

# Assessment of health-related quality of life and hospital admission costs of domiciliary High-Flow nasal cannula treatment for severe COPD with chronic hypoxic failure

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## Introduction

Domiciliary High Flow Nasal Cannula (HFNC) has previously been shown to reduce days of hospitalization in COPD-patients with chronic hypoxic failure (CHF) (1).

## Aim

To evaluate the development in health-related quality of life (HRQoL) and costs related to hospital admissions in HFNC-treated COPD patients with CHF compared to controls within a 12-month period.

## Methods

In a cohort of 200 COPD patients randomized equally into usual care  $\pm$  HFNC, complete HRQoL data, judged by St. Georg Respiratory Questionnaire (SGRQ), were available in 140 patients (66 HFNC-treated and 74 controls). SGRQ data were used to predict EQ-5D utility values using a validated algorithm (2). Based on this, Quality-Adjusted Life-Years (QALYs) were calculated. The cost of hospital admission due to COPD exacerbation (AE-COPD) was calculated for the same 140 patients during the study period using mean daily admission costs. By use of regression analysis, QALYs were corrected for baseline HRQoL and days of treatment, and costs were corrected for the cost of AECOPD admissions in the year prior to inclusion as well as days of treatment. Costs were valued in British Pounds (£) at price level 2019.

## Results

Patients were comparable at baseline except for the mMRC score (Table 1). A somewhat higher cost for hospital admission due to AECOPD in the year prior to recruitment was observed for the HFNC-treated patients, though the difference was insignificant. The analysis revealed that HFNC treatment resulted in a QALY improvement of 0.045 (95% CI -0.017; 0.107) and a mean decrease in hospital admission cost of £ -1290 (95% CI -2710; 131) per patient. No statistically significant differences were observed.

## Conclusion

HFNC treatment led to a gain in QALYs and resulted in savings in hospital admission costs when compared to usual care. Further analysis will reveal whether HFNC for COPD patients with CHF is a cost-effective treatment when considering all relevant cost categories.

Characteristics	Control (n=100)	HFNC-treated (n=100)
Sex, % male	37	44
Age	70.41 $\pm$ 9.01	70.95 $\pm$ 8.20
mMRC score*	2.94 $\pm$ 0.93	3.28 $\pm$ 0.87
FEV1/FVC	40.23 $\pm$ 10.35	37.46 $\pm$ 11.13
Exacerbations in the preceding year	2.95 $\pm$ 2.79	3.23 $\pm$ 3.12
Smoking status, N, never/present/former	0/26/74	1/14/85
EQ-5D-3L index score	0.50 $\pm$ 0.17	0.47 $\pm$ 0.20
Hospital admission costs in preceding year, per person	£2,934 $\pm$ 4,658	£4,501 $\pm$ 6,517

Results are presented as mean  $\pm$ SD unless otherwise stated. \*p=0.008.

**Table 1:** Baseline characteristics of the randomized study population

## Reference

1. Storgaard LH, Hockey H, Laursen BS, Weinreich UM. Long-term effects of oxygen-enriched nasal high flow treatment in COPD with chronic hypoxemic respiratory failure. *Int J Chron Obs Pulmon Dis* 2018; 13: 1195–1205
2. Starkie HJ, Briggs AH, Chambers MG, Jones P. Predicting EQ-5D values using the SGRQ. *Value Health*. 2011;14(2):354-360.