTs)

- Similar effective in improving HRQoL and exercise capacity
- Varying degree of supervision or support

Factors consider when choosing the setting (BTS 2013, ATS/ERS 2013)

- Mechanisms to offer remote supervision
- Patient specific factors
- ➢ Determine the extent of supervision (e.g. stable v.s. unstable)
- ➢ Need for different modalities of physical exercise and interventions

Applications of telehealth technologies

- Tele-monitoring
- Teleconsultation
- Tele-education
- Telehealth PR

Selzler AM et al. Chronic Respiratory Disease 2018;15:41-47

Thank you