

## HTA-Report | Summary

# Outpatient pulmonary rehabilitation – rehabilitation models and shortcomings in outpatient aftercare

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### Health political background

The chronic obstructive pulmonary disease (COPD) and bronchial asthma are widespread diseases. They need long-lasting and sustainable rehabilitation.

### Scientific background

COPD is a chronic pulmonary disease with not-fully reversible lung obstruction which at most occurs in the fifth decade of life. Treatment goals are the reduction of disease progression and symptoms, an increase of physical fitness, an improvement of the quality of life and the prevention of complications.

Asthma is a chronic inflammation of the respiratory system. In the treatment of asthma priority is given to the avoidance of symptoms and the interference of activities.

Especially for COPD, positive effects of in-patient as well as of out-patient rehabilitation are documented. Pulmonary rehabilitation leads to an increased physical fitness, a reduction of dyspnoea, an improvement of health related quality of life and a reduction of hospital admissions.

Rehabilitation is granted by social pension funds (GRV), by the compulsory health insurance (GKV) and the statutory accident insurance (GUV).

### Medical research questions

1. In which way do the supply for in-patient and out-patient pulmonary rehabilitation differ from each other?
2. What are the advantages and disadvantages of an in-patient versus an out-patient pulmonary rehabilitation?
3. For which patients is out-patient and/or in-patient pulmonary rehabilitation appropriate?

### Economic research question

What is the cost-benefit of out-patient rehabilitation?

### Ethical and juridical research questions

1. Which ethical, social and juridical factors have to be considered?
2. Which effects does pulmonary rehabilitation have on patients quality of life?

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## Methods

Several key words were defined and a research strategy was developed. On behalf of the German Institute for Medical Documentation and Information (DIMDI), Art & Data Communication conducts an electronic search in September 2009. The following data bases are included:

BIOSIS Preview, Bundesanzeiger, Ressort BMG, CAB Abstracts, CCMed, Cochrane Library-CDSR, Cochrane Library-Central, DAHTA-Datenbank, Deutsches Ärzteblatt, Derwent Drug File, DIQ-Literatur, EMBASE, EMBASE Alert, ETHMED, GLOBAL Health, gms, gms Meetings, HECLINET, Hogrefe-Verlagsdatenbank und Volltexte, IPA, ISTEPB + ISTEP/ISSHP, KARGER-Verlagsdatenbank, Kluwer-Verlagsdatenbank, MEDIKAT, MEDLINE, NHS Economic Evaluation Database, NHS-CDR-DARE, NHS-CDR-HTA, Sci-Search, SOMED, Springer-Verlagsdatenbank, Springer-Verlagsdatenbank PrePrint, Thieme-Verlagsdatenbank, Thieme-Verlagsdatenbank PrePrint.

The time frame reaches from 2004 until 2009, including German and English literature. There are four single searches for medical, health economic, juridical and ethical themes in the hospital setting and in the health care system in general. Additionally, the authors are looking for related studies and literature.

The methodological quality of the studies is evaluated by means of check lists provided by the German Scientific Working Group Technology Assessment for Health Care (GSWG HTA).

## Medical results

The included studies show with a high evidence (grade: 1A, 2A) that activity based pulmonary rehabilitation can improve the health care utilisation, the hospital admission rate and the mortality rate of COPD patients. Patients with other chronic diseases of the respiratory system show as well accordant improvements although with lower evidence (grade: 4). The positive results are obtained in in-patient as well as in out-patient settings.

Out-patient rehabilitation for severely ill COPD patients who receive a long-time oxygen treatment leads to an improved physical fitness, dyspnoea and health related quality of life (though not significantly).

It is a fact that the improvement of physical fitness by pulmonary rehabilitation for COPD patients has the highest evidence (GOLD: grade A). This result is confirmed by many studies in this HTA which observe an improvement of the physical fitness, measured by the six-minutes-walk-test (6MWT).

Some authors demonstrate that early training programmes in out-patient or home-based rehabilitation reduce the health care utilisation.

The majority of follow-up evaluations is done six to twelve months after the end of the rehabilitation programme, in some studies after shorter terms, in a few after 24 or 48 months. One study documents that a 36 month rehabilitation improves the body capacity and can slow down the progression of COPD.

## Economic results

There are varying results concerning the cost-effectiveness of self-management programmes. Some can prove cost-effectiveness, others cannot find a superiority of self-management programmes against usual care.

The included economic studies prove evidence for a reduction of the number and length of hospital treatments which means in fact a cost-benefit for out-patient pulmonary rehabilitation.

### **Ethical and juridical results**

For pulmonary patients the improvement of the health related quality of life is the main patient reported outcome. The improvement of the health related quality of life is a main benefit of pulmonary rehabilitation as COPD is not reversible. In most of the studies the quality of life is measured by the CRQ or SGRQ. Many studies demonstrate that the health related quality of life can be improved by in-patient as by out-patient pulmonary rehabilitation.

### **Discussion**

The goals of pulmonary rehabilitation like prevention and adequate treatment of acute exacerbations, the minimisation of hospitalisation and the reduction of mortality are attained in out-patient as well as in in-patient pulmonary rehabilitation. Regarding the best frequency of training units per week or the duration and the content of a unit further research is needed. Final results for the ideal length of an in-patient rehabilitation are still missing. The results concerning training and education programmes are not unambiguous. None of the studies deals with the analysis of the different treatment forms of a COPD which are frequently defined by an alteration of in-patient and out-patient treatments and participation in sports clubs or self-help groups. There are some other limitations of the studies. The results concerning self-management programmes are not distinct. (Self-)Selection leads to high drop-out rates. Many studies have only small sample sizes. Confounder and long-time effects are seldomly researched, relevant economic evaluations do not exist. The improvement of health related quality of life is primarily obtained by an improved disease management than by an improvement of medical parameter.

### **Conclusions**

Out-patient pulmonary rehabilitation is as effective as in-patient pulmonary rehabilitation. But there is a critical shortage of the out-patient pulmonary rehabilitation supply in Germany. This is critical because sustainable success can be reached only by a continuous conduction of the rehabilitative activities. Therefore, an area-wide out-patient rehabilitation supply has to be guaranteed. Furthermore, an evaluation of models for integrative care of COPD is missing.

An outsized knowledge deficit exists concerning the comparison of in-patient and out-patient rehabilitation and the possibilities for de-medicalisation in out-patient rehabilitation. This is precarious as rehabilitation is a major factor for the reduction of costs in the health care system.

Domains for further research are the evaluation of models for integrated care, the length, frequency and content of training programmes, psychiatric assessments and the cost-effectiveness of out-patient pulmonary rehabilitation.