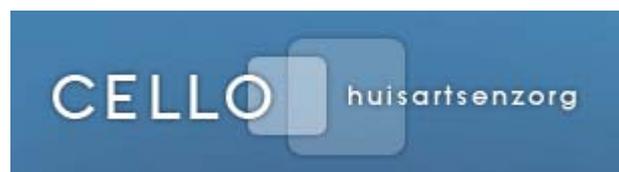


COPD PROTOCOL



CELLO

Leiden

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Introduction

This protocol includes an explanation of the clinical picture, diagnosis, objectives and medication of COPD. The Cello way of working can be viewed on the website www.cello-hazorg.nl in the chapter WAY OF WORKING LUNG PATIENTS CELLO. You can also read or download other protocols here.

COPD (summary of clinical picture)

COPD (chronic obstructive pulmonary disease) is usually a combination of chronic bronchitis and lung emphysema. A distinction is made between these disorders, but co-occurrence is very common.

In *chronic bronchitis* the airways are narrowed and demonstrate inflammatory symptoms. There is an increase in smooth muscle tissue and the production of sputum, and the mucous glands expand¹. This causes the airways to become more narrow by the irritated and swollen walls.

In *lung emphysema*, the inflammatory process causes decline of the alveoli (walls) and thus a decreased elasticity of the lung tissue. This destruction process of the lung tissue is not solitary, as blood vessels are also included.

To date, COPD is a non-reversible, progressive disease. The decrease of airway conductance and loss of elasticity cause symptoms such as coughing, sputum production and shortness of breath.

COPD is a complex disease and much is still unknown. It is becoming more clear though, that COPD is a systemic disease. The inflammatory processes can influence or affect other parts of the body.

Cigarette smoking continues to be the most important risk factor. The smoke can trigger an important inflammatory response which can lead to direct damage of the lung tissue. Additionally, genetic factors or (work) environmental factors can play a (large) role.

Diagnosis

Screening for COPD is recommended for patients with: persistent coughing, increased sputum production and shortness of breath; at an age of >40 years and if smoking (also history of smoking: 20 years smoking and/or 15 pack years).

Recommended lung function tests: spirometry and reversibility test²

The spirometry test result is required and determines the diagnosis of COPD.

¹ Hypertrophy of the mucous glands, hyper = excess, trophy = nourishment (increase in volume)

² No steroid test in new NHG (Dutch General Practitioner Association) standard!

In COPD, during spirometry an obstructed airflow is found during exhalation: a demonstrable obstruction. The FER (Tiffeneau) is lower than 70% in COPD. The FEV1 indicates the severity of the obstruction, see the classification below.

Staging of COPD severity according to GOLD³ criteria

GOLD		FEV1 % predicted value
GOLD 1	mild COPD	≥ 80
GOLD 2	moderate COPD	50-80
GOLD 3	severe COPD	30-50
GOLD 4	very severe COPD	< 30%

New in the treatment of COPD is the Treatment Standard for COPD formulated by the Dutch Lung Alliance (LAN), which gives attention to the disease burden⁴ as experienced by the patient. Cello will wait for the advice of the CAHAG⁵ (COPD & Asthma General Practitioners Advice Group) before starting to incorporate this.

TARGET GROUP AND OBJECTIVES

The target group consists of all patients with COPD that are part of the final medical responsibility of the general practitioner.

General objectives

- Identifying patients with COPD within the general practice by a validated method of diagnosis
- Improving the care for COPD patients, by offering modular supervision by the practice nurse, adapted to the individual patient.

(Teaching) a form of effective self-management is indispensable. Essential recurring elements are education (clinical picture + smoking cessation), medication/therapy compliance and inhalation instructions.

³ GOLD: Global Initiative for Chronic Obstructive Lung Disease

⁴ Free download on www.longalliantie.nl

⁵ CAHAG is the COPD & Asthma General Practitioners Advice Group. It is a network organisation of general practitioners with special interest for COPD and asthma

An effective treatment programme consists of:

- Early diagnostics and monitoring
- Reduction of risk factors
- Treatment of COPD in the stable phase
- Signaling acute exacerbations⁶ (reference by G.P.)

Treatment objectives:

- Increase quality of life
- Decrease dyspnea sensation
- Decrease and prevent exacerbations (and admissions)
- Increase exertion capacity
- Improve lung function by monitoring the therapy and stimulating an active life style (revalidation)⁷.

Specific objectives of COPD

Short term

- Discuss and motivate smoking cessation
- Decrease symptoms
- Improve exertion capability
- Improve lung function
- Prevent exacerbations

Long term

- Prevent or slow down a possible accelerated decline of lung function
- Postpone or prevent complications with disability
- Improve (disease related) quality of life (smr)

Basis of the non-medical therapy:

- Smoking cessation (see separate NHG –Dutch General Practitioner Association- standard). Regarding the supervision, see Cello way of working.
- Aim for or maintain a healthy nutritional and physical condition

Objectives of medical treatment:

- Reduce symptoms
- Prevent exacerbations

Stimulate patients with COPD to get their annual flu vaccination!

⁶ An exacerbation is a period with increased symptoms of shortness of breath (dyspnea) and coughing, with or without bringing up sputum

⁷ At least try to prevent the decline of lung function

Furthermore, stimulate the patient to:

- Get to know their boundaries, in a physical and psychological sense
- Develop their self-confidence
- Learn to cope with fear and panic attacks
- Be responsible for their own life, including the disorder

Other disciplines such as the dietician and physiotherapist can be involved after medical indication.

The criteria for involving a dietician with a COPD patient are:

- Low body weight, if $BMI \leq 21$
- Weight loss, $\geq 5\%$ within 1 month (± 3 kg) or $\geq 10\%$ within 6 months (± 6 kg)
- Low fat free mass index (FFMI), in males ≤ 16 and in females ≤ 15 .

In addition to underweight, there are also risks of overweight. This leads to difficulty moving, inactivity and cardiac strain.

Criteria for involving a physiotherapist:

- COPD patients with a GOLD 2 classification (with $FEV_1/VC(FER)$ of less than 60%)
- Physiotherapy can also be applied regarding other points of attention, such as coughing technique, breathing and/or relaxation exercises. Indications for these are: GOLD 2 and MRC of 2 and higher.

In the following situations the patient should be referred to a lung specialist:

- Doubts regarding the diagnosis or in case of acute or persistent symptoms
- Patients with GOLD 3 classification and higher
- (suspicion) of restrictive lung disorder
- (suspicion) of lung carcinoma
- Two or more exacerbations a year, with oral corticosteroids or hospitalization

MEDICATION FOR COPD

The medicine for COPD⁸ mainly consists of inhalers, with a choice between metered dose aerosols (with holding chamber) and dry powder inhalers.

Bronchodilators (airway dilators)

For patients with COPD, it should be tried out which bronchodilator or combination of bronchodilators works best.

⁸ See (more) detailed NHG (Dutch general practitioner) standards and pharmacotherapy compass

The following short-acting bronchodilators can be used:

- A short-acting β_2 -sympathomimetic drug (salbutamol, terbutaline)
- An anticholinergic drug (ipratropiumbromide)

If after 2 weeks the clinical improvement is insufficient with a short-acting β_2 -sympathomimetic drug, a switch in bronchodilator can be made. Subsequently, try an anticholinergic drug. If this also gives insufficient results after 2 weeks, both types of bronchodilators can be administered simultaneously. Naturally, the maintenance dose is the lowest effective dose.

In case of mild exacerbations, the dose can be increased to the maximum dose temporarily.

The NHG standard contains 3 schemes for medication guidelines:

- short-acting bronchodilators
- long-acting bronchodilators
- Corticosteroid inhalers

Scheme 1. Short-acting bronchodilators

Drug	Dry powder inhaler	Aerosol dose	Maximum/day
Ipratropium*	4 daily 40 mcg	4 daily 20 mcg	320 mcg
Salbutamol#	4 daily 100-400 mcg	4 daily 100-200 mcg	1600 mcg
Terbutaline#	4 daily 250- 500 mcg		4000 mcg

*anticholinergic # β_2 -sympathomimetic

Scheme 2. Long-acting bronchodilators

If the treatment objectives are not met, e.g. in case of nocturnal dyspnea symptoms, a switch is made to maintenance treatment with long-acting bronchodilators (instead of short-acting).

Drug	Dry powder inhaler	aerosol dose	Maximum/day
Formoterol #	2 daily 6-12 mcg	2 daily 12 mcg	48 mcg
Salmeterol #	2 daily 50 mcg	2 daily 25 mcg	100 mcg
Tiotropium*	1 daily 18 mcg		18 mcg

*anticholinergic # β_2 -sympathomimetic

Scheme 3. Corticosteroid inhalers

Treatment with corticosteroid inhalers for *all* COPD patients is not recommended⁹. Consider CSI, according to the NHG standard, in case of two or more exacerbations per year (start test treatment) and in patients with FEV1 < 50%, so from GOLD 3 classification upwards.

Patients with COPD *and* asthma and/or with a history of atopy, or that have COPD without a history of smoking, can start with a test treatment of corticosteroid inhalers. In case of subjective improvement after 3 to 6 months, and/or improvement in spirometry, the treatment can be continued; in case of absence the treatment is stopped (so, when adding/changing CSI extra spirometry is recommended).

⁹ The purpose of corticosteroid inhalers is disputed on a high and international level. Source: ERS congress, European Respiratory Society, Vienne 2009

Corticosteroid inhalers¹⁰

Drug	Dry powder inhaler	Aerosol dose	Maximum/day
Beclometason	2 daily 400 mcg	2 daily 200 mcg	1600 mcg
Budesonide	2 daily 400 mcg	2 daily 200 mcg	1600 mcg
Fluticasone	2 daily 500 mcg	2 daily 250 mcg	1000 mcg

The NHG generally advises against combined preparations of corticosteroid inhalers and bronchodilators in one inhaler. These combined preparations are not mentioned in the standard regarding COPD.

(however, combined preparations are mentioned in the asthma treatment medication scheme: Budesonide/Formeterol (Symbicort) and Salmeterol/Fluticasone (Seretide).

The use of 'old' theophyllines and acetylcysteine in the general medical practice are discouraged by the NHG.

The most recent NHG standard for COPD dates from 2007. A new standard can be expected every five years. Drugs that were new on the market when the NHG Standard was published, or launched after 2007, are therefore not mentioned.

Drugs not mentioned in the 2007 standard:

Tiotropium as a solution (Spiriva Respimat) was not yet on the market when the NHG standard came out. It is only included in the standard as a powder.

The new corticosteroid inhaler Ciclesonide (Alvesco) is not in the standard, but is mentioned in the GINA¹¹ guidelines. Here it is considered as a test treatment (CAHAG presentation of the new standard in 2007) for patients that suffer from side effects, such as hoarseness and fungus infections, from other CSI's that have been on the market for longer.

¹⁰ The daily dosage is mentioned, but there are different strengths / dosages per type of inhaler. E.g. Beclometason aerosol is available in 50 and 100 microgram per dosis.

¹¹ The Global Initiative for Asthma, international guidelines

The combined preparation Beclomethason/Formoterol metered aerosol dose (Foster) is also new, but is a combination of existing medicines that are mentioned in the standard.

Also new on the market is Inacaterol (Onbrez), a long-acting bronchodilator for COPD, which is part of the β_2 family. It is therefore also not in the standard.

Literature and websites

NHG Standards 2007: Asthma / COPD in adults

NHG Practice guideline Asthma/ COPD, diagnostics and treatment.

Consulted websites:

www.cello-hazorg.nl

www.nhg.artsenet.nl

www.ersnet.org

www.ginasthma.org