

# COPD and comorbidity

Citation for published version (APA):

Vanfleteren, L. E. G. W. (2015). *COPD and comorbidity*. [Doctoral Thesis, Maastricht University]. Maastricht University. <https://doi.org/10.26481/dis.20150227lv>

## Document status and date:

Published: 01/01/2015

## DOI:

[10.26481/dis.20150227lv](https://doi.org/10.26481/dis.20150227lv)

## Document Version:

Publisher's PDF, also known as Version of record

## Please check the document version of this publication:

- A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
- The final author version and the galley proof are versions of the publication after peer review.
- The final published version features the final layout of the paper including the volume, issue and page numbers.

[Link to publication](#)

## General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal.

If the publication is distributed under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license above, please follow below link for the End User Agreement:

[www.umlib.nl/taverne-license](http://www.umlib.nl/taverne-license)

## Take down policy

If you believe that this document breaches copyright please contact us at:

[repository@maastrichtuniversity.nl](mailto:repository@maastrichtuniversity.nl)

providing details and we will investigate your claim.

## **ACTIVITIES, PRODUCTS, INNOVATION FOR DIFFERENT TARGET GROUPS**

### **GOVERNMENT, HEALTH INSURANCE**

COPD importantly impacts on the socio-economic system, on the one hand by the loss of quality adjusted life years (QALY) including the loss of productive working years and on the other hand by a high burden of health care consumption. It is the task of policy and law makers to continue their efforts to reduce the exposure of the people to noxious substances, mainly cigarette smoke. Great strides forward have been made, still with the ageing of the population and still a considerably high smoking prevalence, the incidence and prevalence of COPD is bound to increase. Therefore, it is of upmost interest to have high quality epidemiologic data about the burden of disease.

The results of the current thesis have been discussed on regional radio and television (L1) with live interviews with the authors. Also regional (de Limburger), national (nu.nl) and international (Het belang van Limburg) newspapers reported on the topic. This resulted to discussions in the provincial parliament of Limburg concerning the improvement of outdoor air quality. Questions from a political party (PvdA) have been answered by the “Gedeputeerde Staten” after consultation of the first author of the present thesis.

With COPD as a use-case, this thesis also importantly emphasizes the challenges for future medicine. With the ageing population, and more successful cure for acute lethal disease, more people suffer from chronic non-communicable diseases. It is clear that patients suffer from multiple diseases at the same time which increases the complexity of care. A paradigm shift from the treatment of the single disease to a holistic approach which also involves the human aspect regarding psychology, behavioral change, self-management is needed. These are important insights for health policy makers and insurance companies.

### **HEALTH CARE PROVIDERS**

The present thesis gives important insights for health care providers. It was shown that COPD is highly prevalent, underestimated and underdiagnosed. An increased awareness of the presence of the disease is warranted as well as a continued and intensified attitude to stimulate healthy behavior and to quit smoking.

Secondly, this thesis gives handhold for health care providers to actively evaluate patients with COPD for the most prevalent and impactful comorbidities in these patients. Almost all patients with COPD suffer from one or more comorbidities. With a

thorough assessment and treatment of a patients extrapulmonary manifestations and comorbidities, health status and prognosis can be altered.

## **PULMONARY REHABILITATION PROGRAMS**

The interplay between pulmonary rehabilitation and COPD related comorbidities is clinically relevant as almost all patients in rehabilitation programs suffer from comorbidities. This thesis showed that despite comorbidity, patients are still able to benefit from rehabilitation. This thesis also creates new opportunities. The identification of different clusters of patients with differential comorbidity pattern emphasizes the heterogeneity of the disease and the need for tailored individualized diagnostics and management strategies, also within pulmonary rehabilitation programs.

## **COPD PATIENTS**

The patient him- or herself can clearly benefit from the output of the present thesis. Not only by the increased awareness of the disease COPD and the increased awareness of the high burden of comorbidities in these patients by their health care providers, but also by increasing awareness within patient groups and the general population. Different press releases on the findings of the prevalence of COPD in Maastricht and on the concept of multimorbidity in COPD have been done. The discussions on radio and television, and the different interviews in papers or patient-oriented folders contribute to a general education of people of the existence of COPD and comorbidity and the importance of diagnosis and comprehensive management.

## **SCIENCE: FUTURE RESEARCH QUESTIONS**

The relevance of this thesis and the contribution to the scientific field is discussed above. Meanwhile this thesis might be important for researchers in the field as every answer to previous questions reveals multiple unanswered questions. Although this thesis shines new light on the role of systemic inflammation in COPD, the origin and the role of systemic inflammation and the role of the (visceral) fat in the development of cardiovascular disease in patients with COPD remains to be elucidated.

The longitudinal evolution of body composition in different COPD phenotypes is of future interest. The optimal management of comorbidities in rehabilitation programs and the way how to adapt the program to specific clusters of comorbidities need to be explored. In addition, the differential response after rehabilitation illustrates that multiple and probably tailored outcomes need to be considered. This also is food for further research.

## PERSONAL DEVELOPMENT

The results of the studies in this thesis have resulted in multiple scientific abstracts on international respiratory conferences. Several chapters have been published in high quality peer reviewed scientific journals in the respiratory and cardiovascular field. Chapter 6 has been published in the American Journal of Respiratory and Critical Care Medicine, which is the most important journal in the field of respiratory medicine. In addition, the figures of the article reached the cover of the journal. It was the most cited original research paper of that journal in 2013.

The press release was picked up on multiple scientific internet sites. Ultimately, recently the article was discussed in “de Volkskrant”, a major newspaper in the Netherlands.

As discussed above, the results of chapter 2 were discussed in regional, national and international newspapers and discussed with the author on regional radio and television.

After publication, the author was invited on national and international symposia to discuss the results of the scientific work performed. In addition, he was invited to write an editorial in the European Respiratory Journal concerning the topic of comorbidity.

## SCHEDULE AND IMPLEMENTATION

The studies of this thesis are published or submitted in international scientific journals and contribute to the scientific community.

This thesis has resulted in an increasing awareness for early diagnosis of COPD which directly gave synergy for the existing plans of the NHG (Nederlands Huisartsen Genootschap) en Astmafonds to include spirometry in preventive settings.

As already acknowledged in the international Global initiative of Obstructive Lung Disease document, patients with COPD need to be considered as high risk patients for the most prevalent and impactful comorbidities. This thesis contributed to the awareness and the importance of the topic. There is a paradigm shift of a respiratory focus towards a holistic approach of the patient with multimorbidity.

In this view, this thesis can contribute to future guideline development. The realization of the existence of different groups of patients with different disease expression can be helpful in a guided evaluation of the most suspected comorbidities. For example the presence of one comorbidity can indicate the presence or absence of another.

The results of this thesis have also immediate consequences and implementations for pulmonary rehabilitation. Comorbid conditions do not prevent patients to benefit from rehabilitation. In addition, rehabilitation programs are evolving to tailored programs shaped to the needs and comorbid conditions of the patients.