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Chronic care for COPD patients in Denmark

Opieka nad chorymi na POChP w Danii

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COPD in Denmark

The prevalence of chronic obstructive pulmonary disease (COPD) in Denmark is among the highest in the world [1]. This is mainly caused by a very high prevalence of smoking in both men and women throughout the latest 5 decades. Although the percentage of daily smokers among adult Danes has steadily declined to around 20% in 2011, COPD and other smoking related conditions are still a major health problem in Denmark. Based on spirometric findings from the Copenhagen City Heart Study and Copenhagen General Population Study, it has been estimated that around 400,000 Danes have COPD — corresponding to 7% of the total Danish Population, which comprises around 5.4 million [2]. It has also been estimated that around 40,000 individuals have severe or very severe COPD, defined as FEV₁ below 50% of the predicted value. The mortality from COPD is also very high in Denmark. In 2010, app. 3,800 deaths were attributed to COPD, and in an additional 2,200 deaths COPD was acknowledged as a contributory factor, resulting in a total of app. 5,000 deaths, corresponding to app. 10% of all deaths [3]. The number of visits in general practice due to COPD is unknown, since Danish general practitioners, until now, have not performed any routine diagnostic coding describing the type of contact (diagnosis of the patient) in their practice. The drain of COPD on the Danish hospitals is, however, well described by means of a nationwide register cover-

ring all hospital contacts in Denmark. In 2010, there were around 24,000 acute hospital admissions and 53,000 scheduled visits to hospital outpatient clinics due to COPD [4].

In order to improve the care for COPD, the Danish Board of Health and the Danish Regions have launched a disease management program describing optimal care for COPD. These programs describe the role of three major players in Danish society responsible for the delivery of healthcare for individuals with COPD: general practice (family doctors = GPs), hospitals (specialized care), and municipalities [5, 6]. In this short review I will describe the collaboration between these three, with special focus on the role of GPs, but first I will give some brief details on the Danish healthcare system as such.

Danish Healthcare System and COPD care

All people registered as residents in Denmark are entitled to free healthcare [7, 8]. The healthcare system is almost 100% publicly financed through taxes. This means that consultations with a GP or specialists and all hospital treatment is free of charge, whereas patients have to pay for the drugs that are prescribed to them. With regards to the latter, there are rules for reimbursement of the drug expenditure, according to the type of drug and when the payment attains a certain level.

The Danish health system is organized around app. 3,600 GPs who, although being technically private, are financed by public taxes and operate

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entirely within the public healthcare system. They act as gatekeepers to specialists and to the hospitals. This, in practice, means that in order to consult a pulmonologist, either in private practice or at a hospital, patients have to be referred by their own GP [7, 8]. The idea is that the GPs should provide most of the care since they are cheaper.

The number of pulmonologists serving the whole Danish population is around 120, and more than 90% of them are hospital-based, working at app. 70 public hospitals organised under the five Danish Regions, each covering from 0.5 to app. 1.5 million inhabitants. The waiting time from a referral from the GP to a pulmonologist varies between the different regions of Denmark, but there is a fast track if the chest X-ray gives a suspicion of a malignant disease. Otherwise, the waiting time to see a pulmonologist for COPD is between 2 and 6 months, on average.

In addition to the GPs and pulmonologists, the third group of players with regard to COPD are the 98 Danish municipalities. In addition to their main task, which is to run nursing homes, home nurses, health visitors, and school health services, the municipalities share, together with the hospitals, the responsibility for providing the rehabilitation of patients with chronic diseases, including COPD. This means that relevant patients are entitled to a COPD rehabilitation program either at a local training centre in their municipality or at the nearest hospital. The choice of location for rehabilitation depends on the severity of COPD: moderate and severe COPD is often rehabilitated in a municipality-based health centre, whereas in very severe COPD the rehabilitation program is performed at the hospital.

The acknowledgement that chronic diseases will continue to be a major health problem for many decades to come led, in 2007, to the introduction of "the national strategy for chronic disease management", by the Danish Board of Health [9]. This system, which is mainly inspired by the Chronic Care Model and organisations like Kaiser Permanente [10], is based on several pillars including, among others: early identification of individuals with chronic disease, self-management support, stratification according to disease severity in order to define where the patient should be treated and followed-up, distribution of tasks between the GP, hospital-based specialist, and the municipality, and quality assurance. The description of optimal care for COPD according to this concept has been done on regional level during the last three years and has been supported by binding agreements between the hospitals, general practice, and the local municipalities. Quality assurance systems

are currently being launched in order to evaluate the effect of these programs and to monitor the quality of care delivered to the individual COPD patients

Quality of COPD care in Denmark: past and future

Some information on the quality of COPD care in Denmark is available. In general practice a few studies have been performed focusing, among others, on the use of spirometry, correct medication, assessment of dyspnoea by means of the MRC-dyspnoea scale, and assessment of body mass index (BMI) [11, 12]. These studies, based on relatively large samples of GPs, have shown that quality was not optimal, e.g. only about 50% of patients treated with bronchodilators for COPD in general practice had spirometry performed. However, these studies have also shown that the quality of care can be improved by providing education programs to the GPs. A similar study of the quality of care delivered to COPD patients treated as out-patients in Danish hospitals showed that although the frequency of spirometry was satisfactory, but the focus on objective measurements of dyspnoea (the use of the MRC-dyspnoea scale), BMI, and on the comorbidities was too low [13].

Consequently, many initiatives to monitor and improve the quality of COPD care in both general practice and in the hospitals have been initiated throughout Denmark. Since 2008, all Danish hospitals have to monitor the quality of their COPD care. This means that they are continuously obliged to report data into a central COPD database. The data comprise several indicators of good COPD care, including: spirometry, BMI, smoking status, smoking cessation treatment, and COPD rehabilitation. Since 2008 an annual report covering all data has been produced allowing for observation of a time trend and for benchmarking between different regions and different hospitals [14]. Although the database is not complete at present, it covers more than 70% of all hospital contacts due to COPD, thereby comprising more than 20,000 patients with COPD and more than 30,000 hospital contacts each year. The results have shown a very satisfactory improvement with regard to fulfilment of most of the quality indicators all over Denmark [14]. The annual report is published by a national steering committee and is made available to both participating hospitals and politicians responsible for the regional healthcare system in order to further improve the quality of care. A popularized version of the report has also been made available to the general public [15].

Table 1. Stratification of COPD patients

Table 1. Stratyfikacja chorych na POChP

Criterion	Recommended stratification		
	Level 1 General practice	Level 2 Alternating	Level 3 Hospital out-patient clinic
FEV ₁ (in % of predicted when stable)	Mild and moderate COPD FEV ₁ ≥ 50% of predicted	Severe COPD 30% < FEV ₁ < 50% of predicted	Very severe COPD FEV ₁ ≥ 30% of predicted
MRC (dyspnoea)	1–2	3	4–5

All abbreviations in the text/Objaśnienia skrótów w tekście

Beginning in 2012, all Danish GPs will also have to report to this COPD database. A set of quality indicators regarding treatment of COPD in general practice has been developed. These indicators are very similar to those used in the hospitals and are based on Danish and international COPD-guidelines. In practice, in connection with the scheduled once-a-year visit focusing on the status of COPD, the GP has to fill in an electronic questionnaire with elements describing the status of the patient including spirometry, assessment of dyspnoea (MRC-dyspnoea scale), smoking status, BMI, inhalation technique, influenza vaccination status, the frequency of exacerbations, and the need for pulmonary rehabilitation. The information is stored on the GPs computer but is also collected centrally to the COPD database through a so-called data-catch module (a search engine designed to collect and interpret the COPD data in the GPs electronic system). Subsequently, the GP can obtain reports describing all his/her COPD patients and the fulfilment of the COPD indicators. This data collection is possible because all Danish GPs have electronic medical software systems on their computers to register patient-related activities, refer the patients to hospitals and specialists, and to send electronic bills to regions in order to receive payment for their work. The future will show how fast the reporting of COPD indicators is implemented among Danish GPs.

Cooperation between GPs and pulmonologists

The major breakthrough with regard to COPD treatment in general practice in Denmark is the fact that from this year on, all Danish GPs are committed to register their contacts by using diagnosis of the patients according to the international coding for general practice [16]. This allows for the collection of quality data not only for COPD, but also for diabetes and other chronic conditions.

The division of tasks between GPs and specialists regarding COPD patients has only recently

been defined in the management program for COPD and is shown in the table 1.

In general, individuals with GOLD 1–2 disease should be treated by GPs, those with GOLD 4 should be followed by specialists, and those with GOLD 3 constitute a grey area and can be followed by either, depending on the severity of symptoms and frequency of exacerbations. Especially in this group, the concept of shared care between the GP and the specialist is relevant. This, however, depends on good and fast possibilities of communication between the two. At present hospitals can electronically inform the GP on the condition of the patient right after the hospital consultation, whereas it cannot be done the other way round. It is, however, hoped that fast and secure electronic communication pathways between GPs and the hospitals will be developed shortly.

In general, it is presently unknown whether the stratification described in the Table is working satisfactorily. Most importantly, it assumes that COPD is well defined and diagnosed with certainty, and this can sometimes be problematic. Future audits will show whether or not Table 1 represents a good division of work between the GPs and the pulmonologists. The stratification also assumes that early diagnosis of COPD in general practice is actually taking place. This is at present uncertain, and a Danish study in general practice has revealed that up to 40% of patients with spirometry-defined severe and very severe COPD are not on inhaled medications, suggesting substantial deficiencies in the diagnostic process [17]. Since Danish GPs have quite good access to spirometry, it is hoped that spirometry will be more widely employed in the future, and new studies indicate that using the criteria of the Danish Board of Health for early diagnosis of COPD is worthwhile [18].

In conclusion, in recent years there has been a substantial focus on the improvement of COPD care in Denmark. Disease management programs defining optimal care and describing the division

of tasks between the GPs, the specialists, and the municipalities have been launched and are at present being implemented throughout Denmark. Powerful monitoring tools have been established to follow the quality of care for COPD patients both in general practice and in hospitals. The future will show whether or not these programs and efforts will have a positive impact on morbidity and mortality in the long term.

Conflict of interest

Author does not declare current or perceived conflict of interest.

References

1. Fabricius P., Løkke A., Marott J., Vestbo J., Lange P. Prevalence of COPD in Copenhagen. *Respir. Med.* 2011; 105: 410–417.
2. Lange P., Marott J.L., Dahl M., Ingebrigtsen T.S., Vestbo J., Nordestgaard B.G. Substantial need for early diagnosis, rehabilitation and treatment of COPD. *Danish Medical Journal* (e-pub).
3. Death causes in Denmark. <http://www.sst.dk/Indberetning%20og%20statistik/Sundhedsdata/Doedsaarsager/DSN>
4. The Danish National Patient Registry. <http://www.sst.dk/Indberetning%20og%20statistik/Landspatientregisteret> (14 September 2011)
5. Sundhedstyrelsen. KOL — anbefalinger for tidlig opsporing, opfølgning, behandling og rehabilitering. <http://www.sst.dk/publ/Publ2007/CFF/KOL/KOLanbefalinger.pdf>
6. Region Hovedstadens Forløbsprogram for KOL. http://www.regionh.dk/NR/rdonlyres/5B1B6F6B-B369-4636-82DF-01785D198CCE/0/Forloebprogram_KOL_LR.pdf 1 December 1, 2011
7. Background briefing. Health care lessons from Denmark. <http://www.civitas.org.uk/pdf/Denmark.pdf>
8. Vrangbaek K. The Danish Health Care System. http://www.commonwealthfund.org/~media/Files/Resources/2008/Health%20Care%20System%20Profiles/Denmark_Country_Profile_2008%20pdf.pdf
9. Danish Board of Health. http://chronisante.inist.fr/sites/chronique/IMG/pdf/chronic_disease_management_Danemark.pdf
10. <http://www.improvingchroniccare.org>
11. Lange P., Rasmussen F.V., Borgeskov H., Dollerup J., Jensen M.S., Roslind K., Nielsen L.M.; KVASIMODO Study Group. The quality of COPD care in general practice in Denmark: the KVASIMODO study. *Prim. Care Respir. J.* 2007; 16: 174–178.
12. Ulrik C.S., Hansen E.F., Jensen M.S. et al.; KVASIMODO II study group. Management of COPD in general practice in Denmark—participating in an educational program substantially improves adherence to guidelines. *Int J Chron Obstruct Pulmon Dis.* 2010; 5: 73–79.
13. Lange P., Andersen K.K., Munch E. et al. Quality of COPD care in hospital outpatients clinics in Denmark: The Kolibri study. *Respir. Med.* 2009; 103: 1657–1662.
14. National Report regarding the quality of care for COPD in Denmark https://www.sundhed.dk/Fil.ashx?id=15199&ext==pdf&navn=KOL2011_sfa_national.pdf
15. Quality of care for COPD in Denmark (popular version). https://www.sundhed.dk/Fil.ashx?id=15198&ext=pdf&navn=KOL2011_borger_national.pdf
16. Diagnostic coding for general practice. <http://www.gpsc.bc.ca/system/files/GPSC%20Diagnostic%20Codes.pdf>
17. Hansen J.G., Pedersen L., Overvad K., Omland Ø., Jensen H.K., Sørensen H.T. The Prevalence of chronic obstructive pulmonary disease among Danes aged 45–84 years: population-based study. *COPD* 2008; 5: 347–52.
18. Ulrik C.S., Løkke A., Dahl R. et al.; TOP study group. Early diagnosis of COPD in general practice. *Int. J. Chron. Obstruct. Pulmon. Dis.* 2011; 6: 123–127.