CLINIQUE EL YOSR INTERNATIONALE
مصحّة اليسر الدوليّة

FACULTÉ DE Médecin DE MONAS
كلية الطب بالمنستير

OHD au cours des Exacerbations de BPCO: POUR

Pr Islem Ouanes

VNI et EABPCO

- Standard of care

The New England
Journal of Medicine

Volume 333 SEPTEMBER 28, 1995 Number 13

NONINVASIVE VENTILATION FOR ACUTE EXACERBATIONS OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE

LAURENT BROCHARD, M.D., JORDI MANCEBO, M.D., MARC WYSOCKI, M.D., FRÉDÉRIC LOFASO, M.D., GIORGIO CONTI, M.D., ALAIN RAUSS, M.D., GÉRALD SIMONNEAU, M.D., SALVADOR BENITO, M.D., ALESSANDRO GASPARETTO, M.D., FRANÇOIS LEMAIRE, M.D., DANIEL ISABEY, PH.D., AND ALAIN HARF, M.D.

VNI et EABPCO

nes et al. Ann. Intensive Care (2015) 5:30
10.1186/s13613-015-0072-x

Annals of Intensive Care
a SpringerOpen Journal

ESEARCH Open Access

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rends in use and impact on outcome
f empiric antibiotic therapy and non-invasive
entilation in COPD patients with acute
xacerbation

m Ouanes[1,2*], Lamia Ouanes-Besbes[1,2], Saoussen Ben Abdallah[1,2], Fahmi Dachraoui[1,2] and Fekri Abroug[1,2]

20-30 % des patients en EABPCO hypercapniques ne tolèrent pas la VNI pour plusieurs raisons.

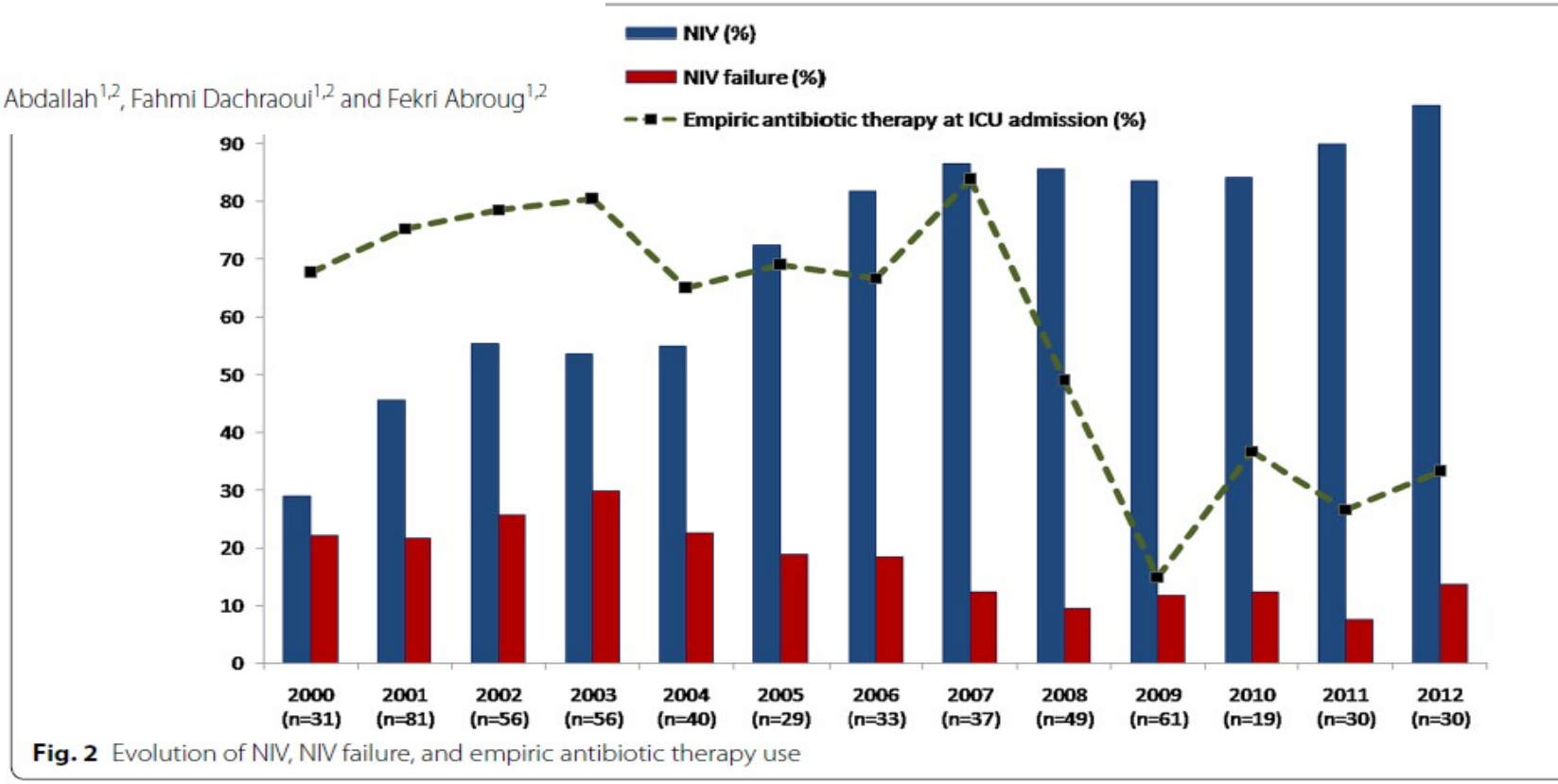


Fig. 2 Evolution of NIV, NIV failure, and empiric antibiotic therapy use

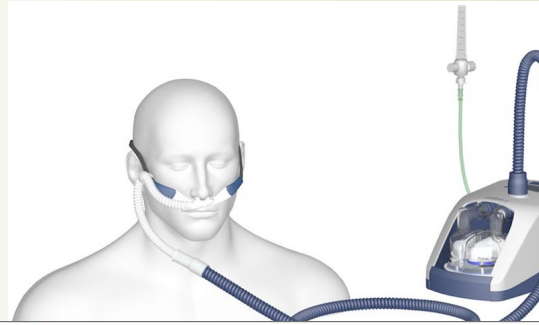
VNI: intolérance et complications

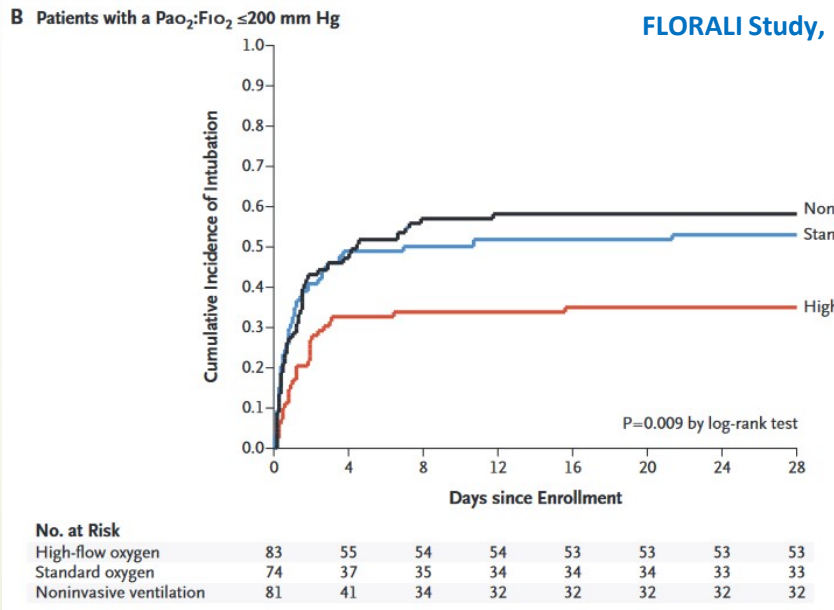
- Claustrophobie/Agitation
- Handicap à la communication et à l'alimentation, SG
- Complications cutanées (escarres faciales)
- Asynchronies
- Conjonctivites
- Inhalation
- Distension digestives

↳ ***Améliorer le confort lors de la VNI***
=
Véritable défi

OHD: principes

- Oxygène à Haut Débit
- Optiflow
- **HFNC**
- **Débit** élevé (générateur)
- Pas l'oxygénothérapie (FiO2)



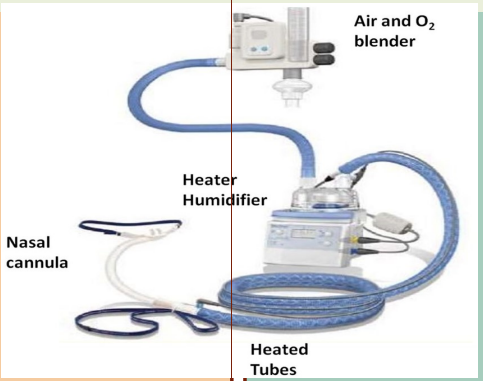


OHD: Effets physiologiques

- Oxygénothérapie humidifiée et chauffée
- Rinçage de l'espace mort
- Effet"PEEP"
- FiO2 stable et précise
- Confort de la procédure

OHD: Effets physiologiques= Effets bénéfiques lors des EABPCO

OHD au cours des EA



Diminue **le travail respiratoire**

Améliore **l'oxygénation**

Rince l'espace mort

Augmente la **capacité résiduelle fonctionnelle**

Haut débit

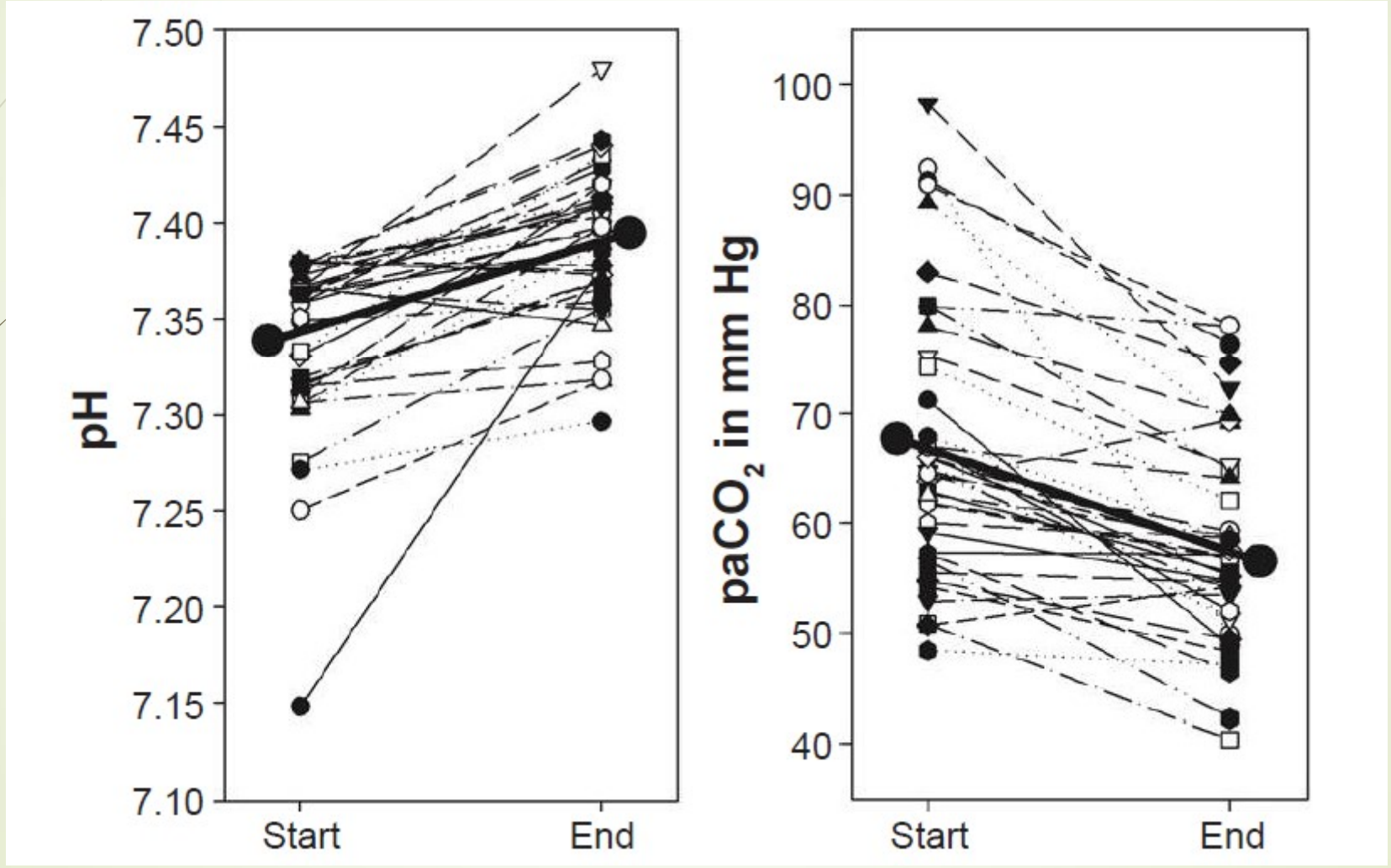
Diminue le **coût métabolique**

Améliore la **clairance des secrétions**

Améliore le **confort de l'oxygénothérapie**

Humidification chauffée

OHD et EABPCO



- 38 patie

Braunlich et al, Int. J. COPD 201

Severity	Variable thresholds to determine severity
Mild (default)	• Dyspnea VAS <5 • RR <24 breaths·min^{-1} • HR <95 bpm • Resting SaO_2 ≥92% breathing ambient air (or patient's usual oxygen prescription) AND change ≤3% (when known) • CRP <10 mg·L^{-1} (if obtained)
Moderate (meets at least three of five#)	• Dyspnea VAS ≥5 • RR ≥24 breaths·min^{-1} • HR ≥95 bpm • Resting SaO_2 <92% breathing ambient air (or patient's usual oxygen prescription) AND/OR change >3% (when known) • CRP ≥10 mg·L^{-1} #: if obtained, ABG may show hypoxemia (PaO_2 ≤60 mmHg) and/or hypercapnia ($PaCO_2$ >45 mmHg) but no acidosis
Severe	• Dyspnea, RR, HR, SaO_2 and CRP same as moderate • ABG show new onset/worsening hypercapnia and acidosis ($PaCO_2$ >45 mmHg and pH <7.35)

- Sévérité de l'EABPCO:
  - Légère
  - Modérée
  - Sévère
- GOLD 2023

GOLD 2023 Eur Respir J 2

Place de l'OHD au cours des EABPCO ?

- OHD: alternative à l'oxygénothérapie conventionnelle
- OHD entre les séances de la VNI
- OHD: lors du sevrage de la VNI ou après l'extubation des patients BPCO
- **OHD: alternative à la VNI**

OHD: alternative à l'oxygénothérapie conventionnelle

- **OHD par rapport à l'O2:**

- Baisse significative de la PCO2

- Baisse de la fréquence respiratoire

Home high-flow nasal cannula oxygen therapy for stable hypercapnic COPD: a randomized clinical trial. Am J Respir Crit Care Med 2022

J Thorac Dis. 2018 Feb;10(2):882-
Respirology 2017,22, 1149–1155.

OHD entre les séances de la VNI

- **OHD par rapport à l'O2 :**

- Réduction de la fréquence respiratoire

- Baisse des efforts respiratoires

- Diminution de l'échec de sevrage de la VNI (reprise des sessions de VNI): 27% vs 47% pour l'O2.

Crit. Care Med. 2019, 47, e506-

OHD après l'extubation

OHD au cours des EA

onal Journal of Chronic Obstructive Pulmonary Disease Dovepress
open access to scientific and medical research
Text Article REVIEW

Flow Nasal Cannula Oxygen Therapy versus
nvasive Ventilation for AECOPD Patients
Extubation: A Systematic Review
leta-Analysis of Randomized Controlled

Feng, Lu Zhang, Haichuan Yu, Xiaojie Su, Tiankui Shuai, Lei Zhu, De Chen, Jian Liu
Medical College, Lanzhou University, Lanzhou City, Gansu Province, People's Republic of China
: Jian Liu, The first clinical medical college, Lanzhou University, Lanzhou City, Gansu Province, People's Republic of China,
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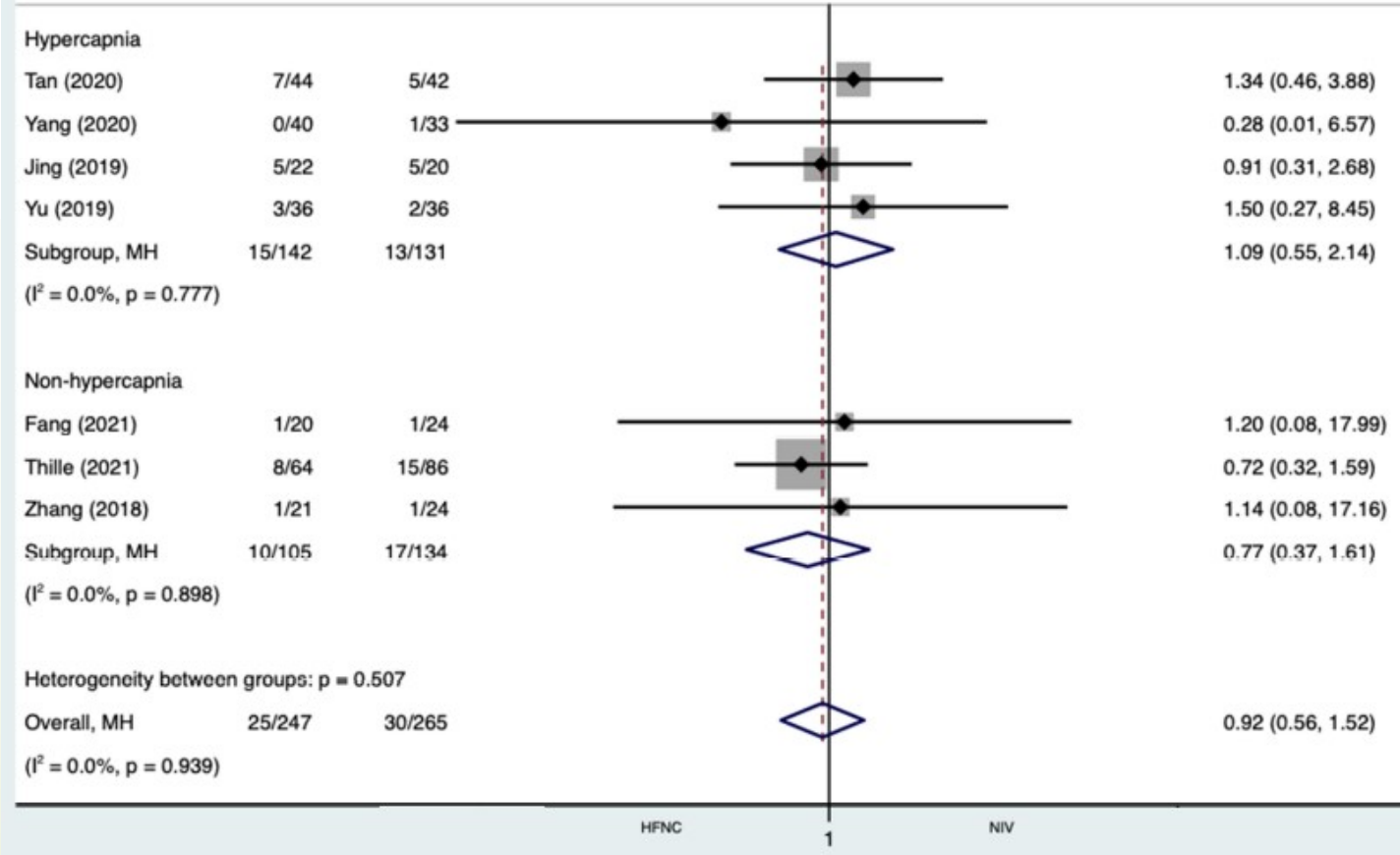
Eight studies were included, with a total of 612 subjects, including 297 in the HFNC group and 315 in the NIV group.

Figure 3 Forest plot of mortality, subgroup analysis was performed according to variable of hypercapnia and non-hyp

Variable and study (year)	HFNC events n/N	NIV events n/N	Risk Ratio (95% CI)
Hypercapnia			
Tan (2020)	7/44	5/42	1.34 (0.46, 3.88)
Yang (2020)	0/40	1/33	0.28 (0.01, 6.57)
Jing (2019)	5/22	5/20	0.91 (0.31, 2.68)
Yu (2019)	3/36	2/36	1.50 (0.27, 8.45)
Subgroup, MH	15/142	13/131	1.09 (0.55, 2.14)
(I^2 = 0.0%, p = 0.777)			
Non-hypercapnia			
Fang (2021)	1/20	1/24	1.20 (0.08, 17.99)
Thille (2021)	8/64	15/86	0.72 (0.32, 1.59)
Zhang (2018)	1/21	1/24	1.14 (0.08, 17.16)
Subgroup, MH	10/105	17/134	0.77 (0.37, 1.61)
(I^2 = 0.0%, p = 0.898)			
Heterogeneity between groups: p = 0.507			
Overall, MH	25/247	30/265	0.92 (0.56, 1.52)
(I^2 = 0.0%, p = 0.939)			



OHD: Alternative à la VNI ?

Cortegiani *et al. Crit Care* (2020) 24:692
https://doi.org/10.1186/s13054-020-03409-0

Critical Care

RESEARCH Open Access

High flow nasal therapy versus noninvasive ventilation as initial ventilatory strategy in COPD exacerbation: a multicenter non-inferiority randomized trial

Andrea Cortegiani[1,2*], Federico Longhini[3], Fabiana Madotto[4], Paolo Groff[5], Raffaele Scala[6], Claudia Crimi[7], Annalisa Carlucci[8], Andrea Bruni[3], Eugenio Garofalo[3], Santi Maurizio Raineri[1,2], Roberto Tonelli[9], Vittoria Comellini[10], Enrico Lupia[11], Luigi Vetrugno[12], Enrico Clini[13], Antonino Giarratano[1,2], Stefano Nava[10], Paolo Navalesi[14], Cesare Gregoretti[1,15] and the H. F.-AECOPD study investigators

et al. Crit Care (2020) 24:692
.org/10.1186/s13054-020-03409-0

EARCH Open Access

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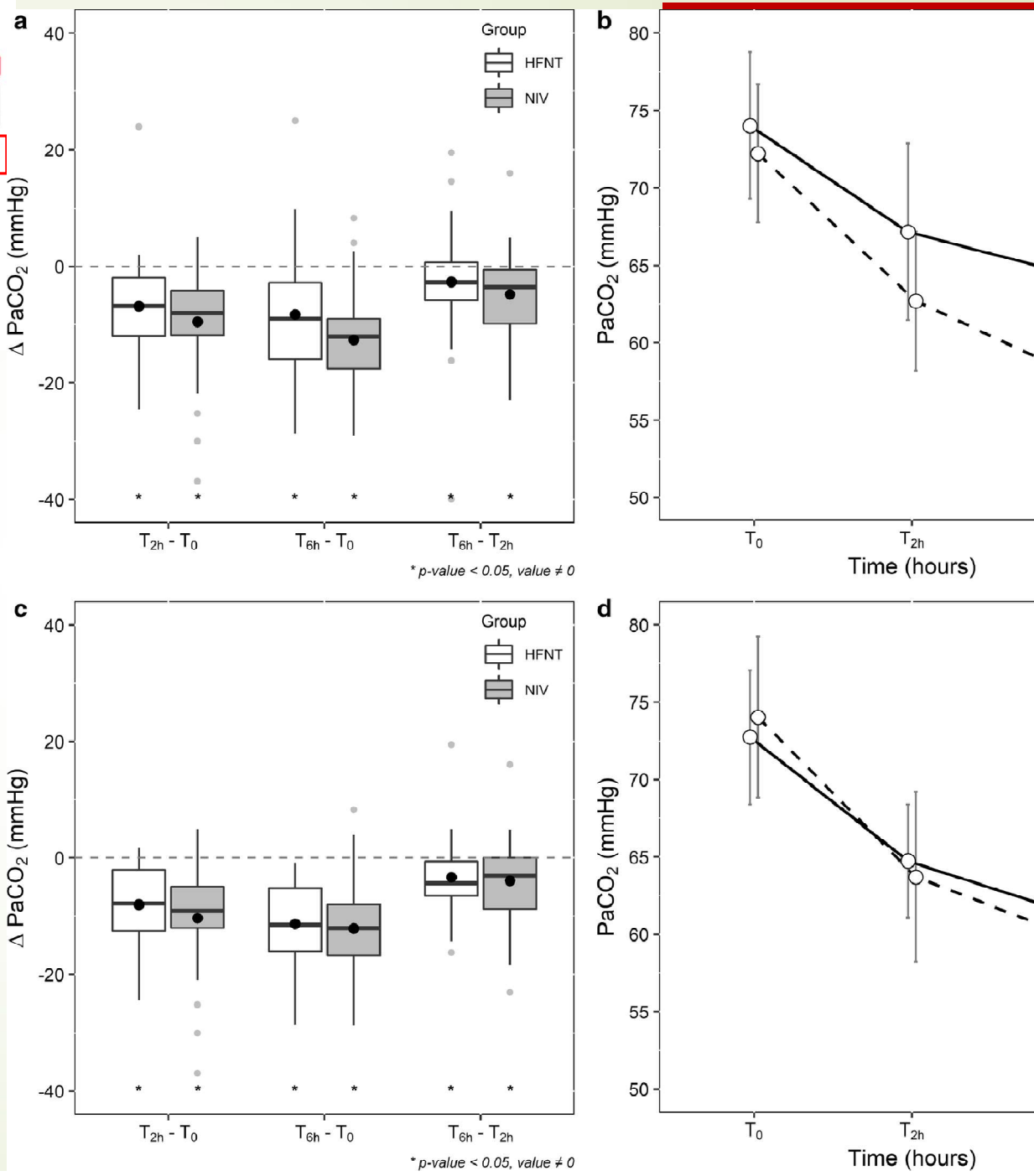
multicenter, **non-inferiority randomized trial** comparing HFNT and NIV in 9 centers in Italy.

Population: AECOPD (arterial pH 7.25–7.35, PaCO2 ≥ 55 mmHg before ventilator support).

Primary endpoint was **the mean difference of PaCO2 from baseline to 2 h** (non-inferiority margin 10 mmHg).

40 patients in each group,



OHD et EABPCO

he efficacy of high-flow nasal cannulae xygen therapy in severe acute exacerbation f chronic obstructive pulmonary disease: A andomized controlled trial

68 patients underwent randomization.

Mean age was 72.4 ± 9.5 years.

30-day mortality: 22.2% HFNC vs 28.1% NIV

Treatment failure: 33.3% HFNC vs 50.0% NIV

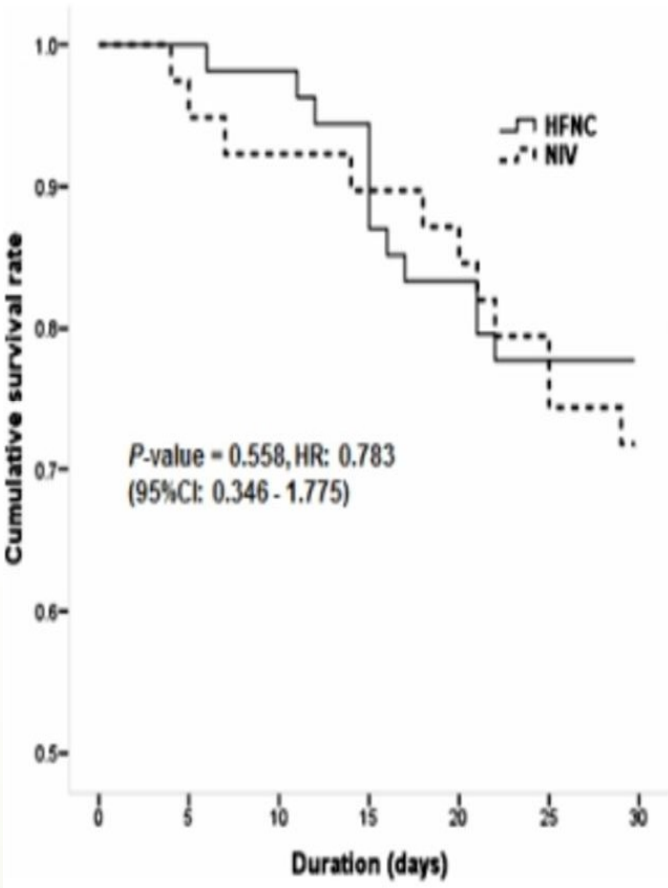


Figure 1. Cumulative survival rate between HFNC and NIV oxygen therapy

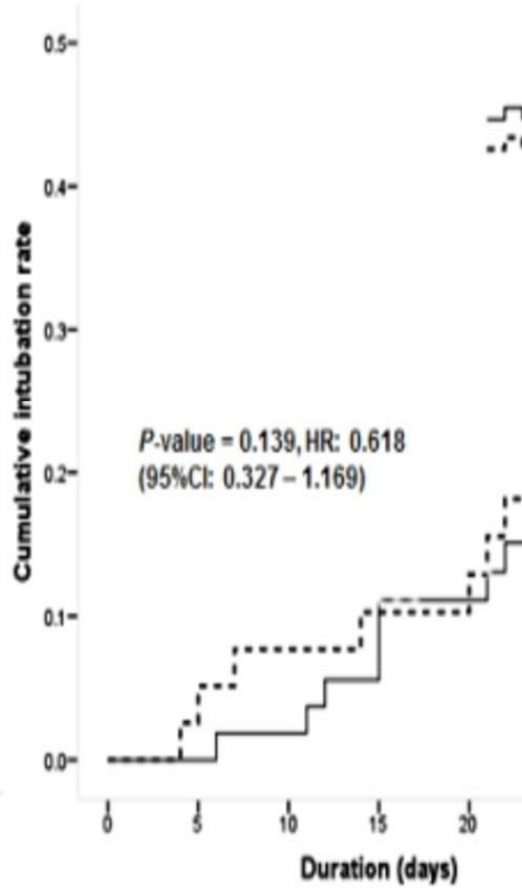


Figure 2. Cumulative intubati between HFNC and NIV oxyge

Myoung Kyu Lee et al., ERJ, 2016

Meta-analyses

ulmonol. 2019;25(6):348–354

PULMONOLOGY

www.journalpulmonology.org

REVIEW

High flow through nasal cannula in exacerbated COPD patients: a systematic review

.. Pisani[a,*], M. Astuto[b], I. Prediletto[a], F. Longhini[c]

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Department of Clinical and Experimental Medicine, University of Catania, Catania, Italy
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spiratory Journal
, Article ID 7707010, 12 pages
g/10.1155/2023/7707010

rch Article

-Flow Nasal Oxygen versus Noninvasive Ventilation in Acute erbation of Chronic Obstructive Pulmonary Disease Patients: ta-Analysis of Randomized Controlled Trials

Yanping Du,[1] Huaping Zhang,[2] Zhiyi Ma,[3] Jun Liu,[4] Zhiyong Wang,[5] Meixia Lin,[5] Fayu Ni,[6] Xi Li,[7] Hui Tan,[8] Shifan Tan,[9] Yanling Chai,[10] and Xiangzhu Zhong[11]

Xu et al. Eur J Med Res (2021) 26:122
https://doi.org/10.1186/s40001-021-00587-7

European Jo
of Medical Res

RESEARCH Open A

The efficacy and safety of high-flow nasal cannula therapy in patients with COPD and type II respiratory failure: a meta-analysis and systematic review

Zhiping Xu†, Lingxia Zhu†, Jingye Zhan and Lijun Liu*

Received: 11 May 2023 | Revised: 1 August 2023 | Accepted: 29 August 2023

DOI: 10.1111/crj.13695

REVIEW ARTICLE

WIL

High flow nasal cannula versus noninvasive ventilation in the treatment of acute hypercapnic respiratory failure: A systematic review and meta-analysis

Aisling C. Fahey[1] | Martina O'Connell[1,2,3] | Nicola Cornally[1] | Mohamad M. Saab[1]

Hindawi
Canadian Respiratory Journal
Volume 2023, Article ID 7707010, 12 pages
https://doi.org/10.1155/2023/7707010

Research Article

High-Flow Nasal Oxygen versus Noninvasive Ventilation in Acute Exacerbation of Chronic Obstructive Pulmonary Disease Patients: A Meta-Analysis of Randomized Controlled Trials

Yanping Du,[1] Huaping Zhang,[2] Zhiyi Ma,[3] Jun Liu,[4] Zhiyong Wang,[5] Meixia Lin,[5] Fayu Ni,[6] Xi Li,[7] Hui Tan,[8] Shifan Tan,[9] Yanling Chai,[10] and Xiangzhu Zhong[11]

- 7 RCTs with a total of 481 patients

Study or Subgroup	High flow nasal cannula Mean	SD	Total	Noninvasive ventilation Mean	SD	Total	Weight (%)	Mean Difference IV, Fixed, 95% CI
Cong 2019	91.93	4.35	84	92.75	4.07	84	48.8	-0.82 [-2.09, 0.45]
Mckinstry 2019	92.5	2.8	24	94.1	3	24	29.4	-1.60 [-3.24, 0.04]
Papachatzakis 2020	93.3	2.1	20	92.9	3.8	20	21.9	0.40 [-1.50, 2.30]
Total (95% CI)			*128*			*128*	*100.0*	*-0.78 [-1.67, 0.11]*

Heterogeneity: chi² = 2.44, df = 2 ($P = 0.30$); $I^2 = 18\%$

Test for overall effect: $Z = 1.72$ ($P = 0.08$)

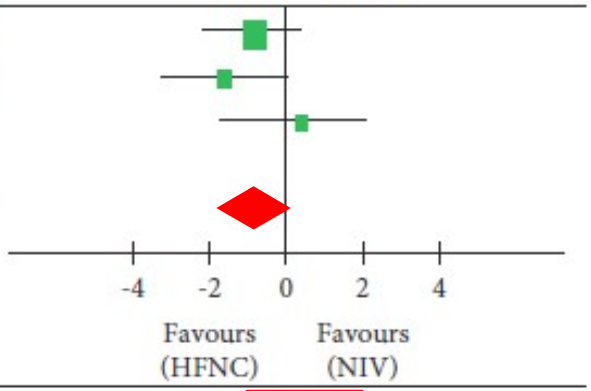


FIGURE 6: Forest plot of standardized mean difference with a confidence interval for SpO_2.

Study or Subgroup	High flow nasal cannula Mean	SD	Total	Noninvasive ventilation Mean	SD	Total	Weight (%)	Mean Difference IV, Fixed, 95% CI
Cortegiani 2020	20	4	24	21	4	29	21.1	-1.00 [-3.16, 1.16]
Fang 2021	19.1	2.3	20	20.6	3.5	24	33.2	-1.50 [-3.23, 0.23]
Jing 2019	22.4	4.4	22	21	4.5	20	13.6	1.40 [-1.30, 4.10]
Mckinstry 2019	14.8	4.5	24	17	4.1	24	16.7	-2.20 [-4.64, 0.24]
Papachatzakis 2020	15.7	3.5	20	17.3	4.6	20	15.4	-1.60 [-4.13, 0.93]
Total (95% CI)			*110*			*117*	*100.0*	*-1.13 [-2.13, -0.14]*

Heterogeneity: chi² = 4.45, df = 4 ($P = 0.35$); $I^2 = 10\%$

Test for overall effect: $Z = 2.23$ ($P = 0.03$)

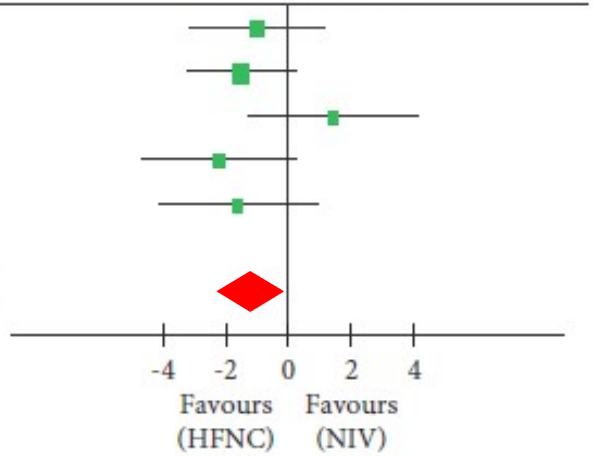


FIGURE 7: Forest plot of standardized mean difference with a confidence interval for the respiratory rate.

Study or Subgroup	HFNC Events	HFNC Total	NIV Events	NIV Total	Weight (%)	Odds Ratio M-H, Fixed, 95% CI
Cortegiani 2020	2	24	6	29	40.0	0.35 [0.06, 1.91]
Fang 2021	1	20	1	24	6.9	1.21 [0.07, 20.67]
Jing 2019	5	22	5	20	32.5	0.88 [0.21, 3.65]
Papachatzakis 2020	3	20	3	20	20.5	1.00 [0.18, 5.67]
Total (95% CI)		*86*		*93*	*100.0*	*0.72 [0.30, 1.69]*
Total events	11		15			

Heterogeneity: chi² = 1.04, df = 3 ($P = 0.79$); $I^2 = 0\%$

Test for overall effect: $Z = 0.76$ ($P = 0.44$)

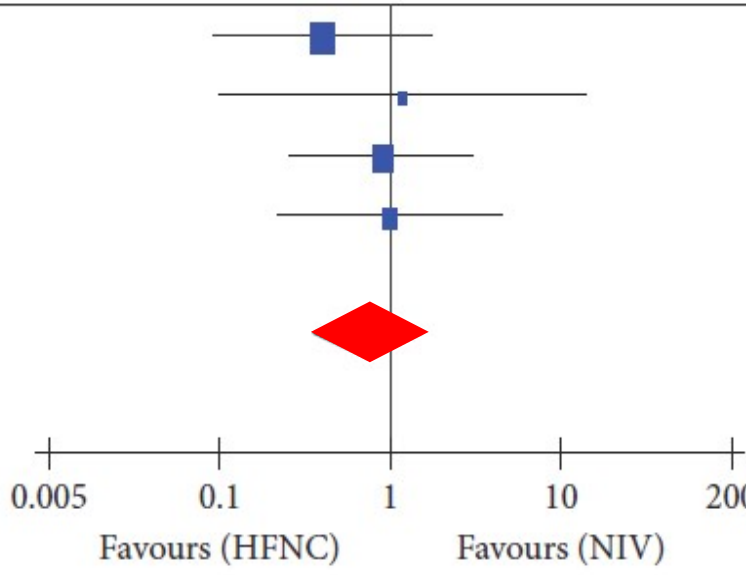
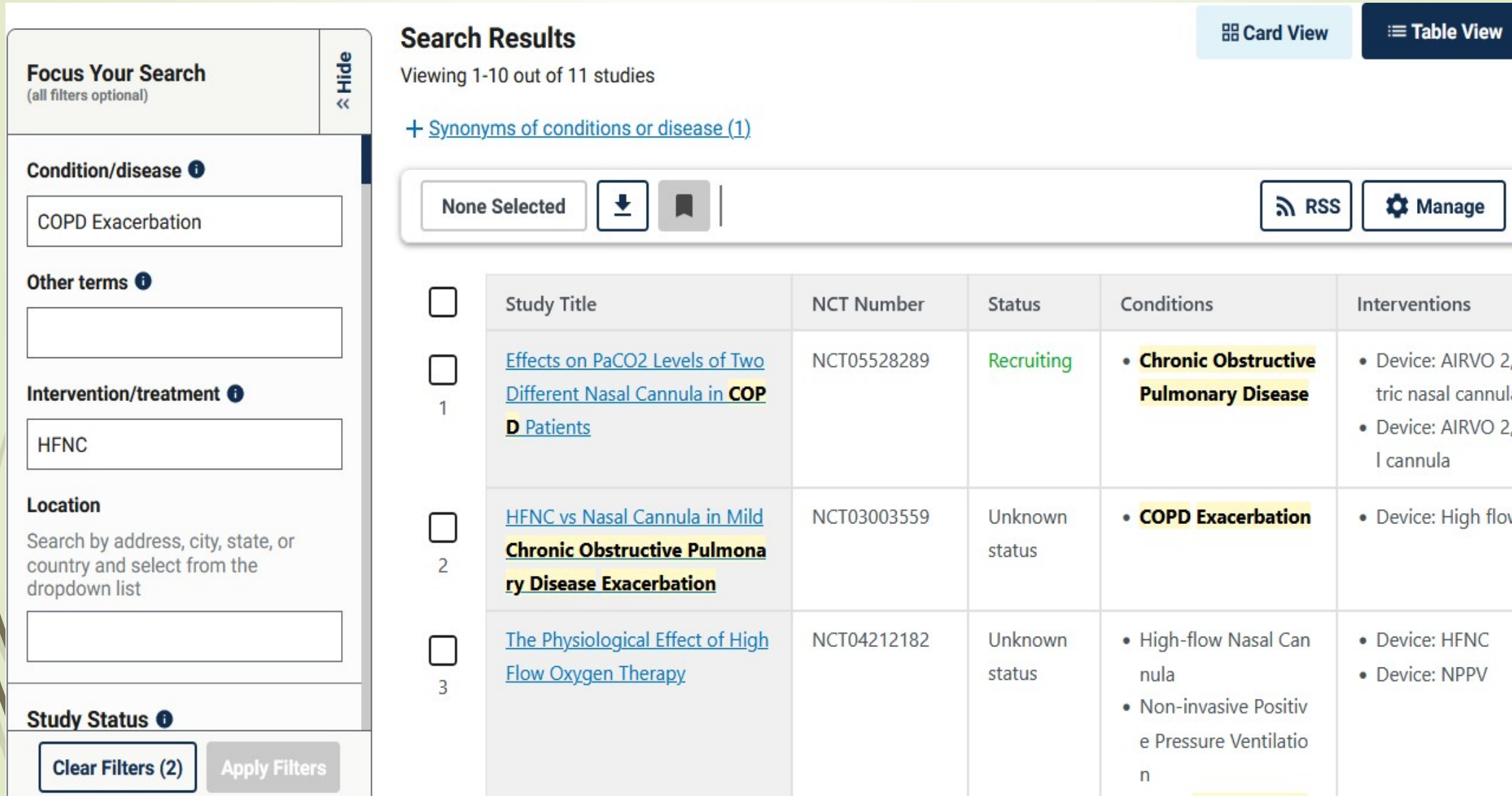
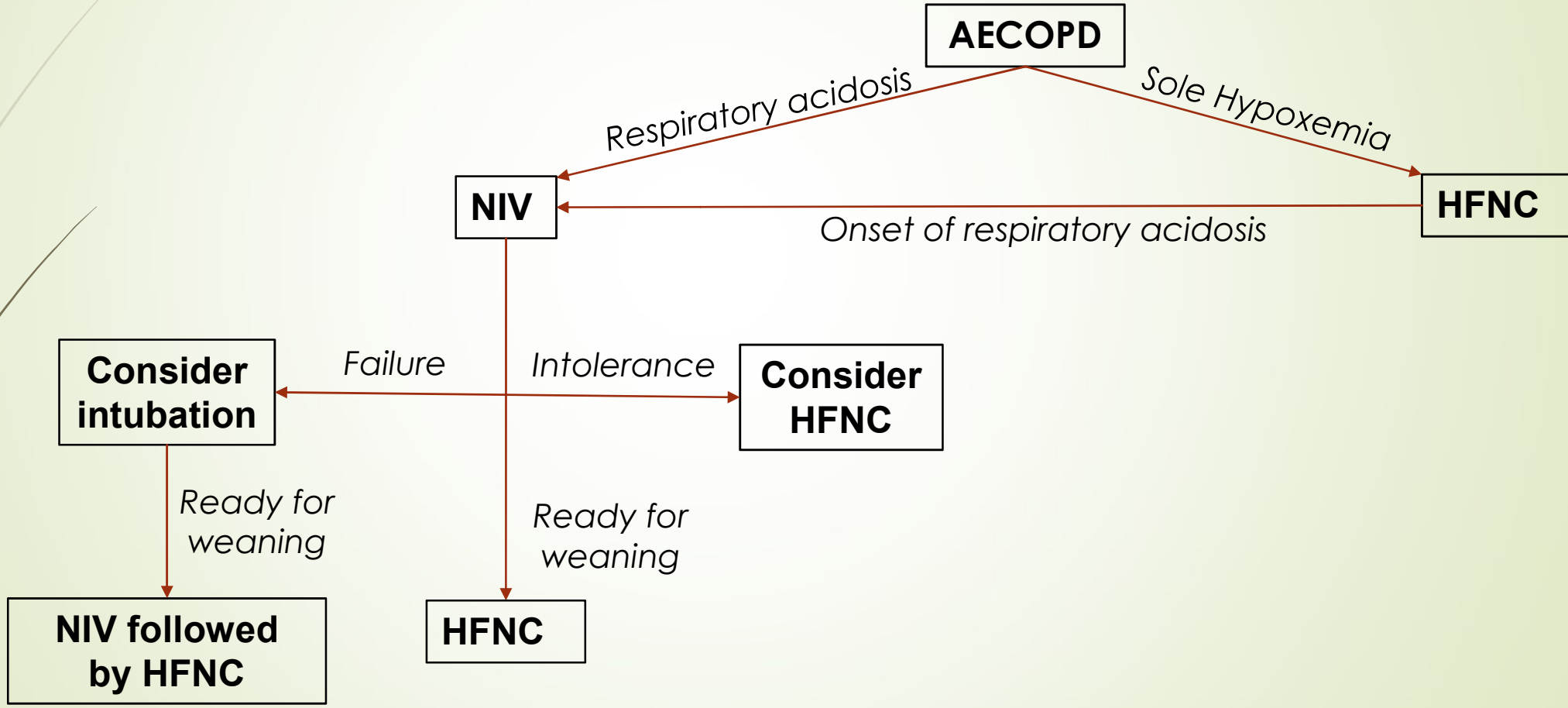


FIGURE 8: The graph shows a forest plot of the relative risk with a confidence interval for the mortality.

Clinicaltrials.gov



Stratégie ventilatoire lors des EABPCO



Current Practice of High Flow through Nasal Can
Exacerbated COPD Patients. Healthcare 2022,

OHD: Réglages pour les EABPCO

- Débit entre 35 et 60 L/min (titration).
- Température entre 34 and 37°C.
- FiO2 pour un objectif de SpO2 entre 88 and 92%.

ERS, Clinical practice guidelines: High-flow nasal cannula in acu
respiratory failure. Eur. Respir. J. 2021, 53, 2101574

Conclusion

- *OHD et EABPCO :*

- *Alternative à la VNI en cas d'intolérance de celle ci.* ✓
- *Supérieure à l'O2 conventionnelle lors des pauses et lors du sevrage de la VNI.* ✓
- *Modalité d'oxygénation lors des EABPCO sans acidose respiratoire.* ✓

OUI
pour l'OHD au cours des EABPCO


على هذه الأرض ما يستحق الحياة
محمود درويش

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