

an acute COPD exacerbation.⁽¹³³⁸⁾ COPD exacerbations increase the risk of adverse cardiovascular events, with heightened risk in the first 30 days persisting for up to 1-2 years.⁽¹³³⁹⁾ Mortality risk may be heightened during spells of cold weather.⁽¹³⁴⁰⁾

An updated Cochrane review concluded that the use of COPD exacerbation action plans with a single short educational component, in conjunction with ongoing support, reduced in-hospital healthcare utilization. Such educational interventions were also found to increase the treatment of COPD exacerbations with corticosteroids and antibiotics.⁽¹³⁴¹⁾

Key points for the management of all exacerbations are given in **Figure 4.6**.

Key Points for the Management of Exacerbations

Figure 4.6

- Short-acting inhaled beta₂-agonists, with or without short-acting anticholinergics, are recommended as the initial bronchodilators to treat an acute exacerbation **(Evidence C)**
- Systemic corticosteroids can improve lung function (FEV₁), oxygenation and shorten recovery time and hospitalization duration. Duration of therapy should not normally be more than 5 days **(Evidence A)**
- Antibiotics, when indicated, can shorten recovery time, reduce the risk of early relapse, treatment failure, and hospitalization duration. Duration of therapy should normally be 5 days **(Evidence B)**
- Methylxanthines are not recommended due to increased side effect profiles **(Evidence B)**
- Non-invasive mechanical ventilation should be the first mode of ventilation used in COPD patients with acute respiratory failure who have no absolute contraindication because it improves gas exchange, reduces work of breathing and the need for intubation, decreases hospitalization duration and improves survival **(Evidence A)**

Pharmacological treatment

The three classes of medications most commonly used for COPD exacerbations are bronchodilators, corticosteroids, and antibiotics.

Bronchodilators

Although there is no high-quality evidence from RCTs, it is recommended that short-acting inhaled beta₂-agonists, with or without short-acting anticholinergics, are the initial bronchodilators for acute treatment of a COPD exacerbation.^(1288,1342) A systematic review of the route of delivery of short-acting bronchodilators found no significant differences in FEV₁ between using metered dose inhalers (MDI) (with or without a spacer device) or nebulizers to deliver the agent,^(592,1343) although the latter may be an easier delivery method for sicker patients. It is recommended that patients do not receive continuous nebulization but use the MDI inhaler one or two puffs every one hour for two or three doses and then every 2-4 hours based on the patient's response. Although, there are no clinical studies that have evaluated the use of inhaled long-acting bronchodilators (either beta₂-agonists or anticholinergics or combinations) with or without ICS during an exacerbation, we recommend continuing these treatments during the exacerbation or to start these medications as soon as possible before hospital discharge. Intravenous methylxanthines (theophylline or aminophylline) are not recommended to use in these patients due to significant side effects.^(1344,1345) If a nebulizer is chosen to deliver the bronchodilator agent, air-driven bronchodilator nebulization is preferable to oxygen-driven in acute exacerbations of COPD in order to avoid the potential risk of increasing the PaCO₂ associated