

Management of COPD exacerbations: a European Respiratory Society/ American Thoracic Society guideline

From the ERS/ATS task force on the management of COPD exacerbations



ERS

EUROPEAN
RESPIRATORY
SOCIETY

every breath counts

Copyright ©ERS 2017

For permissions enquiries, please contact permissions@ersj.org.uk

Disclaimer:

The guidelines published by the European Respiratory Society (ERS) incorporate data obtained from a comprehensive and systematic literature review of the most recent studies available at the time. Health professionals are encouraged to take the guidelines into account in their clinical practice. However, the recommendations issued by this guideline may not be appropriate for use in all situations. It is the individual responsibility of health professionals to consult other sources of relevant information, to make appropriate and accurate decisions in consideration of each patient's health condition and in consultation with that patient and the patient's caregiver where appropriate and/or necessary, and to verify rules and regulations applicable to drugs and devices at the time of prescription.

Table of contents

ERS / ATS TASK FORCE ON THE MANAGEMENT OF COPD EXACERBATIONS	4
Question #1: Should oral corticosteroids (Oral CS) be used to treat patients whose COPD exacerbation is mild enough to be treated as an outpatient (<i>i.e.</i> , ambulatory patients)?	5
Question #2: Should antibiotics be administered to ambulatory patients who are having a COPD exacerbation?	6
Question #3: Should intravenous or oral corticosteroids be used to treat patients who are hospitalised with a COPD exacerbation?	7
Question #4: Should non-invasive mechanical ventilation be used in patients who are hospitalised with a COPD exacerbation associated with acute or acute-on-chronic respiratory failure?	8
Question #5: Should a home-based management program (“hospital at home”) be implemented in patients with COPD exacerbations?	9
Question #6: Should pulmonary rehabilitation be implemented in patients hospitalized with a COPD exacerbation?	10

ERS / ATS TASK FORCE ON THE MANAGEMENT OF COPD EXACERBATIONS

Jadwiga A. Wedzicha (ERS co-chair), London, UK
Marc Miravittles, Barcelona, Spain
John R. Hurst, London, UK
Peter MA. Calverley, Liverpool, UK
Richard K. Albert, Denver, CO, USA
Antonio Anzueto, San Antonio, TX, USA
Gerard J. Criner, Philadelphia, PA, USA
Alberto Papi, Ferrara, Italy
Klaus F. Rabe, Grosshansdorf, Germany
Pawel Sliwinski, Warsaw, Poland
Jørgen Vestbo, Manchester, UK
Jerry A. Krishnan (ATS co-chair), Chicago, IL, USA

ERS /ATS Methodologists:

Thomy Tonia, Bern, Switzerland (ERS)
David Rigau, Barcelona, Spain (ERS)
Kevin C. Wilson, Boston, MA, USA (ATS)

Acknowledgements:

This pocket guideline is based on the ERS Guideline “Management of COPD exacerbations: a European Respiratory Society/American Thoracic Society guideline” by Wedzicha et al. (European Respiratory Journal 2017 49: 1600791; DOI: 10.1183/13993003.00791-2016).

It was prepared by Dr. Beatriz Abascal (Santander, Spain) and Dr. Alexander Mathioudakis (Manchester, UK) under the supervision of the ERS Methodologists Dr. David Rigau and Ms. Thomy Tonia.

Question #1: Should oral corticosteroids (Oral CS) be used to treat patients whose COPD exacerbation is mild enough to be treated as an outpatient (i.e., ambulatory patients)?

For ambulatory patients with an exacerbation of COPD, we suggest a short course (14 days or less) of oral corticosteroids

- Conditional recommendation
- Very low quality of evidence

Evidence on benefits and harms

- Oral CS improve lung function
- Oral CS result in trend towards less hospitalisations
- No differences in quality of life
- No data on time to next exacerbation
- No differences in serious adverse events, mortality and treatment failure.

HOWEVER there is uncertainty about the accuracy of the estimated effect for those outcomes

Rationale of recommendation

The uncertainty in the overall balance of benefits and harms due to low quality of evidence led the panel to make a conditional recommendation in favour of oral corticosteroids.

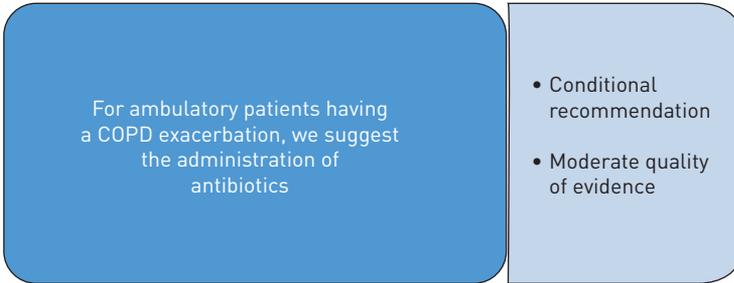
Implementation considerations

Dose: Consider using a dose of 30–40 mg of prednisone or equivalent doses of other steroids.

Clinicians should monitor patients receiving systemic steroids for the following: seizures, insomnia, weight gain, anxiety, depressive symptoms and hyperglycaemia and adjust the treatment accordingly.

Patients with an elevated blood eosinophil count might respond more to oral corticosteroids than patients with a low blood eosinophil count according to some studies.

Question #2: Should antibiotics be administered to ambulatory patients who are having a COPD exacerbation?



Evidence on benefits and harms

- Antibiotics reduce the risk of treatment failure (lack of resolution and deterioration)
- Antibiotics prolong the time to next exacerbation
- Antibiotics increase the risk of mild adverse events
- No data on hospital admission rate, length of hospital stay or mortality were reported.

There is MODERATE quality of evidence about the estimates of effect for those outcomes.

Rationale of recommendation

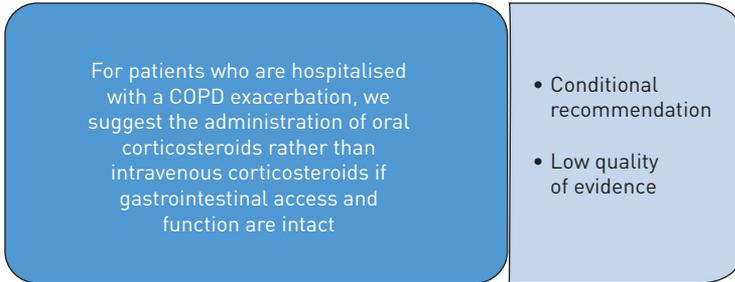
The panel considered the reduction of treatment failure and the increased time between COPD exacerbations with antibiotics. These perceived benefits were balanced against the increase in adverse events most of which were mild gastrointestinal side effects (e.g. diarrhoea). The lack of information about several outcomes of interest, specifically, the hospital admission rate and length of hospital stay, led the panel to make a conditional recommendation in favour of antibiotic use.

Implementation considerations

Patients presenting with purulent sputum and more severe COPD are more likely to benefit from antibiotic treatment.

Consider administering a short course of antibiotics, in accordance with the local microbial sensitivities.

Question #3: Should intravenous or oral corticosteroids be used to treat patients who are hospitalised with a COPD exacerbation?



Evidence on benefits and harms

- There are no differences in treatment failure, mortality, hospital readmissions or length of hospital stay between intravenous and oral administration of corticosteroids
- No data on time to next exacerbation
- Intravenous corticosteroids might increase the risk of mild adverse events.

HOWEVER there is uncertainty about the accuracy of the estimated effect for those outcomes.

Rational of recommendation

The panel considered the lack of convincing evidence about benefits or harms supporting one form of administration over the other due to low quality of evidence. Instead, oral corticosteroids are simpler to administer and might reduce healthcare expenditures compared to intravenous corticosteroids. This led the panel to make a conditional recommendation in favour of oral corticosteroids provided that gastrointestinal access and function are intact.

Implementation considerations

Dose: Consider using 30-40 mg of prednisone or equivalent doses of other steroids for 5 to 10 days.

Clinicians should monitor patients receiving systemic steroids for the following: seizures, insomnia, weight gain, anxiety, depressive symptoms, psychosis and hyperglycaemia and adjust the treatment accordingly

Intravenous corticosteroids should be administered to patients who are unable to tolerate oral corticosteroids and those with impaired gastrointestinal access or function

Question #4: Should non-invasive mechanical ventilation be used in patients who are hospitalised with a COPD exacerbation associated with acute or acute-on-chronic respiratory failure?

<p>For patients with acute or acute-on-chronic hypercapnic respiratory failure due to a COPD exacerbation, we recommend the use of non-invasive ventilation</p>	<ul style="list-style-type: none">• Strong recommendation• Low quality of evidence
---	---

Evidence on benefits and harms

- NIV reduces the need for intubation, mortality, length of hospital and ICU stay.
- NIV also reduces treatment complications (e.g. aspiration or barotrauma)
- No differences in pH after 1 hour of treatment initiation.
- No data on the impact of NIV on the rate of nosocomial pneumonia are available.

HOWEVER there is uncertainty about the accuracy of the estimated effect for those outcomes.

Rationale of recommendation

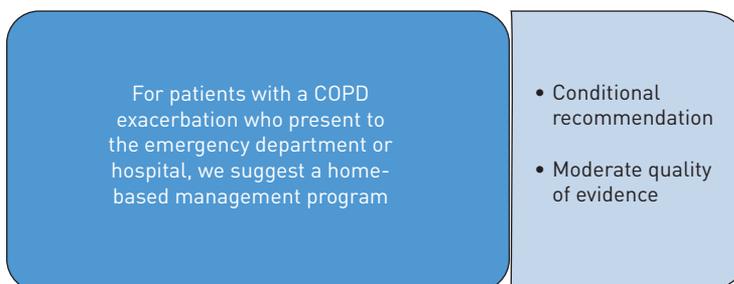
Despite the low confidence in the estimated effects, the panel made a strong recommendation for the use of NIV in acute or acute-on-chronic hypercapnic respiratory failure due to a COPD exacerbation considering that the overwhelming majority of well-informed patients would want NIV given the possibility of one or more important clinical benefits with minimal risk of harm.

Implementation considerations

For implementation, it is important to protect the upper airways and clear secretion. Clinicians should individually evaluate risk and benefits of the use of NIV to patients with any of the following:

- inability to cooperate
- severely impaired consciousness
- facial deformity
- high aspiration risk
- recent oesophageal stenosis

Question #5: Should a home-based management program (“hospital at home”) be implemented in patients with COPD exacerbations?



Evidence on benefits and harms

- Home-based management reduces the number of hospital readmissions
- Home-based management results in a trend towards less mortality.
- Home-based management results in no differences in the time to first readmission.
- No data on hospital acquired infections, quality of life or adverse events were reported.

There is MODERATE quality of evidence about the estimates of effect for those outcomes.

Rationale of recommendation

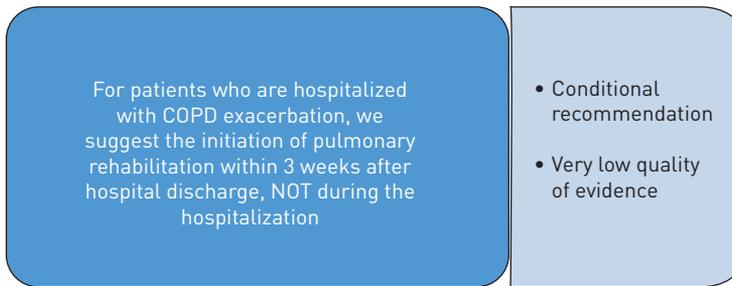
The panel considered the reduction of hospital readmissions with home-based management and its potential impact on the availability of hospital beds. Moreover, the majority of patients indicate preferring home treatment and this intervention seems to be less costly. These perceived benefits were balanced against the uncertainties around the impact on quality of life, adverse events and the large geographical variability in its availability. The unclear balance led the panel to make a conditional recommendation in favour of home-based programs.

Implementation considerations

Home-based management can be considered after emergency department discharge or after initial hospitalisation. Usually involves nurses and potentially other health care professionals (physicians, social workers, physical therapists).

The panel considered a home-based management program model in appropriately selected patients that may include those who DO NOT have: acute or acute-on-chronic ventilator respiratory failure, respiratory distress, hypoxemia requiring high-flow supplemental oxygen, impaired level of consciousness, cor pulmonale, need for full-time nursing care, other reasons for hospitalization (e.g. myocardial ischemia), housing or food insecurity, poor social support, active substance abuse.

Question #6: Should pulmonary rehabilitation be implemented in patients hospitalized with a COPD exacerbation?



Evidence on benefits and harms

- Pulmonary rehabilitation initiated **during hospitalization** increases exercise capacity but also increases mortality
- Pulmonary rehabilitation initiated **within three weeks following discharge** reduces hospital readmissions and improves quality of life
- Pulmonary rehabilitation initiated **within eight weeks following discharge** increases exercise capacity
- Overall serious adverse events during pulmonary rehabilitation program are rare.

HOWEVER the accuracy of the estimated effect for those outcomes is very uncertain.

Rationale of recommendation

Despite the large uncertainties due to very low quality of evidence, the panel considered a conditional recommendation in favour of initiating pulmonary rehabilitation within 3 weeks after hospital discharge due to improved clinical outcomes with minimal risk of harm. In addition, the panel considered a conditional recommendation against initiating pulmonary rehabilitation during hospitalization to avoid the potential increase in mortality.

Implementation considerations

Early pulmonary rehabilitation refers to a program that consists of physical exercise and education. A combination of regular exercise with breathing technique training may be best option of physical exercise.

Pulmonary rehabilitation is not yet completely integrated into the care of patients with COPD exacerbations due to the lack of strategies that systematically target barriers and facilitators. The burden and costs of pulmonary rehabilitation should also be taken into account before.