Improving outcomes following a hospitalization for COPD

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Disclosures

Committee Co-chair:
Role of observational research in guideline development

Recipient:
Research funding

Member:
Medical & Scientific Advisory Board

Clinical consultant:
COPD and Pneumonia measures

Consultant:
COPD Toolkit

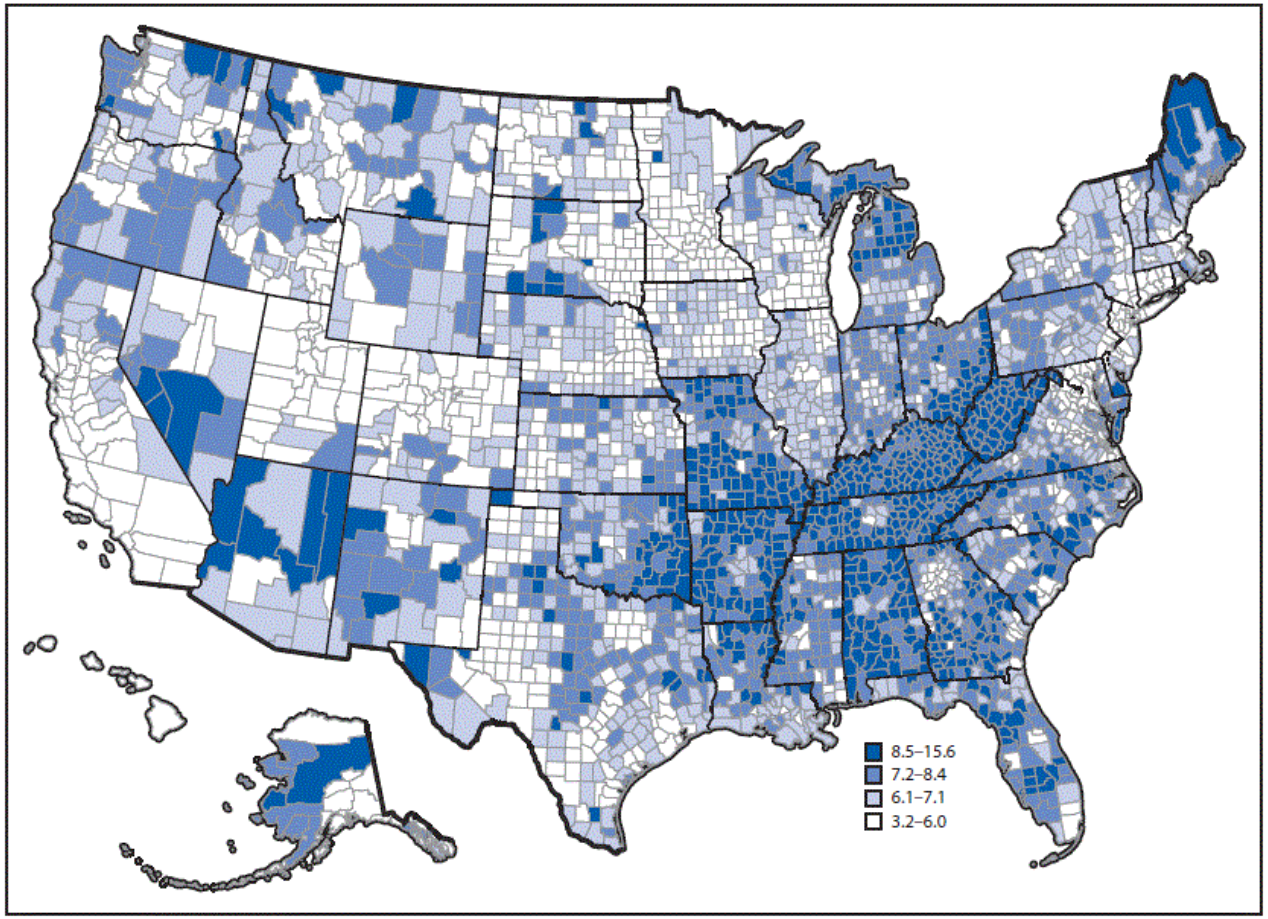
Owner:
Dog named ‘Smokey’

Learning objectives

- Review the epidemiology of hospitalizations for COPD, with a focus on the risk of readmission and death following discharge
- Review potential strategies to improve outcomes following a hospitalization for COPD
- Understand the current state of evidence regarding transitional care management programs

Epidemiology of COPD exacerbations

- 15.5 million individuals in US
- 4th leading cause of death
- Marked geographic variation
- High acute care utilization
  - 1.5M ED visits
  - 700k hospitalizations
- Substantial morbidity
  - 30-day mortality 8%
  - 30-day readmission 20%



ORIGINAL ARTICLE

Risk Trajectories of Readmission and Death in the First Year after Hospitalization for Chronic Obstructive Pulmonary Disease

Peter K. Lindenauer[1,2,3*], Kumar Dharmarajan[4,5,6*], Li Qin[6], Zhenqiu Lin[6], Andrea S. Gershon[7,8,9], and Harlan M. Krumholz[5,6,10]

- 64% of patients readmitted within 1 year of discharge
- 26% died; mortality 42-46% if received noninvasive or invasive ventilation

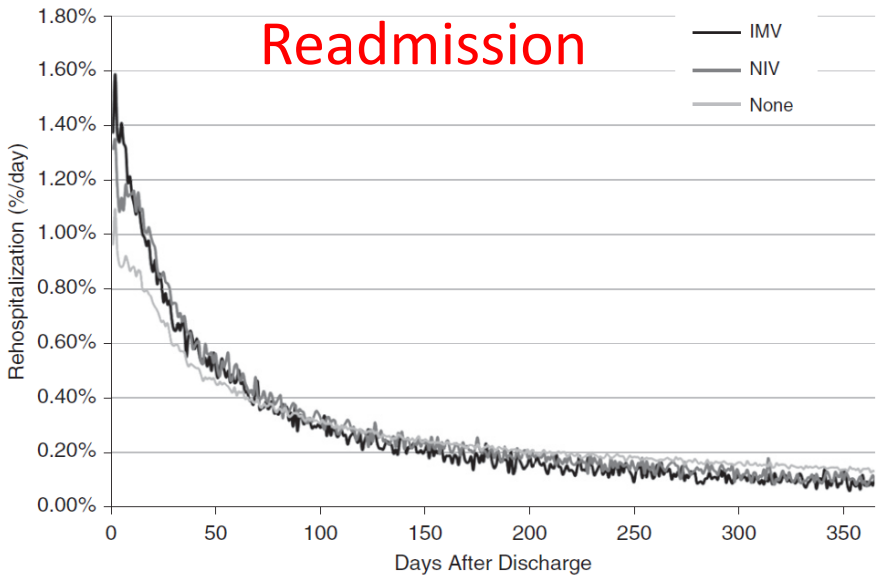


Figure 1. Daily risks of first readmission to the hospital for a 1-year period after hospitalization for chronic obstructive pulmonary disease, according to degree of ventilatory support. IMV = invasive mechanical ventilation; NIV = noninvasive ventilation.

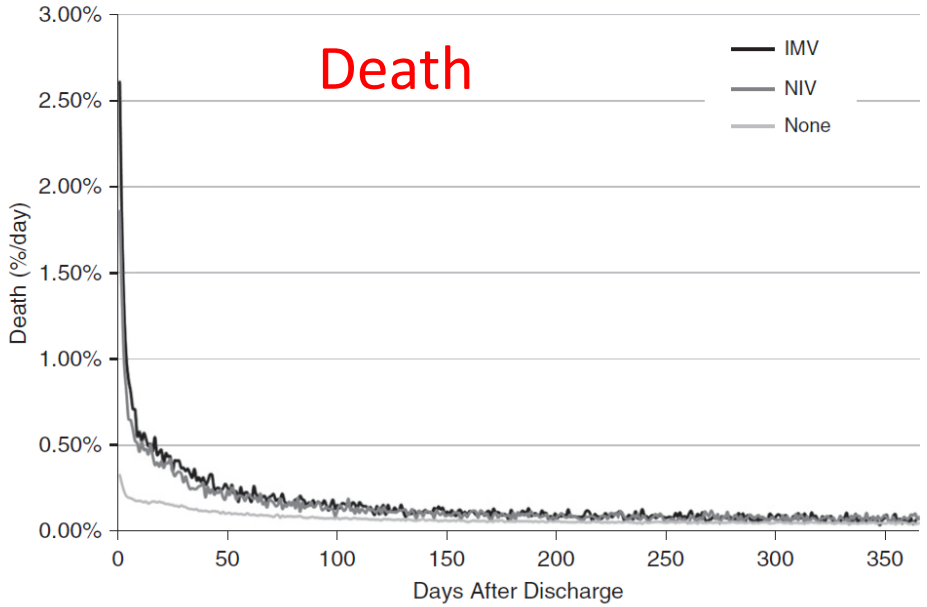


Figure 2. Daily risks of death for a 1-year period after hospitalization for chronic obstructive pulmonary disease, according to degree of ventilatory support. IMV = invasive mechanical ventilation; NIV = noninvasive ventilation.

Potential strategies for optimizing treatment and improving long term outcomes

- Ensuring the correct diagnosis
- Smoking cessation treatment
- Inhaler education
- Stepping up to triple inhaler therapy
- Theophylline
- Vitamin D
- Beta blockers
- Pulmonary rehabilitation

Does this patient really have COPD?

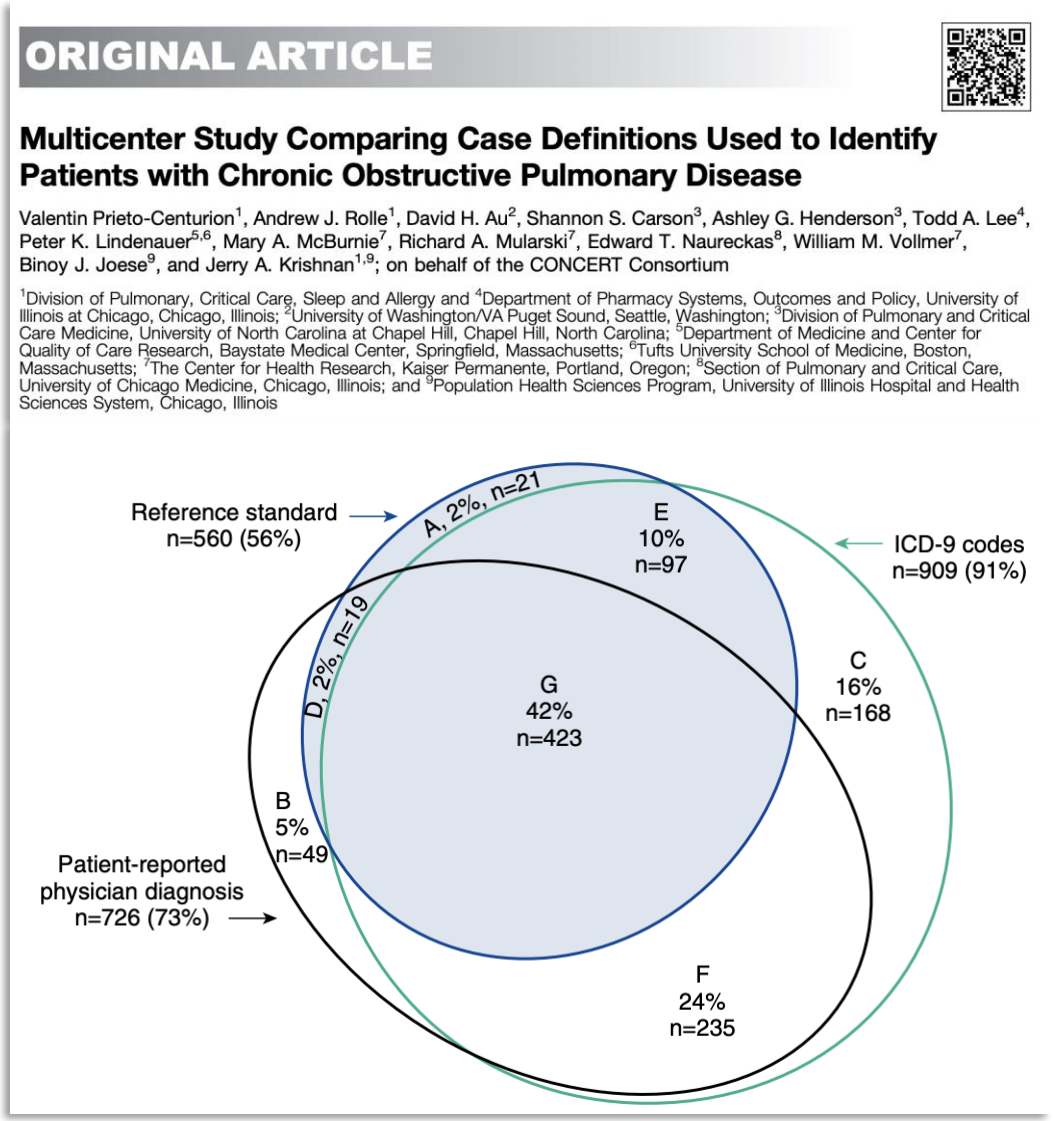
- Only 25-50% of patients have had diagnosis confirmed by spirometry

vs

Dyspnea that is:	Progressive over time. Characteristically worse with exercise. Persistent.
Chronic Cough:	May be intermittent and may be unproductive. Recurrent wheeze.
Chronic Sputum Production:	Any pattern of chronic sputum production may indicate COPD.
Recurrent Lower Respiratory Tract Infections	
History of Risk Factors:	Host factors (such as genetic factors, congenital/developmental abnormalities etc.). Tobacco smoke (including popular local preparations). Smoke from home cooking and heating fuels. Occupational dusts, vapors, fumes, gases and other chemicals.

Misdiagnosis: more common than you might think

- N=998 people with diagnosis of COPD at 6 academic health systems
- ~40% of patients who report a physician diagnosis of COPD did not have airflow limitation (overdiagnosis)
- ~40% of patients with billing code of COPD did not have airflow limitation (overdiagnosis)
- Overdiagnosis more common in patients with BMI>30kg/m^2



ORIGINAL ARTICLE

Multicenter Study Comparing Case Definitions Used to Identify Patients with Chronic Obstructive Pulmonary Disease

Valentin Prieto-Centurion[1], Andrew J. Rolle[1], David H. Au[2], Shannon S. Carson[3], Ashley G. Henderson[3], Todd A. Lee[4], Peter K. Lindenauer[5,6], Mary A. McBurnie[7], Richard A. Mularski[7], Edward T. Naureckas[8], William M. Vollmer[7], Binoy J. Joese[9], and Jerry A. Krishnan[1,9]; on behalf of the CONCERT Consortium

[1]Division of Pulmonary, Critical Care, Sleep and Allergy and [4]Department of Pharmacy Systems, Outcomes and Policy, University of Illinois at Chicago, Chicago, Illinois; [2]University of Washington/VA Puget Sound, Seattle, Washington; [3]Division of Pulmonary and Critical Care Medicine, University of North Carolina at Chapel Hill, Chapel Hill, North Carolina; [5]Department of Medicine and Center for Quality of Care Research, Baystate Medical Center, Springfield, Massachusetts; [6]Tufts University School of Medicine, Boston, Massachusetts; [7]The Center for Health Research, Kaiser Permanente, Portland, Oregon; [8]Section of Pulmonary and Critical Care, University of Chicago Medicine, Chicago, Illinois; and [9]Population Health Sciences Program, University of Illinois Hospital and Health Sciences System, Chicago, Illinois

Prieto-Centurion. Am J Respir Crit Care Med. 2014

Misdiagnosis common in the hospital setting as well as the clinic

- 2 studies (n=316 patients hospitalized with Dx COPD exacerbation)
- ~30% patients diagnosed and treated as COPD exacerbation in hospitals do not have airflow limitation

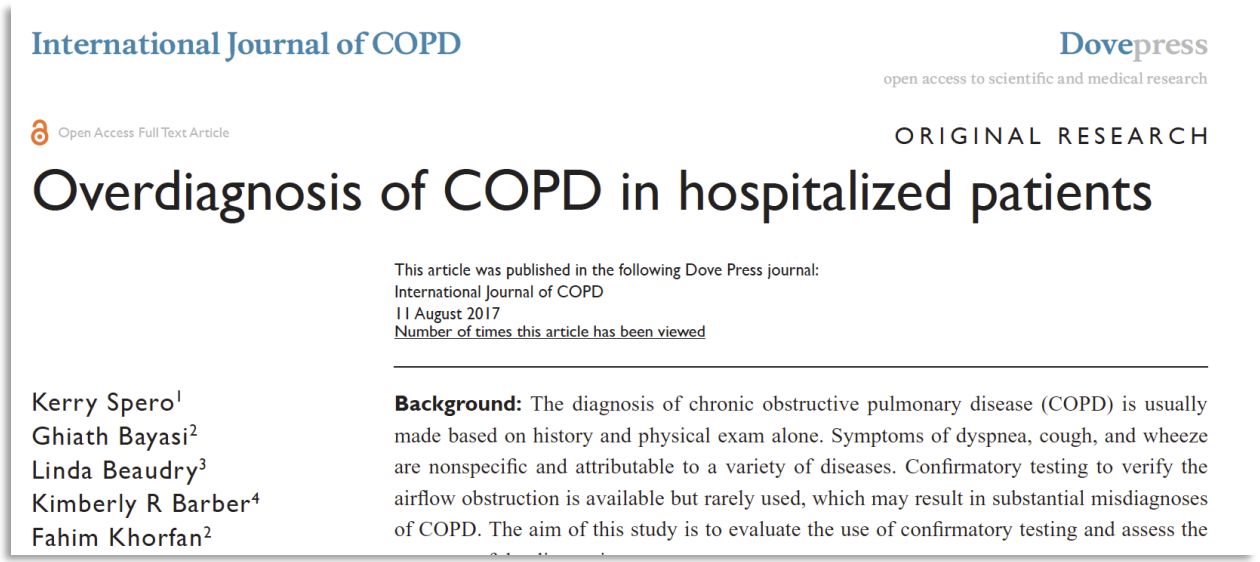
Prieto Centurion *et al. BMC Pulmonary Medicine* 2012, **12**:73
http://www.biomedcentral.com/1471-2466/12/73

BMC Pulmonary Medicine

RESEARCH ARTICLE Open Access

Confirmatory spirometry for adults hospitalized with a diagnosis of asthma or chronic obstructive pulmonary disease exacerbation

Valentin Prieto Centurion[1], Frank Huang[2], Edward T Naureckas[2], Carlos A Camargo Jr[3], Jeffrey Charbeneau[1], Min J Joo[1], Valerie G Press[2] and Jerry A Krishnan[1,4*]



International Journal of COPD

Dovepress
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Open Access Full Text Article

ORIGINAL RESEARCH

Overdiagnosis of COPD in hospitalized patients

This article was published in the following Dove Press journal:
International Journal of COPD
11 August 2017
Number of times this article has been viewed

Kerry Spero[1]
Ghiath Bayasi[2]
Linda Beaudry[3]
Kimberly R Barber[4]
Fahim Khorfan[2]

Background: The diagnosis of chronic obstructive pulmonary disease (COPD) is usually made based on history and physical exam alone. Symptoms of dyspnea, cough, and wheeze are nonspecific and attributable to a variety of diseases. Confirmatory testing to verify the airflow obstruction is available but rarely used, which may result in substantial misdiagnoses of COPD. The aim of this study is to evaluate the use of confirmatory testing and assess the

Take a moment before anchoring on Dx of COPD exacerbation

DIFFERENTIAL DIAGNOSIS OF COPD EXACERBATION

WHEN THERE IS CLINICAL SUSPICION OF THE FOLLOWING ACUTE CONDITIONS, CONSIDER THE FOLLOWING INVESTIGATIONS:

PNEUMONIA
- Chest radiograph
- Assessment of C-reactive protein (CRP) and/or procalcitonin

PNEUMOTHORAX
- Chest radiograph or ultrasound

PLEURAL EFFUSION
- Chest radiograph or ultrasound

PULMONARY EMBOLISM
- D-dimer and/or Doppler sonogram of lower extremities
- Chest tomography – pulmonary embolism protocol

PULMONARY EDEMA DUE TO CARDIAC RELATED CONDITIONS
- Electrocardiogram and cardiac ultrasound
- Cardiac enzymes

CARDIAC ARRHYTHMIAS – ATRIAL FIBRILLATION/FLUTTER
- Electrocardiogram

Smoking cessation

- Up to one-third of patients hospitalized for COPD are current smokers
- Quitting smoking slows the decline in lung function
- Quitting smoking associated with lower risk of readmission and better survival

ORIGINAL ARTICLE

Risk of hospital admission for COPD following smoking cessation and reduction: a Danish population study

N S Godtfredsen, J Vestbo, M Osler, E Prescott

- 20k patients hospitalized for COPD in Denmark
- Evaluated risk of readmission among those who quit; those who reduced their smoking, and those who continued to smoke.
- Over 15 year f/u period quitting smoking associated with ~40% lower chance of rehospitalization; reducing smoking not associated with lower risk

Thorax 2003

Journal of HOSPITAL MEDICINE www.journalofhospitalmedicine.com

ORIGINAL RESEARCH

Utilization and Effectiveness of Pharmacotherapy for Tobacco Use Following Admission for Exacerbation of COPD

Anne C. Melzer, MD[1,2]*, Laura C. Feemster, MD, MS[1,2], Margaret P. Collins, PhD[2], David H. Au, MD, MS[1,2]

[1]Division of Pulmonary and Critical Care, University of Washington, Seattle, Washington; [2]Center of Innovation for Veteran-Centered and Value-Driven Care, VA Puget Sound, Seattle, Washington.

BACKGROUND: Patients admitted for chronic obstructive pulmonary disease (COPD) commonly continue to smoke. The utilization and effectiveness of tobacco cessation medications after discharge is largely unknown. We sought to examine whether pharmacologic treatment of tobacco use following admission for COPD was associated with smoking cessation at 6 to 12 months.

METHODS: Multivariable logistic regression analysis of a cohort of 1334 smokers, discharged from hospital with a COPD exacerbation between 2005 and 2012, identified administratively within the Veterans Affairs Veterans Integrated Service Network-20, adjusted for variables chosen *a priori*. Our primary exposure was treatment with any 1 or combination of smoking cessation medications within 90 days of discharge determined from pharmacy records, with the outcome of smoking cessation at 6 to 12 months after discharge.

MEASUREMENTS AND MAIN RESULTS: Four hundred fifty (33.7%) of the patients were dispensed a smoking cessation medication, with 53.4% receiving a nicotine patch alone. Overall, 19.8% of patients reported quitting smoking at 6 to 12 months. Compared to those not receiving medications, th
patients
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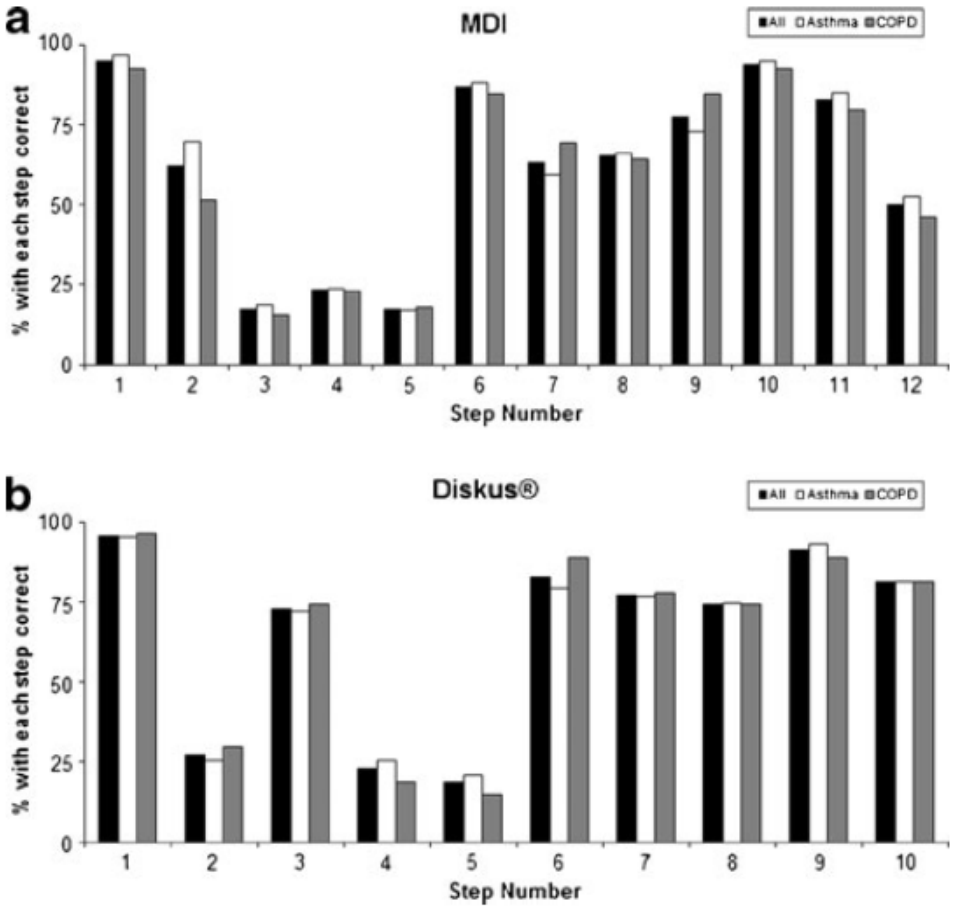
CONCLU
subjects
potential
medications. Systems-based changes may improve delivery of this key intervention. *Journal of Hospital Medicine* 2016;11:257–263. © 2015 Society of Hospital Medicine

Only 34% of active smokers were prescribed a medication to assist smoking cessation at discharge

Misuse of Respiratory Inhalers in Hospitalized Patients with Asthma or COPD

Valerie G. Press, MD, MPH[1], Vineet M. Arora, MD, MAPP[2], Lisa M. Shah, MD, MA[3], Stephanie L. Lewis, BA[4], Krystal Ivy, BA[4], Jeffery Charbeneau, MS[4], Sameer Badlani, MD[1,5], Edward Naurekas, MD[4], Antoinette Mazurek, MS[4], and Jerry A. Krishnan, MD, PhD[4,6]

- 100 inpatients with COPD and asthma
- Misuse of inhalers the norm
  - MDI = 86%
  - Diskus = 71%
- Poor vision and low health literacy were associated with lower level of mastery and more common in COPD

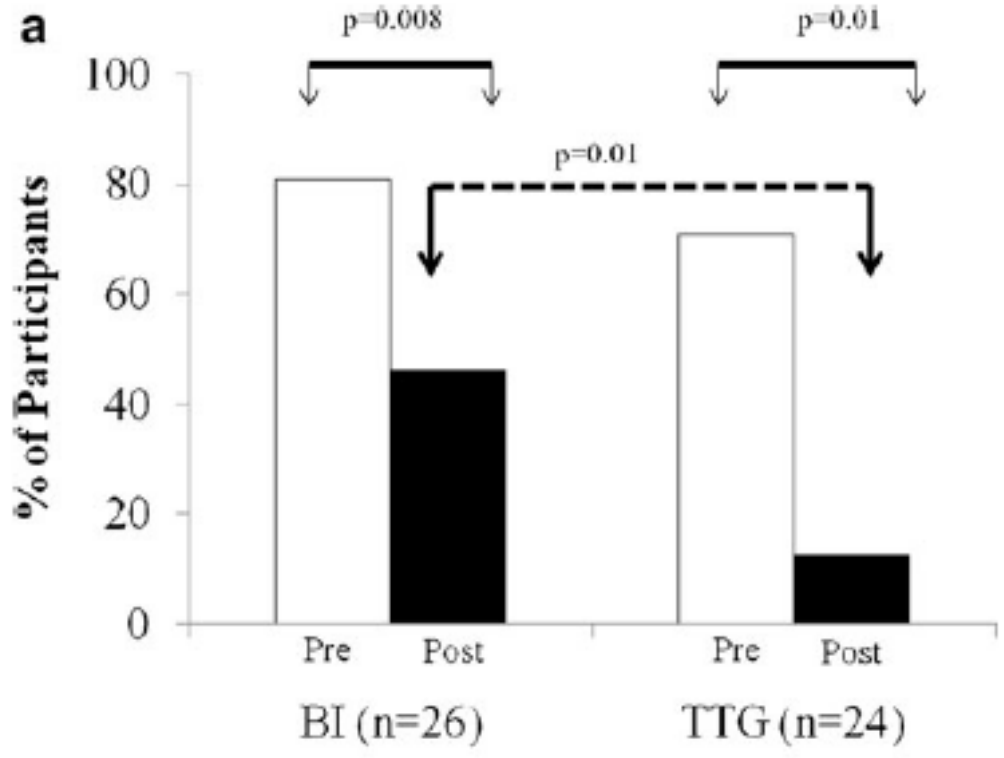


JGIM 2012

Teaching the Use of Respiratory Inhalers to Hospitalized Patients with Asthma or COPD: a Randomized Trial

Valerie G. Press, MD, MPH[1], Vineet M. Arora, MD, MAPP[2], Lisa M. Shah, MD, MAPP[3,4], Stephanie L. Lewis, BA[5], Jeffery Charbeneau, MS[5], Edward T. Naureckas, MD[6], and Jerry A. Krishnan, MD, PhD[5]

- Single center RCT (n= 50) of teach to goal (TTG) vs brief intervention (BI)
- Teach back has been used successfully in other settings and is endorsed by NQF
- TTG included written and verbal instructions followed by repeated demonstrations and teach back



ORIGINAL ARTICLE

Once-Daily Single-Inhaler Triple versus Dual Therapy in Patients with COPD

David A. Lipson, M.D., Frank Barnhart, D.V.M., Noushin Brealey, M.D., Jean Brooks, M.Sc., Gerard J. Criner, M.D., Nicola C. Day, Ph.D., Mark T. Dransfield, M.D., David M.G. Halpin, M.D., MeiLan K. Han, M.D., C. Elaine Jones, Ph.D., Sally Kilbride, M.Sc., Peter Lange, M.D., et al., for the IMPACT Investigators

May 3, 2018
N Engl J Med 2018; 378:1671-1680

- 10,000 patient, industry-funded RCT
- Once-daily combination of LABA/LAMA/ICS vs LABA/LAMA vs LABA/ICS
- Primary outcome: annual rate of moderate or severe COPD exacerbations
- 25% RRR
  - Triple therapy: 0.91 per year
  - LABA-LAMA: 1.21 per year
  - → NNT = 333
- 50% RRI in Pneumonia
  - 9.6 vs 6.1 per 100 patient-years
  - → NNH = 2857

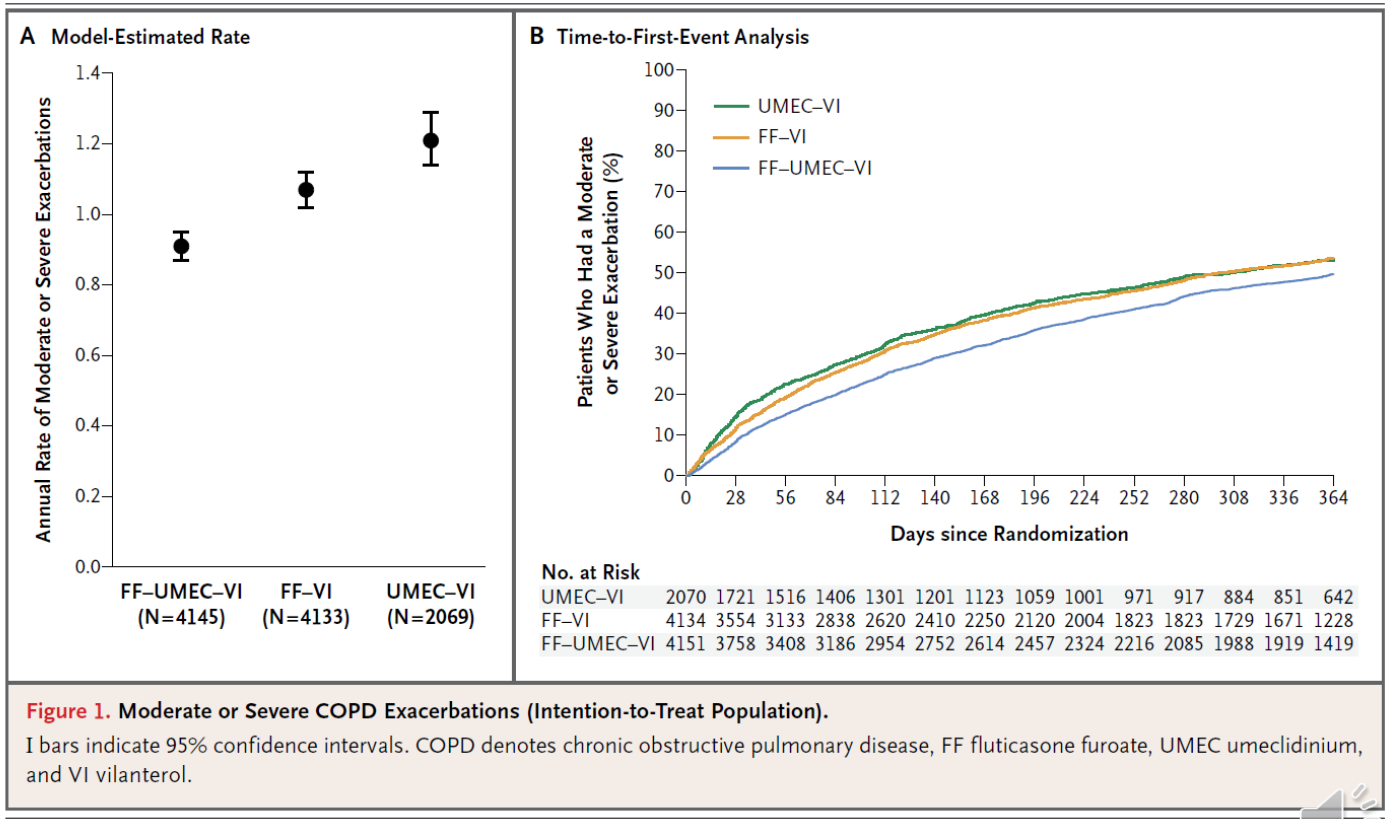
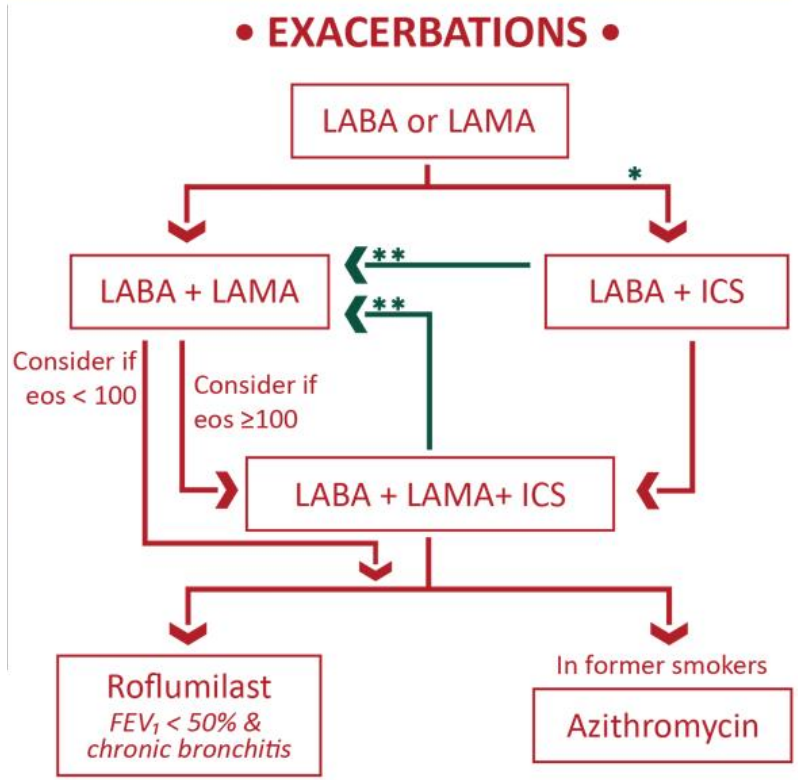


Figure 1. Moderate or Severe COPD Exacerbations (Intention-to-Treat Population).

I bars indicate 95% confidence intervals. COPD denotes chronic obstructive pulmonary disease, FF fluticasone furoate, UMEC umeclidinium, and VI vilanterol.

FOLLOW-UP PHARMACOLOGICAL TREATMENT

1. **IF RESPONSE TO INITIAL TREATMENT IS APPROPRIATE, MAINTAIN IT.**
2. **IF NOT:**
   - ✓ Consider the predominant treatable trait to target (dyspnea or exacerbations)
     - Use exacerbation pathway if both exacerbations and dyspnea need to be targeted
   - ✓ Place patient in box corresponding to current treatment & follow indications
   - ✓ Assess response, adjust and review
   - ✓ These recommendations do not depend on the ABCD assessment at diagnosis



eos = blood eosinophil count (cells/µL)
** Consider if eos ≥ 300 or eos ≥ 100 AND ≥2 moderate exacerbations / 1 hospitalization*
*** Consider de-escalation of ICS or switch if pneumonia, inappropriate original indication or lack of response to ICS*

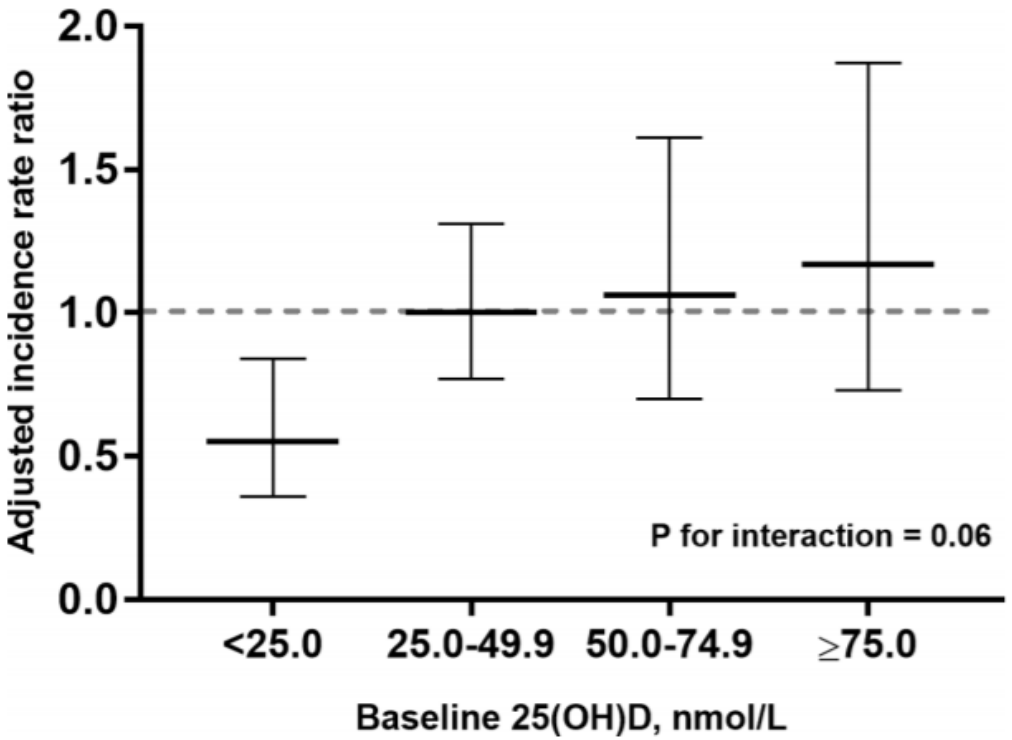
FIGURE 4.4

Original article

Vitamin D to prevent exacerbations of COPD: systematic review and meta-analysis of individual participant data from randomised controlled trials FREE

David A Jolliffe[1], Lauren Greenberg[1], Richard L Hooper[1], Carolien Mathyssen[2], Rachida Rafiq[3], Renate T de Jongh[3], Carlos A Camargo[4], Christopher J Griffiths[1, 5], Wim Janssens[2], Adrian R Martineau[1, 5]

- 2019 meta-analysis of 4 RCTs; 560 patients with COPD
- Vitamin D supplementation did not influence overall rate of moderate / severe COPD exacerbations
- aIRR 0.55 (95% CI 0.36 to 0.84) among those with low baseline level of Vitamin D



Joliffe Thorax 2019

Original Investigation

FREE

October 16, 2018

Effect of Theophylline as Adjunct to Inhaled Corticosteroids on Exacerbations in Patients With COPD

A Randomized Clinical Trial

Graham Devereux, PhD[1,2,3]; Seonaidh Cotton, PhD[4]; Shona Fielding, PhD[5]; et al

» Author Affiliations | Article Information

JAMA. 2018;320(15):1548-1559. doi:10.1001/jama.2018.14432

- Double-blinded, placebo controlled RCT; 1500 pts; 121 sites
- Patients with FEV1/FVC <0.7; ≥2 exacerbations in year; on ICS
- Theophylline 200-400mg / day to achieve plasma concentration 1-5 mg/l
- Primary outcome: moderate or severe exacerbations over 1 year
- Results: No difference in exacerbations (2.2 per group) or AEs

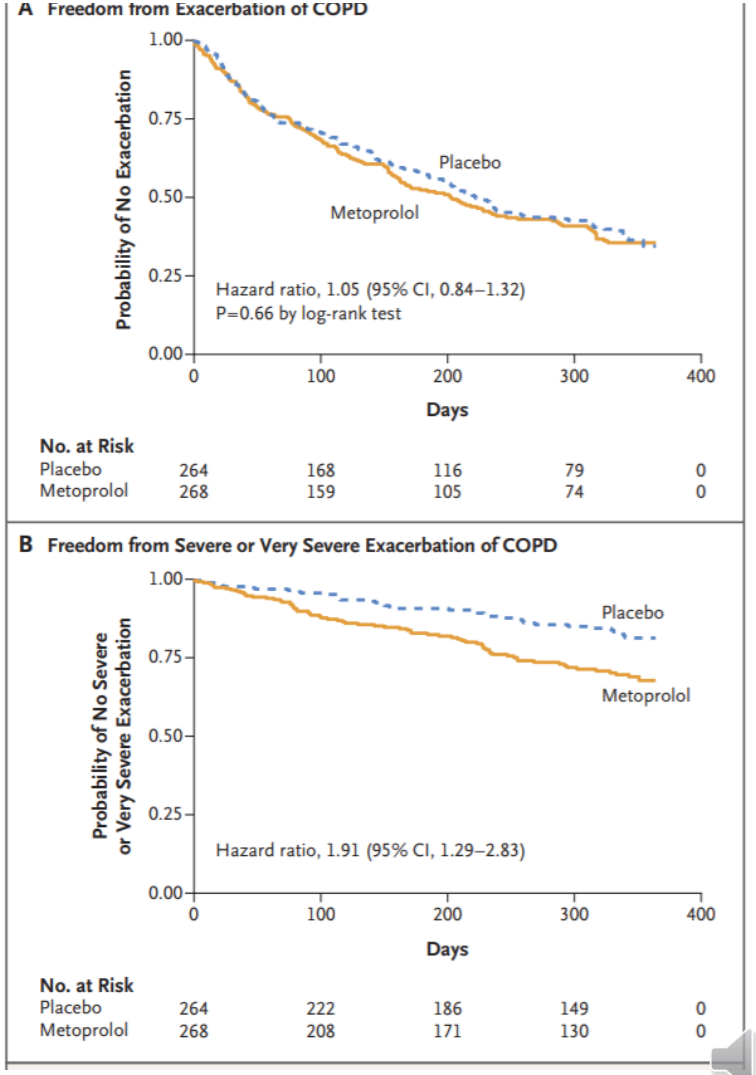
Devereux JAMA 2018

ORIGINAL ARTICLE

Metoprolol for the Prevention of Acute Exacerbations of COPD

Mark T. Dransfield, M.D., Helen Voelker, B.A., Surya P. Bhatt, M.D., Keith Brenner, M.D., Richard Casaburi, M.D., Carolyn E. Come, M.D., J. Allen D. Cooper, M.D., Gerard J. Criner, M.D., Jeffrey L. Curtis, M.D., MeiLan K. Han, M.D., Umur Hatipoğlu, M.D., Erika S. Helgeson, Ph.D., et al., for the BLOCK COPD Trial Group*

- 532 patients with COPD
  - Moderate airflow limitation
  - History of exacerbation OR use of home O2
  - Excluded users of BB and those with indications
- Randomized to Metoprolol XL vs placebo
  - Dose adjusted over 6 weeks
- Primary outcome: time to first exacerbation
- Trial stopped early for futility and safety concerns
- Metoprolol associated with a higher risk of exacerbation leading to hospitalization (HR 1.91; 95% CI, 1.29 to 2.83).



Dransfield MT. NEJM 2019

Benefits of Pulmonary Rehabilitation in COPD

McCarthy B 2015; Maddocks M 2015; Nici L 2009; Puhan MA 2016; Ryrsø CK 2018; Spruit MA 2013; Criner GJ 2015; Wedzicha JA 2016

Ryrsø et al. BMC Pulmonary Medicine (2018) 18:154
https://doi.org/10.1186/s12890-018-0718-1

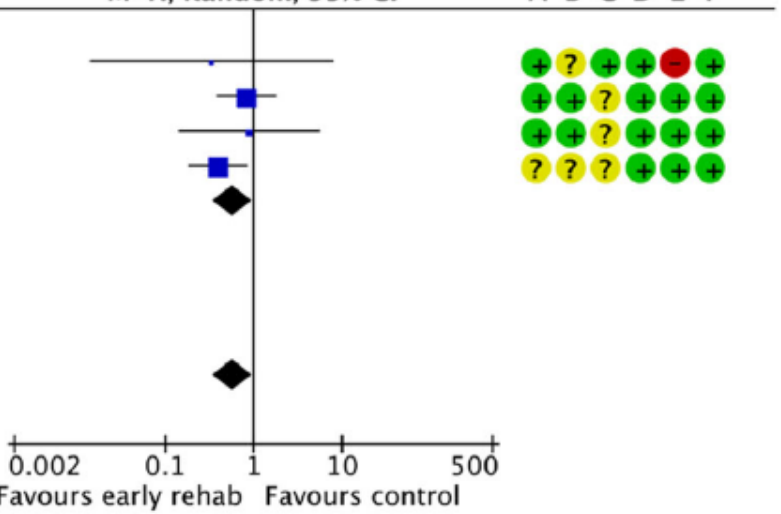
BMC Pulmonary Medicine

RESEARCH ARTICLE Open Access

Lower mortality after early supervised pulmonary rehabilitation following COPD-exacerbations: a systematic review and meta-analysis

Camilla Koch Ryrsø[1,2*], Nina Skavlan Godtfredsen[3,4], Linette Marie Kofod[5], Marie Lavesen[6], Line Mogensen[7], Randi Tobberup[8], Ingeborg Farver-Vestergaard[9], Henriette Edemann Callesen[2], Britta Tendal[2], Peter Lange[1,10,11] and Ulrik Winning Iepsen[1]

Effect of supervised early PR on mortality



Study or Subgroup	Early rehabilitation Events	Total	Usual care Events	Total	Weight	Risk Ratio M-H, Random, 95% CI	Risk of Bias A B C D E F
1.4.1 After discharge							
Ko 2011	0	30	1	30	2.7%	0.33 [0.01, 7.87]	+ ? + + - +
Ko 2017	10	90	12	90	43.9%	0.83 [0.38, 1.83]	+ + ? + + +
Puhan 2012	2	19	2	17	8.0%	0.89 [0.14, 5.68]	+ + ? + + +
Troosters 2000	6	24	12	19	45.4%	0.40 [0.18, 0.86]	? ? ? + + +
Subtotal (95% CI)		**163**		**156**	**100.0%**	**0.58 [0.35, 0.98]**	
Total events	18		27				
Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 2.11$, df = 3 (P = 0.55); $I^2 = 0\%$							
Test for overall effect: Z = 2.03 (P = 0.04)							
Total (95% CI)		**163**		**156**	**100.0%**	**0.58 [0.35, 0.98]**	
Total events	18		27				
Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 2.11$, df = 3 (P = 0.55); $I^2 = 0\%$							
Test for overall effect: Z = 2.03 (P = 0.04)							
Test for subgroup differences: Not applicable							

Risk of bias legend

(A) Random sequence generation (selection bias)
(B) Allocation concealment (selection bias)
(C) Blinding of outcome assessment (detection bias)
(D) Incomplete outcome data (attrition bias)
(E) Selective reporting (reporting bias)
(F) Other bias

Fig. 2 The effect of supervised early PR versus usual care on mortality at the end of treatment.

JAMA | Original Investigation

Association Between Initiation of Pulmonary Rehabilitation After Hospitalization for COPD and 1-Year Survival Among Medicare Beneficiaries

Peter K. Lindenauer, MD, MSc; Mihaela S. Stefan, MD, PhD; Penelope S. Pekow, PhD; Kathleen M. Mazor, EdD; Aruna Priya, MA, MSc; Kerry A. Spitzer, PhD, MPA; Tara C. Lagu, MD, MPH; Quinn R. Pack, MD, MSc; Victor M. Pinto-Plata, MD; Richard ZuWallack, MD

IMPORTANCE Meta-analyses have suggested that initiating pulmonary rehabilitation after an exacerbation of chronic obstructive pulmonary disease (COPD) was associated with improved survival, although the number of patients studied was small and heterogeneity was high. Current guidelines recommend that patients enroll in pulmonary rehabilitation after hospital discharge.

OBJECTIVE To determine the association between the initiation of pulmonary rehabilitation within 90 days of hospital discharge and 1-year survival.

DESIGN, SETTING, AND PATIENTS This retrospective, inception cohort study used claims data from fee-for-service Medicare beneficiaries hospitalized for COPD in 2014, at 4446 acute care hospitals in the US. The final date of follow-up was December 31, 2015.

EXPOSURES Initiation of pulmonary rehabilitation within 90 days of hospital discharge.

MAIN OUTCOMES AND MEASURES The primary outcome was all-cause mortality at 1 year. Time from discharge to death was modeled using Cox regression with time-varying exposure to pulmonary rehabilitation, adjusting for mortality and for unbalanced characteristics and propensity to initiate pulmonary rehabilitation. Additional analyses evaluated the association between timing of pulmonary rehabilitation and mortality and between number of sessions completed and mortality.

RESULTS Of 197 376 patients (mean age, 76.9 years; 115 690 [58.6%] women), 2721 (1.5%) initiated pulmonary rehabilitation within 90 days of discharge. A total of 38 302 (19.4%) died within 1 year of discharge, including 7.3% of patients who initiated pulmonary rehabilitation within 90 days and 19.6% of patients who initiated pulmonary rehabilitation after 90 days or not at all. Initiation within 90 days was significantly associated with lower risk of death over 1 year (absolute risk difference [ARD], −6.7% [95% CI, −7.9% to −5.6%]; hazard ratio [HR], 0.63 [95% CI, 0.57 to 0.69]; $P < .001$). Initiation of pulmonary rehabilitation was significantly associated with lower mortality across start dates ranging from 30 days or less (ARD, −4.6% [95% CI, −5.9% to −3.2%]; HR, 0.74 [95% CI, 0.67 to 0.82]; $P < .001$) to 61 to 90 days after discharge (ARD, −11.1% [95% CI, −13.2% to −8.4%]; HR, 0.40 [95% CI, 0.30 to 0.54]; $P < .001$). Every 3 additional sessions was significantly associated with lower risk of death (HR, 0.91 [95% CI, 0.85 to 0.98]; $P = .01$).

CONCLUSIONS AND RELEVANCE Among fee-for-service Medicare beneficiaries hospitalized for COPD, initiation of pulmonary rehabilitation within 3 months of discharge was significantly associated with lower risk of mortality at 1 year. These findings support current guideline recommendations for pulmonary rehabilitation after hospitalization for COPD, although the potential for residual confounding exists and further research is needed.

Editorial page 1

Supplemental content

CME Quiz at jamacmelookup.com and CME Questions page 0

Author Affiliations: Author affiliations are listed at the end of this article.

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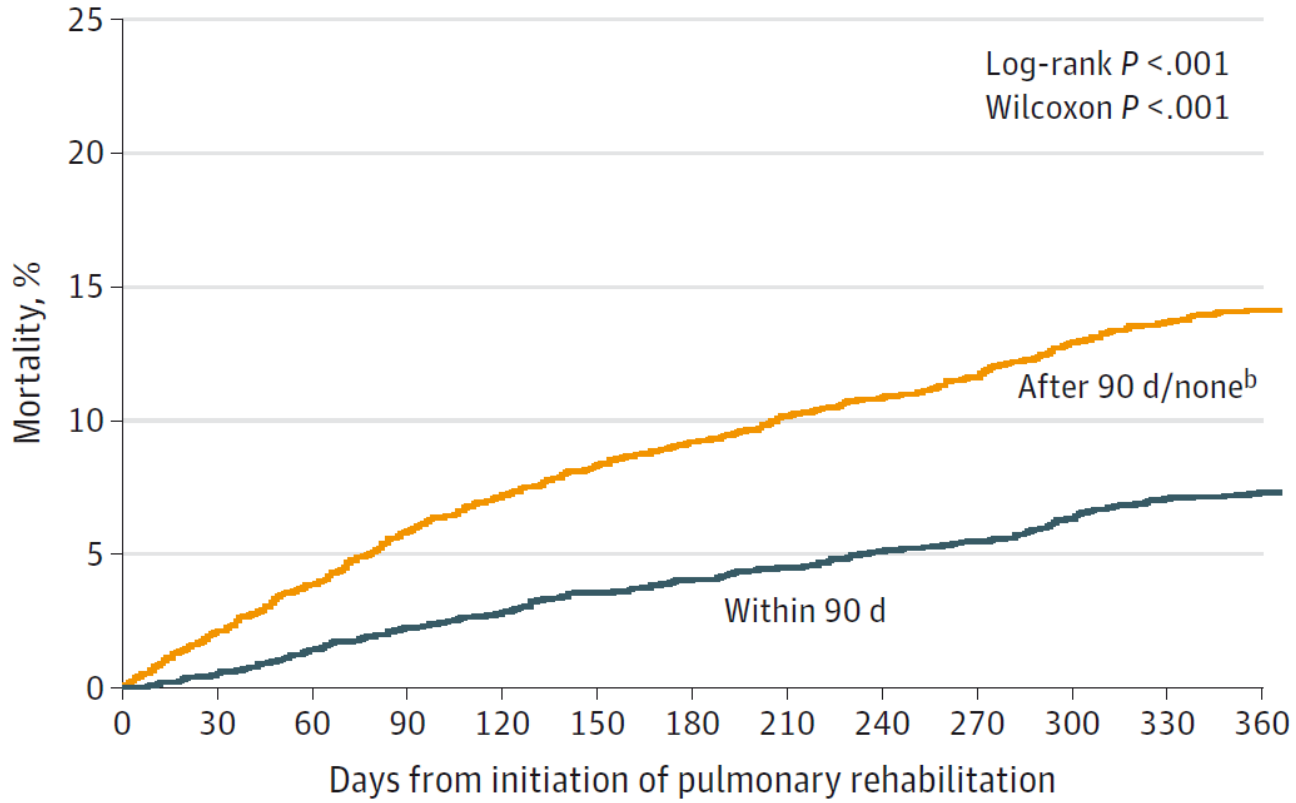
JAMA. 2020;323(18):1-11. doi:10.1001/jama.2020.4437

Figure 3. One-Year Mortality After Initiation of Pulmonary Rehabilitation in the Propensity-Matched Cohort[a]



No. at risk

After 90 d/none[b]	2710	2538	2449	2361
Within 90 d	2709	2645	2591	2538

Effect of supervised early PR on readmission

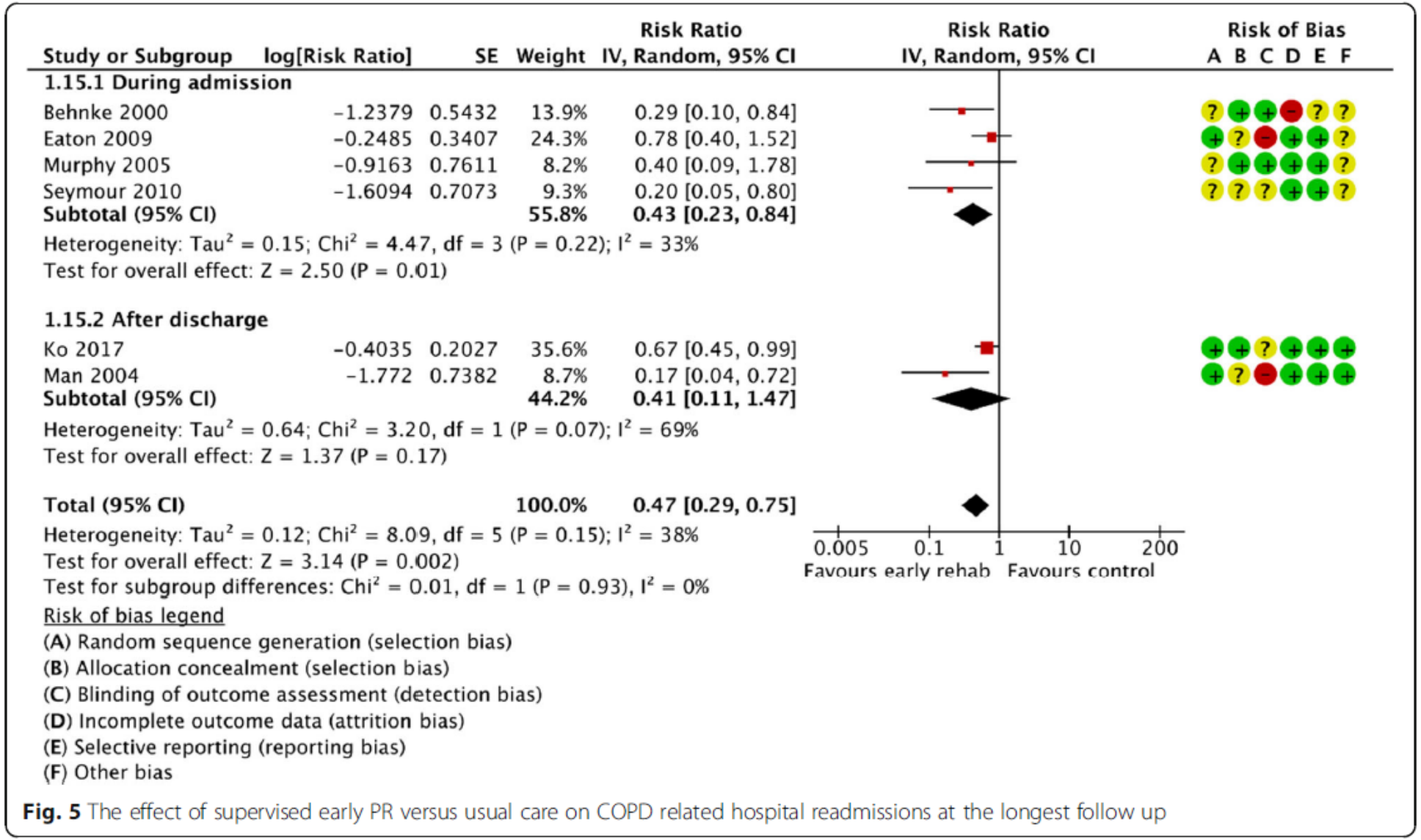
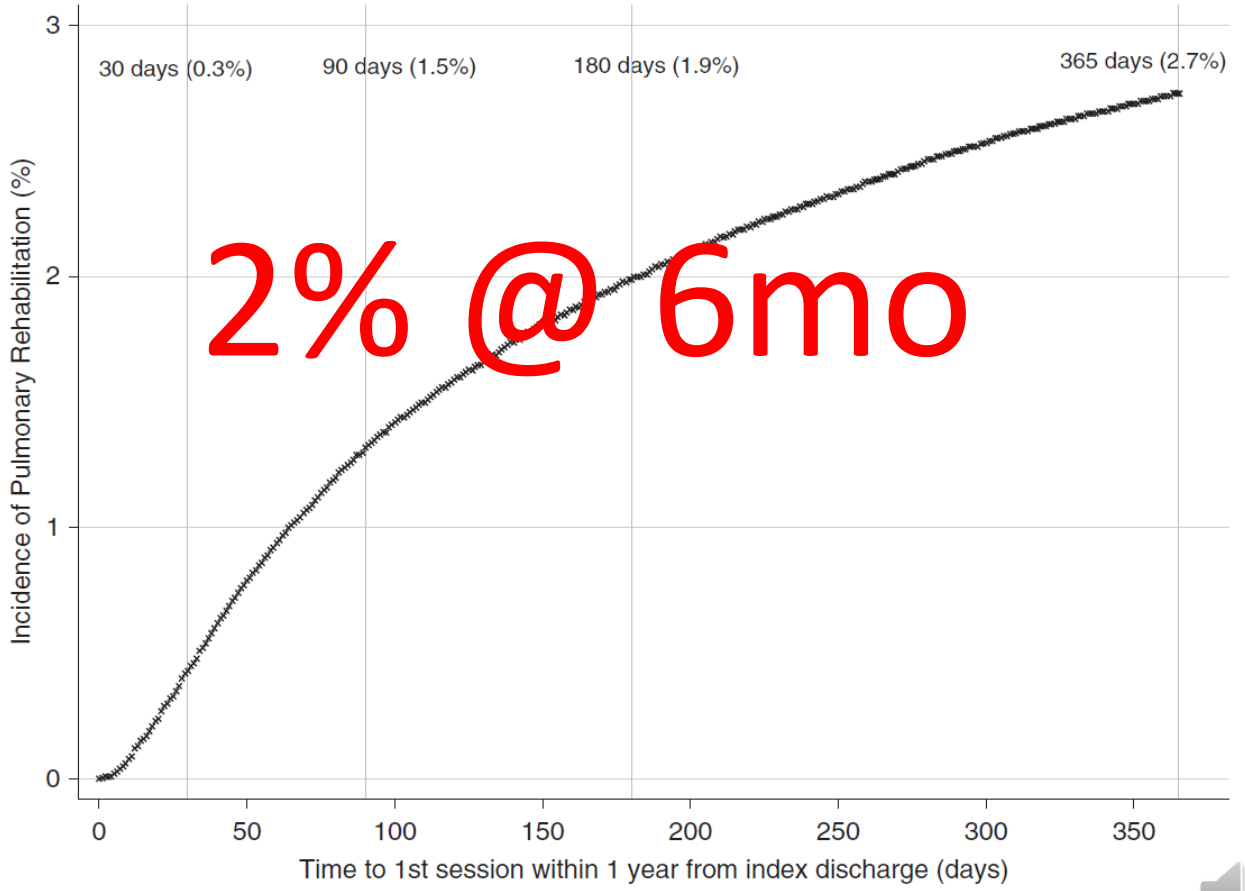


Fig. 5 The effect of supervised early PR versus usual care on COPD related hospital readmissions at the longest follow up

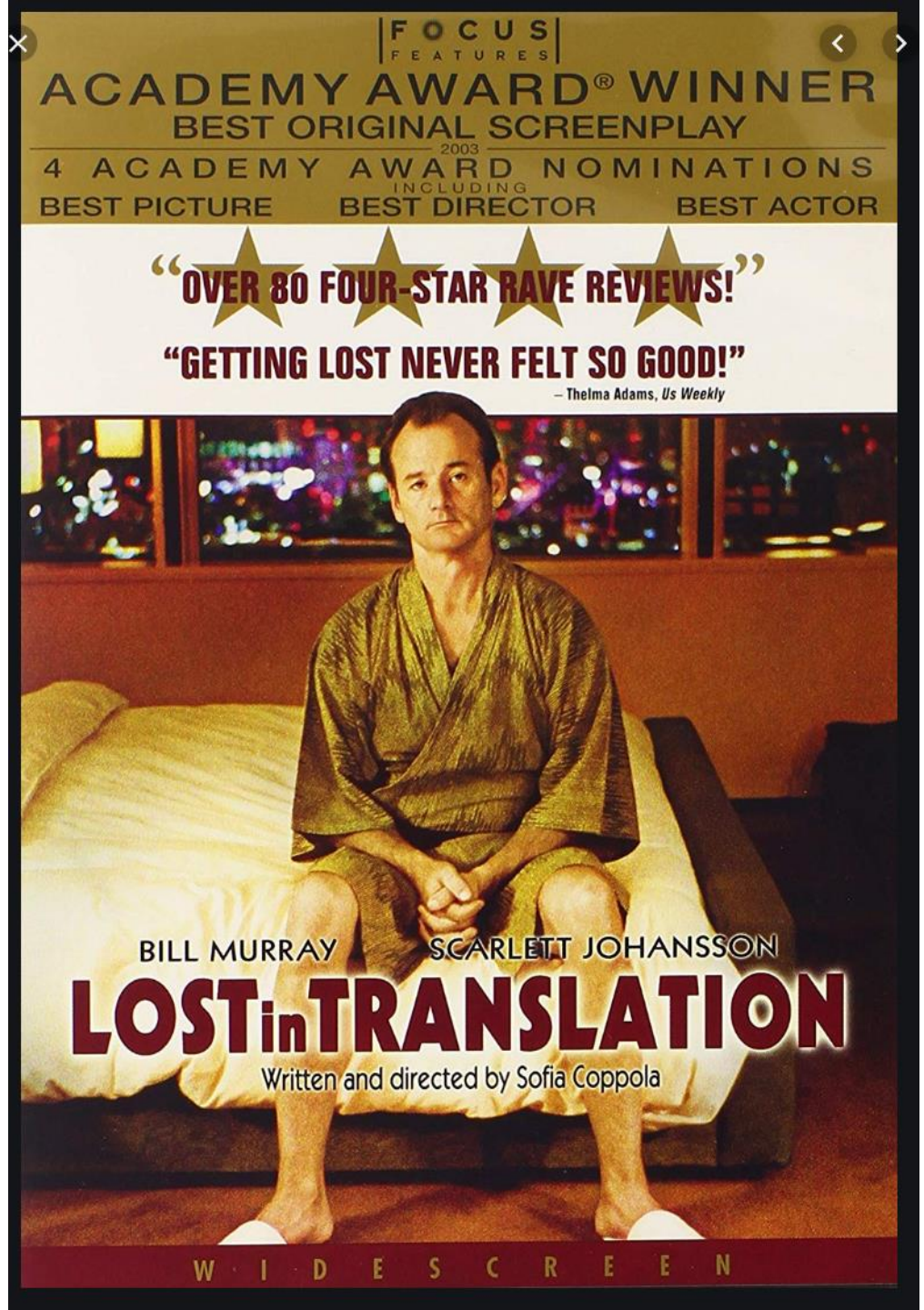
Participation in Pulmonary Rehabilitation after Hospitalization for Chronic Obstructive Pulmonary Disease among Medicare Beneficiaries

Kerry A. Spitzer[1], Mihaela S. Stefan[1,2], Aruna Priya[1,3], Quinn R. Pack[1,2,4], Penelope S. Pekow[1,3], Tara Lagu[1,2], Victor M. Pinto-Plata[5], Richard L. ZuWallack[6], and Peter K. Lindenauer[1,2,7]

- Factors associated with lower chance of participation
  - Older age; Female sex
  - Non-white race / Hispanic ethnicity
  - Lower SES
  - Greater distance to PR center



Spitzer KA et al Annals ATS 2018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WIDESCREEN

A tale of 3 care management programs

Eur Respir J 2006; 28: 123–130
DOI: 10.1183/09031936.06.00063205

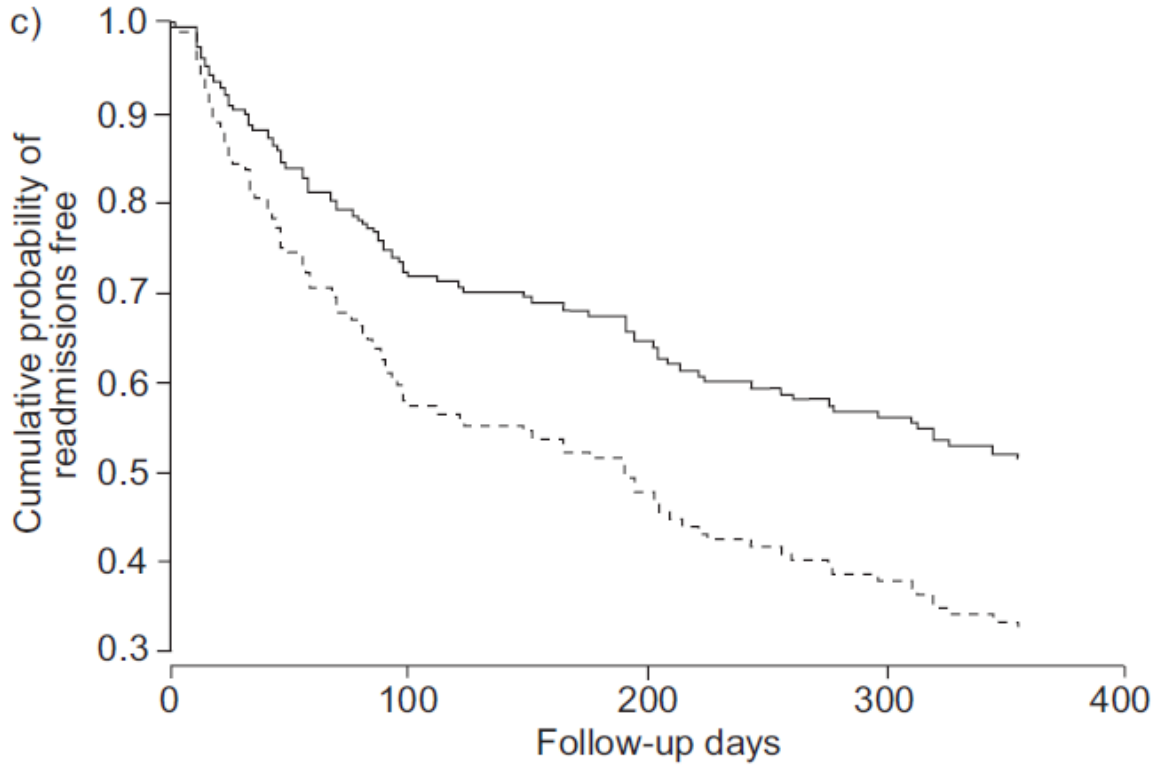
Integrated care prevents hospitalisations for exacerbations in COPD patients

A. Casas*, T. Troosters+, J. Garcia-Aymerich#, J. Roca*, C. Hernández*, A. Alonso*, F. del Pozo¶, P. de Toledo¶, J.M. Antó#, R. Rodríguez-Roisín*, M. Decramer+ and members of the CHRONIC Project

Readmission rates 51% vs 69% at 1yr
No difference in mortality

<u>155 patients randomized after discharge in Spain and Belgium</u>

1. Biopsychosocial assessment
2. Self-management training at DC
3. Individually tailored care plan between the specialized nurse case manager and the primary team
4. Accessibility of the specialized nurse through web-based call center



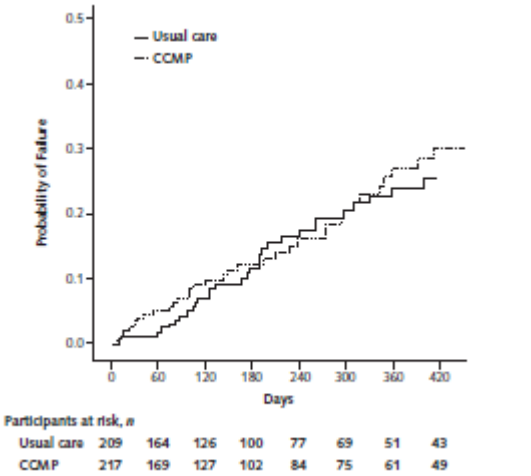
Casas A. ERJ 2006

ORIGINAL RESEARCH | 15 MAY 2012

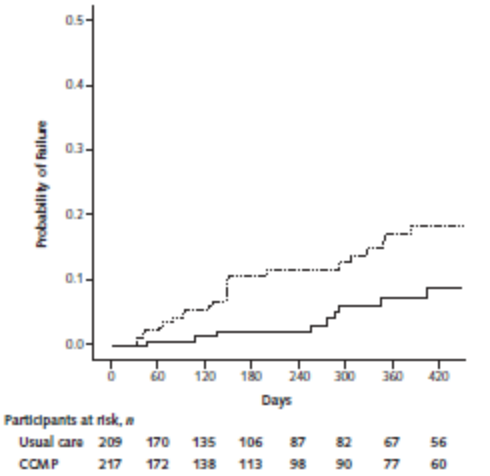
A Comprehensive Care Management Program to Prevent Chronic Obstructive Pulmonary Disease Hospitalizations: A Randomized, Controlled Trial

- RCT of comprehensive care management program at 20 VAMCs with 426 pts (plan 960)
  - 1-1 COPD education x 4
  - Group session
  - Action plan for exacerbations
  - Scheduled telephone calls
- Study stopped prematurely for safety concerns
  - 28 vs 10 deaths (HR 3.00 p.003)
  - 10 vs 3 COPD deaths (HR 3.6 p.05)
  - No effect on hospitalizations

Hospitalizations



Death



Fan V. Annals IM 2012

JAMA | Original Investigation

Effect of a Program Combining Transitional Care and Long-term Self-management Support on Outcomes of Hospitalized Patients With Chronic Obstructive Pulmonary Disease

A Randomized Clinical Trial

- 240 patients enrolled during COPD hospitalization @ Hopkins Bayview
- Interventions
  - 1-mo transitional care support (Usual care)
  - Usual care + 3-mo self-management support intervention delivered by COPD RNs
- Outcomes
  - Acute care utilization over 6 months
  - Change in HRQoL
- Results:
  - 0.72 (Intervention) vs 1.4 (Control) acute care events; difference 0.68 events p=.004
  - Clinically meaningful, statistical significant changes in HRQoL favoring intervention

Aboumatar H et al JAMA 2018

JAMA | Original Investigation

Effect of a Program Combining Transitional Care and Long-term Self-management Support on Outcomes of Hospitalized Patients With Chronic Obstructive Pulmonary Disease
A Randomized Clinical Trial

Hanan Aboumatar, MD, MPH; Mohammad Naqibuddin, MBBS, MPH; Suna Chung, MPH; Hina Chaudhry, MPH; Samuel W. Kim, BA; Jamia Saunders, MD, MS; Lee Bone, MPH; Ayse P. Gurses, MS, MPH, PhD; Amy Knowlton, ScD, MPH; Peter Pronovost, MD, PhD; Nirupama Putcha, MD, MHS; Cynthia Rand, PhD; Debra Roter, DrPH; Carol Sylvester, RN, MS; Carol Thompson, MS, MBA; Jennifer L. Wolff, PhD; Judith Hibbard, PhD, MPH, FCCM; Robert A. Wise, MD

IMPORTANCE Patients hospitalized for chronic obstructive pulmonary disease (COPD) exacerbations have high rehospitalization rates and reduced quality of life.

OBJECTIVE To evaluate a hospital-initiated program that combined transition and long-term self-management support for patients hospitalized due to COPD and their family caregivers.

DESIGN, SETTING, AND PARTICIPANTS This single-site randomized clinical trial was conducted in Baltimore, Maryland, with 240 participants. Participants were patients hospitalized due to COPD, randomized to intervention or usual care, and followed up for 6 months after hospital discharge. Enrollment occurred from March 2015 to May 2016; follow-up ended in December 2016.

INTERVENTIONS The intervention (n = 120) was a comprehensive 3-month program to help patients and their family caregivers with long-term self-management of COPD. It was delivered by COPD nurses (nurses with special training in supporting patients with COPD using standardized tools). Usual care (n = 120) included transition support for 30 days after discharge to ensure adherence to discharge plan and connection to outpatient care.

MAIN OUTCOMES AND MEASURES The primary outcome was number of COPD-related acute care events (hospitalizations and emergency department visits) per participant at 6 months. The co-primary outcome was change in participants' health-related quality of life measured by the St George's Respiratory Questionnaire (SGRQ) at 6 months after discharge (score, 0 [best] to 100 [worst]; 4-point difference is clinically meaningful).

RESULTS Among 240 patients who were randomized (mean [SD] age, 64.9 [9.8] years; females, 61.7%), 203 (85%) completed the study. The mean (SD) baseline SGRQ score was 63.1 (19.9) in the intervention group and 62.6 (19.3) in the usual care group. The mean number of COPD-related acute care events per participant at 6 months was 0.72 (95% CI, 0.45-0.97) in the intervention group vs 1.40 (95% CI, 1.01-1.79) in the usual care group (difference, 0.68 [95% CI, 0.22 to 1.15]; $P = .004$). The mean change in participants' SGRQ total score at 6 months was −1.53 in the intervention and +5.44 in the usual care group (adjusted difference, −6.69 [95% CI, −12.97 to −0.40]; $P = .04$). During the study period, there were 15 deaths (intervention: 7; usual care: 8) and 337 hospitalizations (intervention: 135; usual care: 202).

CONCLUSIONS AND RELEVANCE In a single-site randomized clinical trial of patients hospitalized due to COPD, a 3-month program that combined transition and long-term self-management support resulted in significantly fewer COPD-related hospitalizations and emergency department visits and better health-related quality of life at 6 months after discharge. Further research is needed to evaluate this intervention in other settings.

TRIAL REGISTRATION ClinicalTrials.gov Identifier: NCT02036294

JAMA. doi:10.1001/jama.2018.17933
Published online November 12, 2018.

Visual Abstract
Editorial
Supplemental content

RETRACTION

Author Affiliations: Author affiliations are listed at the end of this article.

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Editorial

FREE

October 8, 2019

Unexpected Harm From an Intensive COPD Intervention

Seppo T. Rinne, MD, PhD[1,2]; Peter K. Lindenauer, MD, MSc[3,4]; David H. Au, MD, MS[5,6]

» Author Affiliations | Article Information

JAMA. 2019;322(14):1357-1359. doi:10.1001/jama.2019.12976

Related Articles

Science and sound clinical care both rely on honest reporting and, when necessary, self-correction. In this issue of *JAMA*, the Notice of Retraction[1] and republication of the article by Aboumatar et al titled, "Effect of a Hospital-Initiated Program Combining Transitional Care and Long-term Self-management Support on Outcomes of Patients Hospitalized With Chronic Obstructive Pulmonary Disease,"[2] represent a commitment by the authors to ensure an accurate scientific record. Following discovery of an error in the analysis of data from the initial report,[3] the reanalysis by the authors now shows that the study's original conclusion changed remarkably from showing a strong benefit of the intervention to showing harm. The results of this study, as in all high-quality research, are important regardless of outcome. The authors have acknowledged and addressed the error in an open and transparent way. The integrity of science is built on the principle that scientists are forthright in their research, and these authors adopted an earnest approach to amend their error.

Take home messages

- Start
  - Confirm the diagnosis of COPD through spirometry
  - Prescribing medication to help smokers quit
  - Make sure that patients can use their inhalers correctly
  - Refer and encourage patients to attend Pulmonary Rehabilitation
  - Check a vitamin D level
  - Discuss goals of care; consider role of palliative care
- Consider
  - Triple inhaler therapy for patients with frequent exacerbation / hospitalizations
- Don’t start and/or stop
  - Beta blockers unless patient has an indication for beta blocker treatment
  - Theophylline
- Be cautious / skeptical
  - Before referring to a care management program to prevent readmission

Thank you


December
Birthdays
December 17, 2018
Fran C.
Susan G.
Ann T.
Kelley
Hours


PULMONARY REHAB
December 17, 2018
Afternoon
Holiday Party
New temporary
Hours M-W-F 8am-5pm