AECOPD: Management and Prevention

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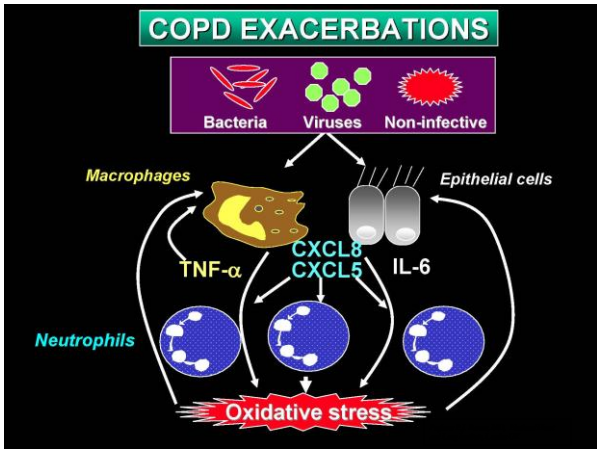
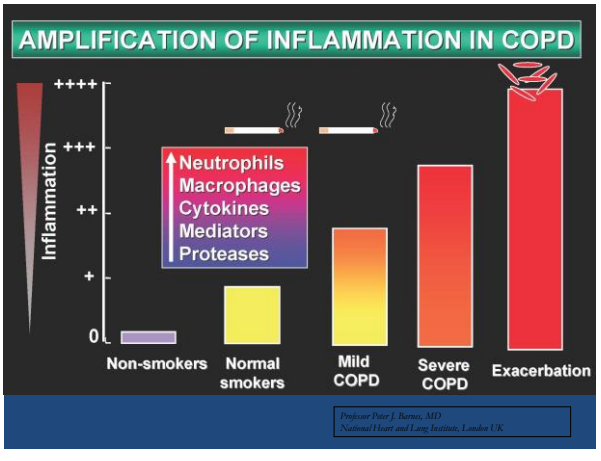
AECOPD: Management and Prevention

- AECOPD: Definitions and impact
- Acute management of AECOPD
- Preventing AECOPD

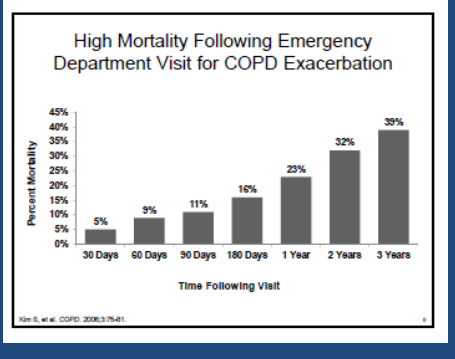




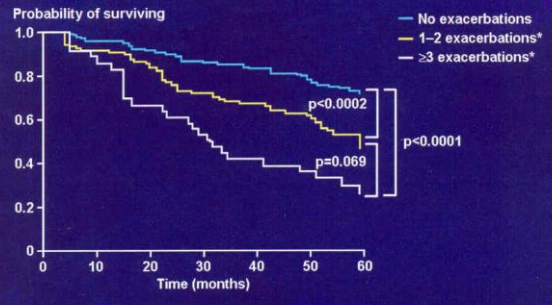
Global Strategy for Diagnosis, Management and Prevention of COPD

An exacerbation of COPD is:

"an acute event characterized by a worsening of the patient's respiratory symptoms that is beyond normal day-to-day variations and leads to a change in medication."



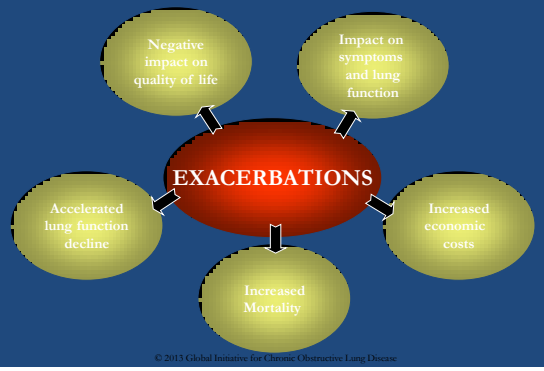
Frequency of severe acute exacerbations predicts mortality



*Acute exacerbations of COPD prior to entry to study requiring hospital management

Soler-Cataluña et al. Thorax 2005

Consequences Of COPD Exacerbations



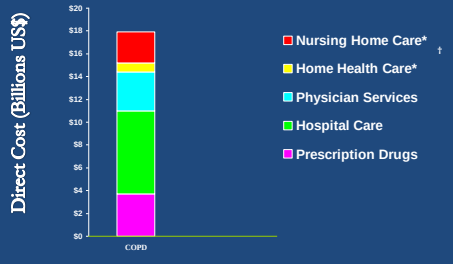
Recurrence of Exacerbations

- 27% of first exacerbations associated with second exacerbation in 8 weeks
- 34% of 1,221 hospitalized patients in UK readmitted within 3 months (range 5-65%)

C M Roberts et al.Thorax 2002;57:137–141
Hurst et al. Am J Respir Crit Care Med 2009; 179:369

Duke data 2013: 270 AECOPD admissions – 20% readmit in 30 days
Majority AECOPD but also CHF and combos

COPD: Direct Cost



Morbidity and Mortality: 2002 Chart Book on Cardiovascular, Lung, and Blood Diseases. NIH/NHLBI. May 2002

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Global Strategy for Diagnosis, Management and Prevention of COPD

AECOPD: Assessments – R/O other problems

Arterial blood gas measurements: PaO_2 < 60 mm Hg with or without $PaCO_2$ > 48 mm Hg on RA indicates respiratory failure.

Chest radiographs: useful to exclude alternative diagnoses.

ECG: may aid in the diagnosis of coexisting cardiac problems.

Whole blood count: identify polycythemia, anemia or bleeding.

Purulent sputum indication to begin empirical antibiotics

Biochemical tests: detect electrolyte disturbances, diabetes, and poor nutrition.

Spirometric tests: not recommended during an exacerbation.

Contrasted CT: consider in pts at risk with severe hypoxemia

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Manage Exacerbations: Treatment Options

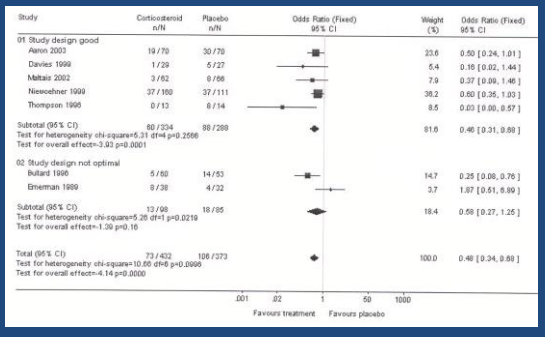
Oxygen: titrate to improve the patient's hypoxemia with a target saturation of 88-92%.

Bronchodilators: Short-acting inhaled beta$_2$-agonists with or without short-acting anticholinergics are preferred.

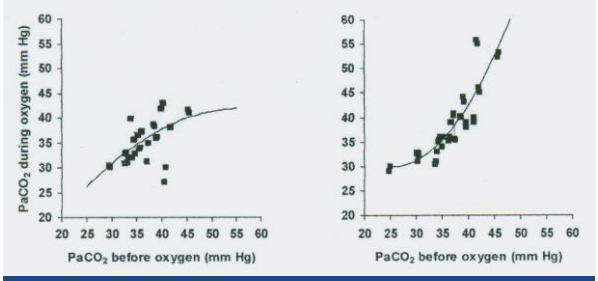
Systemic Corticosteroids: Shorten recovery time, improve lung function (FEV_1) and arterial hypoxemia (PaO_2), and reduce the risk of early relapse, treatment failure, and length of hospital stay. A dose of 30-40 mg prednisolone per day for 10-14 days is recommended.

AECOPD: Oral CS RCTs

Treatment Failures



Oxygen titrated to SpO2



SpO2 target 88-92 SpO2 target > 95

Should be humidified

Chest 2004;125:1061

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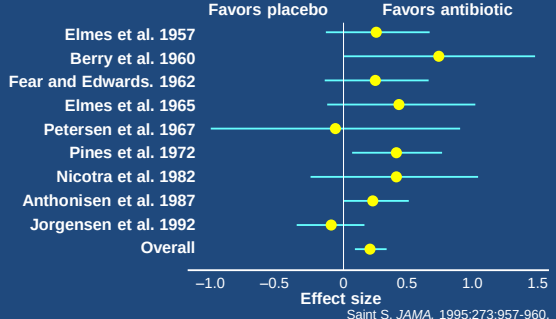
Manage Exacerbations: Treatment Options

Antibiotics should be given to patients with:

- Three cardinal symptoms: increased dyspnea, increased sputum volume, and increased sputum purulence.
- Who require mechanical ventilation.

Meta-analysis of the Benefits of Antibiotics in AECOPD



Saint S. *JAMA.* 1995;273:957-960.

Association of Antibiotic Therapy and Outcomes of Patients with COPD Exacerbation

- Retrospective study of patients >40-years-old hospitalized for a COPD exacerbation and treated with systemic corticosteroids (N=53,900)
- Addition of antibiotics was associated with:
  - 40% reduction in in-hospital mortality
  - 13% reduction in 30-day readmission for COPD

Stefan MS, et al. Chest. 2013;143(1):62-90.

Acute Respiratory Failure in COPD

- Narrowed airways increases inspiratory work
- Narrowed airways increases air trapping and decreases muscle force generation capability

Net result is hypercapneic respiratory failure

Global Strategy for Diagnosis, Management and Prevention of COPD

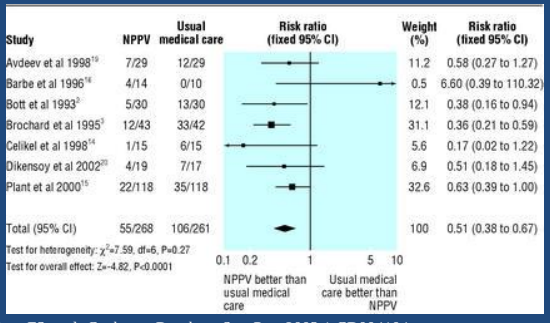
Manage Exacerbations: Treatment Options

Noninvasive ventilation (NIV) for patients hospitalized for acute exacerbations of COPD:

- Improves respiratory acidosis, decreases respiratory rate, severity of dyspnea, complications and length of hospital stay.
- Decreases mortality and needs for intubation.

 GOLD Revision 2011

NPPV in Acute Exacerbations of COPD: *Risk of "Treatment Failure" (Mortality, Intubation, Intolerance)*



Ram FS et al. *Cochrane Database Syst Rev*. 2003;1:CD004104.
Reproduced with permission. Lightowler JV et al. *BMJ*. 2003;326:185-190.

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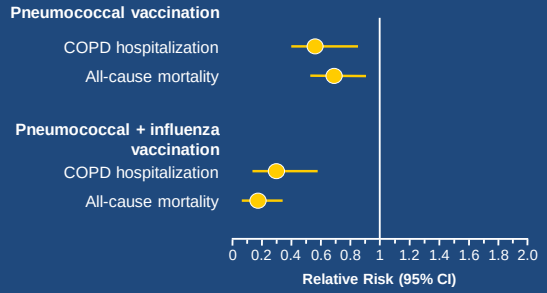
Manage Stable COPD: Non-pharmacologic

Patient Group	Essential	Recommended	Depending on local guidelines
A	Smoking cessation (can include pharmacologic treatment)	Physical activity	Flu vaccination Pneumococcal vaccination
B, C, D	Smoking cessation (can include pharmacologic treatment) Pulmonary rehabilitation	Physical activity	Flu vaccination Pneumococcal vaccination

Prevention of COPD Exacerbations: Pneumococcal and Influenza Vaccinations

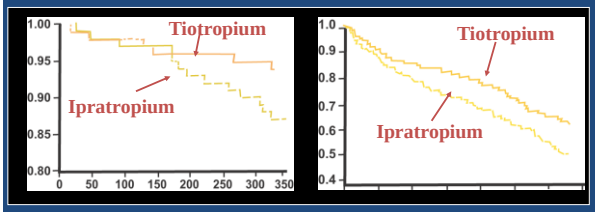


Adapted from Nichol et al. *Arch Intern Med*. 1999;159:2437-2442 (A).

Smoking Cessation

- "First thing you have to do to get out of hole is stop digging"
- Nicotine is incredibly addictive – spontaneous quit rates <5%/year
- What can help?
  - Nicotine replacement
  - Welbutrin
  - Varenicline
  - Formal programs (ALA, ACS)

LAMAs and Exacerbations and Hospitalizations vs Ipratropium

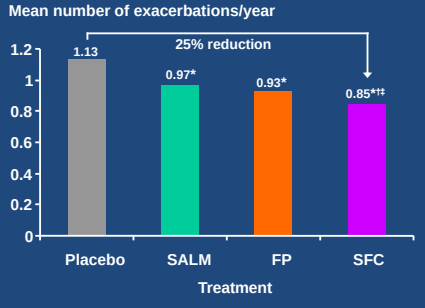


Probability of being exacerbation free vs days on treatment

Probability of being hospitalization free vs days on treatment

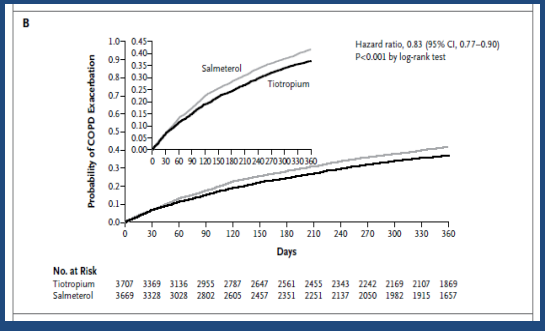
Reproduced with permission. Vincken W et al. *Eur Respir J*. 2002;19:209-16.

LABA+ ICS



*p < 0.001 vs placebo; †p = 0.002 vs SALM; ‡p = 0.024 vs FP
Calverley et al. *N Engl J Med* 2007;356:775.

LABA vs LAMA



NEJM 2011;364:1093

Triple therapy – Fewer hospitalizations

	Tiotropium (n=156)	Tiotropium + Salmeterol (n=148)	Tiotropium + Salmeterol + Fluticasone (n=145)
% Pts with 1 or more exacerbation(s)	62.8 %	64.8%	60.0%
Total Exacerbations	222	226	188
Exacerbations with Hosp	49	38	26*

Aaron et. al. *Ann Int Med*. 2007

Global Strategy for Diagnosis, Management and Prevention of COPD

Preventing AECOPD

- The phospodiesterase-4 inhibitor roflumilast may be useful to reduce exacerbations for patients with FEV_1 < 50% of predicted, chronic bronchitis, and frequent exacerbations.

Discharge Planning

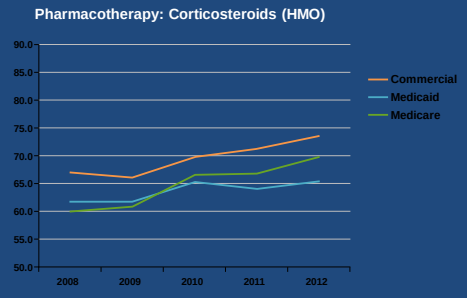
- The use of maintenance bronchodilator therapy for COPD is low[1]
- At discharge from exacerbation:
  - 45% of patients with COPD were prescribed maintenance bronchodilators[2]
  - 23% of patients with COPD were not prescribed an inhaled therapy at all[2]

1. Make B, et al. *Int J Chron Obstruct Pulmon Dis.* 2012;7:1-9.
2. Yip NH, et al. *COPD.* 2010;7(2):85-92.

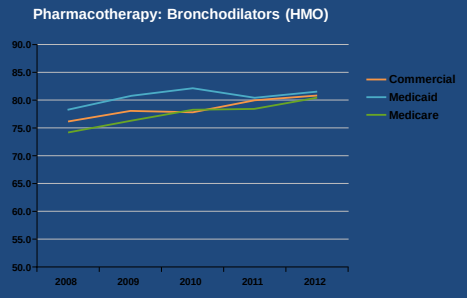
Pharmacotherapy Management (PCE)

- **2 rates are reported:**
  1. Patients dispensed a systemic corticosteroid within 14 days of event
  2. Patients dispensed a bronchodilator within 30 days of event

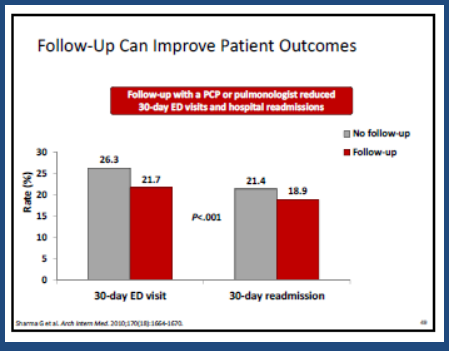
PCE Performance 2008–2012



PCE Performance 2008–2012



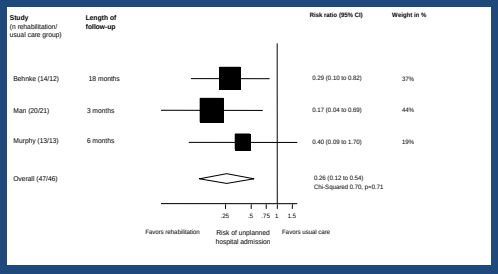
Follow-Up Can Improve Patient Outcomes



Sharma G et al. *Arch Intern Med.* 2010;170(18):1664-1670.

Pulmonary rehabilitation

- Education
  - chronic management
  - acute management
- Exercise
  - deconditioning common
  - may need bronchodilators/O2
- Psycho-social support



Reproduced from Puhan MA, Scharplatz M, Troosters T, et al. *Respir Res.* 2005;6:54.

Can Patients Be Given an "Action Plan" to Self Manage AECOPD?

- Yes….But….
- Conflicting data from 2 large VA trials
  - First showed remarkable reduction in need for hospitalizations etc if patients educated to start antibiotics promptly at symptom onset
  - Second showed worse outcomes using a similar strategy

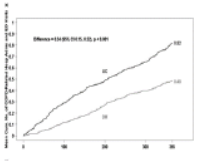
Care Management in COPD

N = 743 pts

Usual Care vs

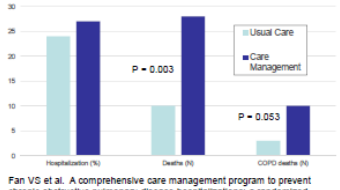
Disease Management

- 1.5 hr education
- Action plan for self treatment
- Monthly f/u calls from case manager
- Results: All cause hospitalizations decreased 28%.
- COPD-related Hosp. and ED visits decreased by 41%



Rice KL, Dewan N, Bloomfeld HE, Grill J, Schult TM, Nelson DB, Kumari S, Thomas M, Gelat LJ, Beaner C, Caldwell M, Niewoehner DE. Disease management program for chronic obstructive pulmonary disease: a randomized controlled trial. Am J Respir Crit Care Med. 2010;182(7):890-6

VA comprehensive care management trial (n = 426 / 960)



Fan VS et al. A comprehensive care management program to prevent chronic obstructive pulmonary disease hospitalizations: a randomized, controlled trial. Ann Intern Med. 2012;156(10):673-83.

Can Patients Be Given an "Action Plan" to Self Manage AECOPD?

- Yes….But….
- Conflicting data from 2 large VA trials
  - First showed remarkable reduction in need for hospitalizations etc if patients educated to start antibiotics promptly at symptom onset
  - Second showed worse outcomes using a similar strategy
- Take home message: Self management offers advantage of prompt therapy but patients need to know when to call for help

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