Management of stable copd
Laba postioning as initial treatment for copd patients

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OVERALL KEY POINTS
The management strategy for stable COPD should be predominantly based on the individualized assessment of symptoms and future risk of exacerbations. All individuals who smoke should be strongly encouraged and supported to quit. The main treatment goals are reduction of symptoms and future risk of exacerbations. Management strategies are not limited to pharmacologic treatments, and should be complemented by appropriate non-pharmacologic interventions. Once COPD has been diagnosed, effective management should be based on an individualized assessment to reduce both current symptoms and future risks of exacerbations.

Identify and reduce exposure to known risk factors
Identification and reduction of exposure to risk factors is important in the treatment and prevention of COPD. Cigarette smoking is the most commonly encountered and easily identifiable risk factor for COPD, and smoking cessation should be continually encouraged for all individuals who smoke. Reduction of total personal exposure to occupational dusts, fumes, and gases, and to indoor and outdoor air pollutants, should also be addressed.

Pharmacologic treatment
Pharmacologic therapies can reduce symptoms, and the risk and severity of exacerbations, as well as improve health status and exercise tolerance. Most of the drugs are inhaled so proper inhaler technique is of high relevance.

Pharmacologic treatment algorithms
A proposed model for the initiation, and then subsequent escalation and/or de-escalation of pharmacologic management of COPD according to the individualized assessment of symptoms and exacerbation risk is shown. We suggest escalation (and de-escalation) strategies. The recommendations made are based on available efficacy as well as safety data. It should be noted that there is a lack of direct evidence supporting the therapeutic recommendations for patients in groups C and D. These recommendations will be re-evaluated as additional data become available.
Pharmacologic treatment algorithms

Group A

All Group A patients should be offered bronchodilator treatment based on its effect on breathlessness. This can be either a short- or a long-acting bronchodilator. This should be continued if symptomatic benefit is documented.

Group B

Initial therapy should consist of a long acting bronchodilator. Long-acting inhaled bronchodilators are superior to short-acting bronchodilators taken as needed i.e., pro re nata (prn) and are therefore recommended. There is no evidence to recommend one class of long-acting bronchodilators over another for initial relief of symptoms in this group of patients. In the individual patient, the choice should depend on the patient’s perception of symptom relief. For patients with persistent breathlessness on monotherapy the use of two bronchodilators is recommended.

Group C

Initial therapy should consist of a single long acting bronchodilator. In two head-to-head comparisons the tested LAMA was superior to the LABA regarding exacerbation prevention, therefore we recommend starting therapy with a LAMA in this group. Patients with persistent exacerbations may benefit from adding a second long acting bronchodilator (LABA/LAMA) or using a combination of a long acting beta₂-agonist and an inhaled corticosteroid (LABA/ICS). As ICS increases the risk for developing pneumonia in some patients, our primary choice is LABA/LAMA.
**Group D**

We recommend starting therapy with a LABA/LAMA combination because:

- In studies with patient reported outcomes as the primary endpoint LABA/LAMA combinations showed superior results compared to the single substances. If a single bronchodilator is chosen as initial treatment, a LAMA is preferred for exacerbation prevention based on comparison to LABAs (for details see GOLD 2017 Chapter 3).
- A LABA/LAMA combination was superior to a LABA/ICS combination in preventing exacerbations and other patient reported outcomes in Group D patients (for details see GOLD 2017 Chapter 3).
- Group D patients are at higher risk of developing pneumonia when receiving treatment with ICS.
- In some patients initial therapy with LABA/ICS may be the first choice. These patients may have a history and/or findings suggestive of asthma-COPD overlap. High blood eosinophil counts may also be considered as a parameter to support the use of ICS, although this is still under debate (for details see Chapter 2 and Appendix).
- In patients who develop further exacerbations on LABA/LAMA therapy we suggest two alternative pathways:
  - Escalation to LABA/LAMA/ICS. Studies are underway comparing the effects of LABA/LAMA vs. LABA/LAMA/ICS for exacerbation prevention.
  - Switch to LABA/ICS. However, there is no evidence that switching from LABA/LAMA to LABA/ICS results in better exacerbation prevention. If LABA/ICS therapy does not positively impact exacerbations/symptoms, a LAMA can be added.

If patients treated with LABA/LAMA/ICS still have exacerbations the following options may be considered:

- Add roflumilast. This may be considered in patients with an FEV1 < 50% predicted and chronic bronchitis, particularly if they have experienced at least one hospitalization for an exacerbation in the previous year.
- Add a macrolide. The best available evidence exists for the use of azithromycin. Consideration to the development of resistant organisms should be factored into decision making.
- Stopping ICS. A reported lack of efficacy, an elevated risk of adverse effects (including pneumonia) and evidence showing no significant harm from withdrawal supports this recommendation (see Chapter 3 for further details).

**Non-Pharmacologic Treatment**

- Education and self-management
- Physical activity
- Pulmonary rehabilitation programs
- Exercise training
- Self-management education
- End of life and palliative care
► Nutritional support
► Vaccination
► Oxygen therapy

**Education and self-management**

Self-management education and coaching by healthcare professionals should be a major component of the “Chronic Care Model” within the context of the healthcare delivery system. The aim of self-management education is to motivate, engage and coach the patients to positively adapt their health behavior(s) and develop skills to better manage their disease.

**Oxygen therapy**

Long-term oxygen therapy is indicated for stable patients who have:

► PaO$_2$ at or below 7.3 kPa (55 mmHg) or SaO$_2$ at or below 88%, with or without hypercapnia confirmed twice over a three week period; or
► PaO$_2$ between 7.3 kPa (55 mmHg) and 8.0 kPa (60 mmHg), or SaO$_2$ of 88%, if there is evidence of pulmonary hypertension, peripheral edema suggesting congestive cardiac failure, or polycythemia (hematocrit > 55%).

**Interventional bronchoscopy and surgery**

► In selected patients with heterogeneous or homogenous emphysema and significant hyperinflation refractory to optimized medical care, surgical or bronchoscopic modes of lung volume reduction (e.g., endobronchial one-way valves or lung coils) may be considered.
► In selected patients with a large bulla, surgical bullectomy may be considered.
► In selected patients with very severe COPD and without relevant contraindications, lung transplantation may be considered.

**Monitoring and Follow-up**

**Monitoring disease progression and development of complications and/or comorbidities**

► **Measurements.** Decline in FEV$_1$ can be tracked by spirometry performed at least once a year.
► **Symptoms.** At each visit, information on symptoms since the last visit should be collected, including cough and sputum, breathlessness, fatigue, activity limitation, and sleep disturbances.
► **Exacerbations.** The frequency, severity, type and likely causes of all exacerbations should be monitored.
► **Imaging.** If there is a clear worsening of symptoms, imaging may be indicated.
► **Smoking status.** At each visit, the current smoking status and smoke exposure should be determined followed by appropriate action.

**Pharmacotherapy and other medical treatment**
In order to adjust therapy appropriately as the disease progresses, each follow-up visit should include a discussion of the current therapeutic regimen. Monitoring should focus on:

- Dosages of prescribed medications.
- Adherence to the regimen.
- Inhaler technique.
- Effectiveness of the current regime.
- Side effects.

*Treatment modifications should be recommended.*