

1. Murphy, *J Am Med Assoc* 2017 (**HOT-HMV**)
Home NIV plus oxygen in hypercapnic COPD after acute Exacerbation
(NIV and Oxygen post discharge vs. Home Oxygen alone)

n=116 with persistent hypercapnia (PaCO₂ >53 mmHg) after hospitalization for AECOPD- followed for 1 year

HOT – HMV group presented:

- ◆ *51% ↓ risk of readmission or death
- ◆ *↑ time to readmission or death from 1.4 to 4.3 months
- ◆ *34% ↓ exacerbation rate
- ◆ NIV usage averaged 7.6 h/night

NIV: RMD VPAP III™ ST-A or PR BiPAP™ Harmony II
 average settings IPAP: 24/ EPAP: 4/ Backup rate:14

2. Criner, *Am J Respir Crit Care Med* 2018 (*Supplement*)
Health economic evaluation of the HOT-HMV study results
(Compare the cost-effectiveness of HOT-HMV vs. HOT alone)

Costs were applied to the events collected during the HOT-HMV trial.

Events included:

- ◆ use of NIV
- ◆ physician visits
- ◆ hospital admissions
- ◆ patient medications and other care

Despite the additional cost for the bilevel ST device (E0471; average \$2,715/patient); total costs savings (average **\$3,928/patient**)

- ◆ ↓ total exacerbation costs (-\$2,086/patient)
- ◆ ↓ total patient reported costs (- \$4,558/patient)

Take away

Treating this population with bilevel device with backup rate is more effective and less costly than home oxygen therapy alone

3. Köhnlein, *Lancet Respir Med* 2014
NIV for the treatment of severe stable COPD
(Standard treatment vs. Standard treatment + NIV)

n = 195 stable COPD (GOLD Stage IV) pts -
 baseline PaCO₂ ≥ 51.9 mmHg - followed for 1 year

- ◆ *Almost 3 times as many patients died within the year in the control group
- ◆ *Over time, the odds of patients dying are 76% less for patients treated with NIV
- ◆ *PaCO₂ ↓ by ≥ 20% to <48.1 mmHg
- ◆ NIV usage ≥ 6 h/day in 64.6% of patients

NIV: RMD VPAP III™ ST-A average settings
 IPAP: 21.6/ EPAP: 4.8/ Backup rate:16

4. Galli, *Respir Med* 2014
Home NIV following acute hypercapnic respiratory failure in COPD
(NIV post discharge vs. no NIV)

n=166. Six months retrospective review- patients divided in two groups: with or without NIV post-discharge-

- ◆ * NIV post discharge group demonstrated ↑ event-free survival
- ◆ * Reduction in hospital readmission rate: 40% vs 75%

NIV: Bilevel average settings IPAP:22.1 /EPAP: 5.9 cmH₂O

COPD and NIV Clinical Studies

(1) Survival

- Murphy
- Köhnlein
- Galli

(2) Readmission/Cost

- Boston HealthCare
- Murphy
- Galli

(3) Morbidities

- Murphy
- Köhnlein

(4) Quality of Life

- Köhnlein

In view of the evidence supporting the positive impact of NIV, in 2017 the GOLD Consortium updated its guidelines stating that long-term NIV may decrease mortality and prevent re-hospitalization in selected patients with severe COPD and persistent hypercapnia following hospital admission.

[2018 GOLD Pocket Guide](#) (p.9)

Full link to the 2018 GOLD Pocket Guide:

<https://goldcopd.org/wp-content/uploads/2018/02/WMS-GOLD-2018-Feb-Final-to-print-v2.pdf>