réanimation 2022
PARIS 22-24 JUIN
Palais des Congrès de Paris
Porte Maillot
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Oxygénation lors d'une infection à CoviD-19

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Frédéric BONNIER Bruxelles

☑ Je n'ai pas de lien d'intérêt potentiel à déclarer

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O_2 Pourquoi ?

- Corriger l'hypoxémie.

O_2 = médicament prescription toujours en LPM et Nbr h/24h

Erreur relative de 2% < l'oxymètre de pouls < 3 %,

la valeur cible de la SpO_2 chez les patients atteints de COVID et

IRA est de 92 %.

Sortie de prise murale O_2 est à 0°c et 0% d'hygrométrie
Sortie débimètre 15°C et +/- 2%
Humidification si débit > 3-6 LPM

Si FiO_2 > 60% longue durée -> signes inflammatoires,

d'infiltration alvéolaire et finalement d'une sclérose pulmonaire.

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Oxygénothérapie : précautions d'emploi

- Interdiction formelle de fumer ;
- Interdiction d'utiliser un corps gras (vaseline, lanoline) sur le visage mais privilégier une pâte à l'eau ;
- Toute flamme est proscrite à proximité d'une source d'O2 ;
- Ne pas serrer trop fort le masque (sensation d'étouffement ou d'oppression) ;
- Lors d'utilisation de haut débit d'O2, les patients peuvent se plaindre d'un assèchement de la cornée surtout s'ils sont porteurs de lentilles de contact.

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Dispositifs d'oxygénothérapie

Dispositifs à concentration variable en oxygène (bas débit)

- Canules nasales

- Masques moyenne concentration

- Masques haute concentration

Dispositifs à concentration fixe en oxygène (haut débit)

- Valves Venturi fixes

- Valves Venturi réglables

- Oxygenation à haut débit

- CPAP

Dispositifs à concentration
Venturi fixe en oxygène

Débits

Débitmètre à oxygène – litres par minute (L/min)

Concentration en oxygène	2	3	4	5	6	7	8	9	10	11	12	15
24%	**52**	78	104	130	156	181	207	233	259	285	311	389
28%	22	34	**45**	56	67	78	90	101	112	123	135	168
31%	16	24	31	39	**47**	55	63	71	79	87	94	118
35%	11	17	23	28	34	39	**45**	51	56	62	68	84
40%	8	12	17	21	25	29	33	37	**41**	46	50	62
60%	4	6	8	10	12	14	16	18	20	22	24	30

Débit total délivré au patient
Litres par minute (L/min)

A noter : Les valeurs en blanc indiquent un débit total de gaz pouvant être insuffisant pour le besoin inspiratoire du patient. Les valeurs en **gras** indiquent le débit total de gaz délivré au patient selon le débit d'oxygène recommandé.

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Algorithme de prise en charge

Est-ce que le patient est en situation critique?

Non

Oui

Masque à réserve, appel médecin et envisager VM

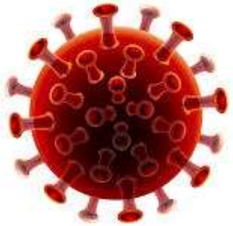
Est-ce que ce patient a ou est susceptible d'avoir une BPCO ?

Oui

Non

Objectif SpO2 88-92 %
Surveillance capnie et clinique

Débuter O_2
Objectif SpO2 92-98 %



Objectif SpO2 92-98 % non atteint?

Signes d'épuisement ou hypercapnie ?

Oui

?

Envisager Ventilation mécanique

Oui

Arguments pour un OAP?

Non

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- OHD
- PPC
- DVV
- VNI

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Oxygénation à **H**aut **D**ébit

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OHD

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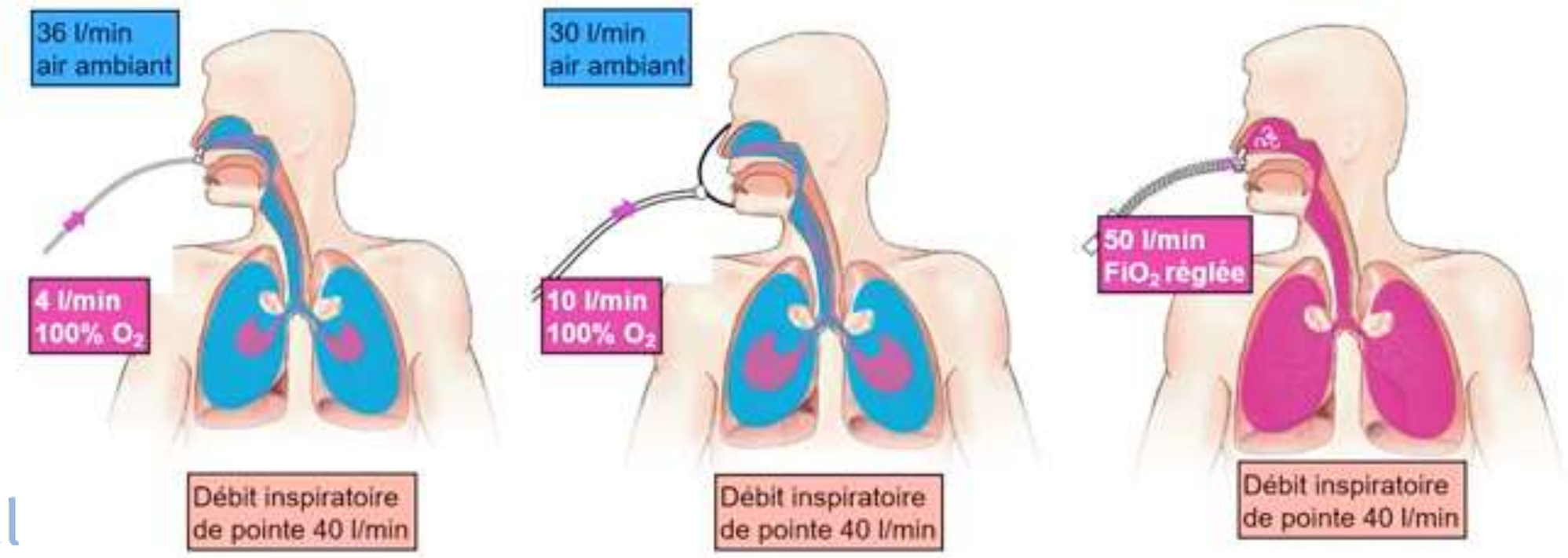
FiO2=0.29



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Kallet. Resp Care 2007

High flow nasal cannula oxygenation in COVID-19 related acute respiratory distress syndrome: a safe way to avoid endotracheal intubation?

Delbove.A, Foubert, A et al. Ther Adv Respir Dis . Jan-Dec 2021;15.

Etude de cohorte, rétrospective ds USI d'un hôpital général français.

Patients inclus s'ils recevaient une HFNC pour hypoxémie SpO2 <92 % sous oxygène ⩾6 LPM associée à un SDRA et à un SARS-CoV-2 (PCR+).

Le critère d'évaluation principal : taux d'intubation, mortalité et durée du séjour à l'hôpital.

Les critères secondaires : sécurité de OHD (pour les patients et soignants)

<u>Conclusions :</u> taux de mortalité comparable à ARDS

OHD sans danger pour les travailleurs de la santé.

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La sévérité du SDRA avec PaO2/FiO2 <150 associée à une fréquence respiratoire >35/min pourrait être considérée comme un facteur prédictif d'intubation.

JAMA | Original Investigation

Effect of Noninvasive Respiratory Strategies on Intubation or Mortality Among Patients With Acute Hypoxemic Respiratory Failure and COVID-19

The RECOVERY-RS Randomized Clinical Trial

Gavin D. Perkins, MD; Chen Ji, PhD; Br
Paul Dark, PhD; Chirag Dave, MD; Anth
Ellen A. Gorman, MB, BCh; Christophe
Nicola McGowan, MRes; Benjamin Mes
Jaimin Patel, PhD; Scott E. Regan, BA;
Nigel Stallard, PhD; Michael Steiner, M

Table 1. Baseline Characteristics of the Participants

	Continuous positive airway pressure (n = 380)	High-flow nasal oxygen (n = 418)	Conventional oxygen therapy (n = 475)
Treatment period, No. (%)			
Before July 2020	47 (12.4)	44 (10.5)	47 (9.9)
July 2020-January 2021	262 (69.0)	289 (69.1)	331 (69.7)
After January 2021	71 (18.7)	85 (20.3)	97 (20.4)
Age, mean (SD), y	56.7 (12.5)	57.6 (13.0)	57.6 (12.7)
Sex, No. (%)			
Male	260 (68.4)	272 (65.1)	312 (65.7)
Female	120 (31.6)	146 (34.9)	163 (34.3)
very fit to managing well	351 (92.4)	376 (90.0)	430 (90.5)
Very mild frailty to terminally ill	19 (5.0)	35 (8.4)	39 (8.2)
Respiratory rate, median (IQR), /min	(n = 377); 24 (21-30)	(n = 414); 24 (20-29)	(n = 472); 23 (20-28)
FIO_2, median (IQR)	(n = 363); 0.60 (0.40-0.80)	(n = 404); 0.60 (0.40-0.80)	(n = 459); 0.60 (0.40-0.80)
SpO_2, median (IQR), %	(n = 378); 94.0 (92.0-95.0)	(n = 409); 93.0 (91.0-95.0)	(n = 470); 94.0 (92.0-95.0)
Ratio of SpO_2 to FIO_2, median (IQR), %	(n = 363); 155.0 (110.6-232.5)	(n = 399); 156.7 (113.8-232.5)	(n = 457); 156.7 (115.0-230.0)
PaO_2, median (IQR), mm Hg	(n = 238); 67.5 (60.0-77.3)	(n = 287); 66.0 (59.3-74.3)	(n = 317); 66.8 (58.5-80.3)
Ratio of PaO_2 to FIO_2, median (IQR), mm Hg	(n = 229); 112.5 (80.0-161.3)	(n = 284); 115.0 (80.9-168.4)	(n = 308); 113.8 (84.8-150.9)
$PaCO_2$, median (IQR), mm Hg	(n = 252); 33.0 (30.0-36.8)	(n = 306); 33.0 (30.0-36.0)	(n = 331); 33.8 (30.8-36.8)

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Nicola McGowan, MRes; Benjamin Messer, MA; Jay N
Jaimin Patel, PhD; Scott E. Regan, BA; Clare Ross, MB
Nigel Stallard, PhD; Michael Steiner, MD; Rama Vanch

Table 4. Primary and Secondary Outcomes in the High-Flow Nasal Oxygen Group vs the Conventional Oxygen Therapy Group

	High-flow nasal oxygen	Conventional oxygen therapy	Difference (95% CI)[a]
Primary composite outcome			
Tracheal intubation or mortality within 30 d, No./total (%)	184/415 (44.3)	166/368 (45.1)	AD, −1 (−8 to 6)
Secondary outcomes			
Individual components of the primary composite outcome, No./total (%)			
Tracheal intubation within 30 d	170/415 (41.0)	153/368 (41.6)	AD, −1 (−8 to 6)
Mortality within 30 d	78/416 (18.8)	74/370 (20.0)	AD, −1 (−7 to 4)
Tracheal intubation rate, No./total (%)[f]	169/415 (40.7)	154/368 (41.8)	AD, −1 (−8 to 6)
Admission to intensive care unit, No./total (%)	252/408 (61.8)	214/361 (59.3)	AD, 2 (−4 to 9)
Duration of invasive mechanical ventilation after tracheal intubation, median (IQR), d[g]	(n = 169) 15.0 (8.0 to 26.0)	(n = 154) 12.0 (6.0 to 23.0)	MOND, 3.0 (−1.0 to 7.0)
Time to event, median (IQR), d			
Tracheal intubation[f]	(n = 169) 1.0 (0 to 3.0)	(n = 154) 1.0 (0 to 3.0)	MOND, 0 (−0.4 to 0.4)
Death[h]	(n = 88) 16.5 (9.0 to 22.5)	(n = 85) 17.0 (11.0 to 24.0)	MOND, 0 (−3.4 to 3.4)
Mortality, No./total (%)			
During intensive care unit stay	72/251 (28.7)	65/214 (30.4)	AD, −2 (−10 to 7)
During hospital stay	86/405 (21.2)	80/359 (22.3)	AD, −1 (−7 to 5)
Length of stay, mean (SD), d			
Intensive care unit[i]	(n = 407) 10.5 (15.6)	(n = 361) 9.6 (14.1)	MD, 0.95 (−1.16 to 3.07)
Hospital[j]	(n = 405) 18.3 (20.0)	(n = 359) 17.1 (18.0)	MD, 1.21 (−1.50 to 3.93)

Abbreviations: AD, absolute difference; HR, hazard ratio; MD, mean difference; MOND, median difference;

[a] Outcome included tracheo

High-Flow Nasal Cannula in Critically Ill Patients with Severe COVID-19

Demoule.A, Vieillard Baron.A et al. AJRCCM Volume 202 Number 7 | October 1 2020

379 Pat (233 NHFO/ 146 HFO)

Significativement mois de défaillance organique ds grpe OHD

Matching Pat (146 NHFO/ 146 HFO)

OHD associée à un moindre recours à VM (55% vs 72%)

Pas de ≠ mortalité à 28j

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Surveillance en OHD

- Fréquence respiratoire
- Saturation en O2: SpO2, SaO2
- Score ROX:

$$\frac{\text{SpO2/FiO2}}{\text{Fréquence Respiratoire}}$$

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Roca O, Caralt B, Messika J, et al. An Index Combining Respiratory Rate and Oxygenation to Predict Outcome of Nasal High-Flow Therapy. Am J Respir Crit Care Med. 2019;199(11):1368-1376.

Pression **P**ositive **C**ontinue

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Contents lists available at ScienceDirect

EClinicalMedicine

journal homepage: https://www.journals.elsevier.com/eclinicalmedicine

Research paper

Conventional oxygen therapy versus CPAP as a ceiling of care in ward-based patients with COVID-19: a multi-centre cohort evaluation.

P Bradley[a,b,h,†], J Wilson[b,e,†], R Taylor[c], J Nixon[d,h], J Redfern[d], P Whittemore[e], M Gaddah[f], K Kavuri[g], A Haley[f], P Denny[f], C Withers[a], RC Robey[a], C Logue[a], N Dahanayake[e], D Siaw Hui Min[e], J Coles[e], M S Deshmukh[e], S Ritchie[e], M Malik[b], H Abdelaal[b], K Sivabalah[b], MD Hartshorne[g], D Gopikrishna[g], A Ashish[g], E Nuttall[e], A Bentley[a,i], T Bongers[b], T Gatheral[f], TW Felton[a,i], N Chaudhuri[a,i], L Pearmain[a,h,j,k,*]

Rétrospective / Multicentrique.

O_2thérapie en salle (hors OHD) vs CPAP.

7 hôpitaux, 492 patients, (171 vague 1 / 308 vague 2).

64 % d'hommes, âge moyen 77 ans, 93 % d'ethnie blanche.

246 patients dans le groupe oxygène (51,4 %) et 233 dans le groupe CPAP (48,6 %).

Tous les patients ont été suivis pendant 30 jours ou jusqu'au décès, (temps de suivi médian de 5 jours)

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Pas de ≠ survie entre O_2 seul vs CPAP.

Taux élevé d'abandon de la CPAP à l'initiative du patient.

-> Pas d'application généralisée de la CPAP dans ce contexte.

JAMA | Original Investigation

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Jaimin Patel, PhD; Scott E. Regan, BA; Clare Ross, MBBS;
Nigel Stallard, PhD; Michael Steiner, MD; Rama Vancheesv

Table 3. Primary and Secondary Outcomes in the Continuous Positive Airway Pressure Group vs the Conventional Oxygen Therap

	Continuous positive airway pressure	Conventional oxygen therapy	Difference (95% CI)[a]
Primary composite outcome			
Tracheal intubation or mortality within 30 d, No./total (%)	137/377 (36.3)	158/356 (44.4)	AD, −8 (−15 to −1)
Secondary outcomes			
Individual components of the primary composite outcome, No./total (%)			
Tracheal intubation within 30 d	126/377 (33.4)	147/356 (41.3)	AD, −8 (−15 to −1)
Mortality within 30 d	63/378 (16.7)	69/359 (19.2)	AD, −3 (−8 to 3)
Tracheal intubation rate, No./total (%)[b]	126/377 (33.4)	147/356 (41.3)	AD, −8 (−15 to −1)
Admission to intensive care unit, No./total (%)	204/368 (55.4)	219/348 (62.9)	AD, −7 (−15 to −1)
Duration of invasive mechanical ventilation after tracheal intubation, median (IQR), d[c]	(n = 126) 15.0 (8.0 to 25.0)	(n = 147) 11.0 (5.0 to 23.0)	MDNO, 4.0 (0.04 to 8.0)
Time to event, median (IQR), d			
Tracheal intubation[d]	(n = 126) 2.0 (1.0 to 4.0)	(n = 147) 1.0 (0 to 4.0)	MDNO, 1.0 (0.2 to 1.8)
Death[e]	(n = 74) 17.0 (11.0 to 26.0)	(n = 79) 17.0 (11.0 to 24.0)	MDNO, 0 (−3.8 to 3.8)
Mortality, No./total (%)			
During intensive care unit stay	62/204 (30.4)	66/219 (30.1)	AD, 3 (−9 to 9)
During hospital stay	72/364 (19.8)	78/346 (22.5)	AD, −3 (−9 to 3)
Length of stay, mean (SD), d			
Intensive care unit[f]	(n = 368) 9.5 (15.6)	(n = 348) 9.6 (13.6)	MD, −0.08 (−2.23 to 2.07)
Hospital[f]	(n = 364) 16.4 (17.5)	(n = 346) 17.3 (18.1)	MD, −0.96 (−3.59 to 1.67)

Abbreviations: AD, absolute difference; HR, hazard ratio; MD, mean difference; MDNO, median difference;

[f] Outcome included tra

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Table 2. Initial Intervention Details, Prone Positioning, and Clinical Conditions Prior to Tracheal Intubation

	Continuous positive airway pressure (n = 380)	High-flow nasal oxygen (n = 418)	Conventional oxygen therapy (n = 475)
Initial intervention details and prone positioning			
Continuous positive airway pressure			
Positive end-expiratory pressure, mean (95% CI), cm H_2O	(n = 304) 8.3 (8.1-8.5)	NA	NA
Delivery device, No. (%)		NA	NA
Noninvasive ventilation[a]	147 (38.7)	NA	NA
Continuous positive airway pressure	173 (45.5)	NA	NA
Other[b]	24 (6.3)	NA	NA
Initial flow for high-flow nasal oxygen, mean (95% CI), L/min	NA	(n = 323) 52.4 (51.4-53.5)	NA
Treatment delivery duration, mean (SD), d	(n = 340) 3.5 (4.6)	(n = 378) 3.7 (4.1)	NA
Awake and in prone position, No./total (%)[c]	207/327 (63.3)	243/341 (71.3)	252/374 (67.4)

Pneumomediastinum in patients with SARS-CoV-2 treated with non-invasive ventilation

BMJ Case Rep. 2021; 14(3)

- Déjà été documenté comme une complication du SDRA.

- Mécanisme inconnu, lié à DAD ? -> rupture alvéolaire.

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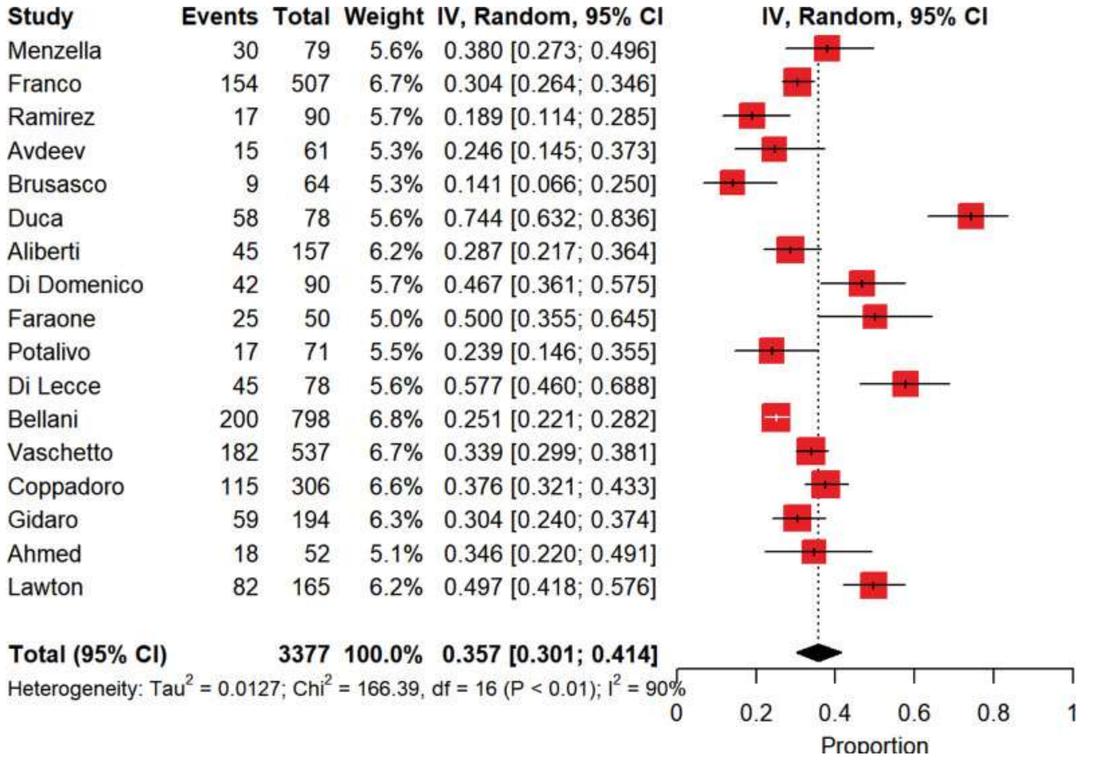
Cammarota *et al. Crit Care* (2021) 25:268
https://doi.org/10.1186/s13054-021-03697-0

Critical Care

RESEARCH Open Access

Noninvasive respiratory support outside the intensive care unit for acute respiratory failure related to coronavirus-19 disease: a systematic review and meta-analysis

Gianmaria Cammarota[1*], Teresa Esposito[2], Danila Azzolina[2], Roberto Cosentini[3], Francesco Menzella[4], Stefano Aliberti[5,6], Andrea Coppadoro[7], Giacomo Bellani[7,8], Giuseppe Foti[7,8], Giacomo Grasselli[6,9], Maurizio Cecconi[10,11], Antonio Pesenti[6,9], Michele Vitacca[12], Tom Lawton[13], V. Marco Ranieri[14], Sandro Luigi Di Domenico[15], Onofrio Resta[16], Antonio Gidaro[17], Antonella Potalivo[18], Giuseppe Nardi[18], Claudia Brusasco[19], Simonetta Tesoro[1], Paolo Navalesi[20], Rosanna Vaschetto[2†] and Edoardo De Robertis[1†]



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PPC à 2764/3047 des patients, Casque (1855).

Moyenne de 7 à 15 cm H_2O

FiO_2 50 à 68 %

Ventilation **N**on **I**nvasive

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Effect of Helmet Noninvasive Ventilation vs High-Flow Nasal Oxygen on Days Free of Respiratory Support in Patients With COVID-19 and Moderate to Severe Hypoxemic Respiratory Failure

The HENIVOT Randomized Clinical Trial

Domenico Luca Grieco, MD; Luca S. Menga, MD; Melania Cesarano, MD; Tommaso Rosà, MD; Savino Spadaro, MD, PhD; Maria Maddalena Bitondo, MD; Jonathan Montomoli, MD, PhD; Giulia Falò, MD; Tommaso Tonetti, MD; Salvatore L. Cutuli, MD; Gabriele Pintaudi, MD; Eloisa S. Tanzarella, MD; Edoardo Piervincenzi, MD; Filippo Bongiovanni, MD; Antonio M. Dell'Anna, MD; Luca Delle Cese, MD; Cecilia Berardi, MD; Simone Carelli, MD; Maria Grazia Bocci, MD; Luca Montini, MD; Giuseppe Bello, MD; Daniele Natalini, MD; Gennaro De Pascale, MD; Matteo Velardo, PhD; Carlo Alberto Volta, MD; V. Marco Ranieri, MD; Giorgio Conti, MD; Salvatore Maurizio Maggiore, MD, PhD; Massimo Antonelli, MD; for the COVID-ICU Gemelli Study Group

INTERVENTIONS Participants were randomly assigned to receive continuous treatment with helmet noninvasive ventilation (positive end-expiratory pressure, 10-12 cm H_2O; pressure support, 10-12 cm H_2O) for at least 48 hours eventually followed by high-flow nasal oxygen (n = 54) or high-flow oxygen alone (60 L/min) (n = 55).

MAIN OUTCOMES AND MEASURES The primary outcome was the number of days free of respiratory support within 28 days after enrollment. Secondary outcomes included the proportion of patients who required endotracheal intubation within 28 days from study enrollment, the number of days free of invasive mechanical ventilation at day 28, the number

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The HENIVOT Randomized Clinical Trial

Table 2. Primary and Secondary Outcomes, According to Study Group

Outcome	No. (%)		Absolute or mean difference (95% CI)[b]	Odds ratio (95% CI)	*P* value[c]
	Helmet noninvasive ventilation (n = 54)[a]	High-flow nasal oxygen (n = 55)[a]			
Primary outcome					
Respiratory support-free days, median (IQR)[d]	20 (0 to 25)	18 (0 to 22)	2 (−2 to 6)		.26
Secondary outcomes					
Intubation within 28 d from enrollment	16 (30)	28 (51)	−21 (−38 to −3)	0.41 (0.18 to 0.89)	.03
Intubation within 28 d from enrollment, after adjudication of intubation criteria by external experts	15 (28)	28 (51)	−23 (−39 to −5)	0.37 (0.17 to 0.82)	.02
Invasive ventilation-free days, median (IQR)					
28 d	28 (13 to 28)	25 (4 to 28)	3 (0 to 7)		.04
60 d	60 (43 to 60)	57 (19 to 60)	6 (−3 to 15)		.07
Mortality					
28 d	8 (15)	10 (18)	−3 (−17 to 11)	0.78 (0.28 to 2.16)	.80
60 d	13 (24)	12 (22)	2 (−13 to 18)	1.14 (0.46 to 2.78)	.82
In-intensive care unit mortality	11 (20)	14 (25)	−5 (−21 to 11)	0.75 (0.30 to 1.84)	.65
In-hospital mortality[e]	13 (24)	14 (25)	−1 (−17 to 15)	0.93 (0.39 to 2.22)	>.99
Duration of stay, median (IQR), d					
Intensive care unit	9 (4 to 17)	10 (5 to 23)	−6 (−13 to 1)		.22
Hospital	21 (14 to 30)	22 (13 to 44)	−6 (−14 to 1)		.47
Safety end points					
Hours to intubation, median (IQR)	29 (8 to 71)	21 (4 to 65)	−7 (−60 to 46)		.45
Need for emergency intubation	0	0			>.99

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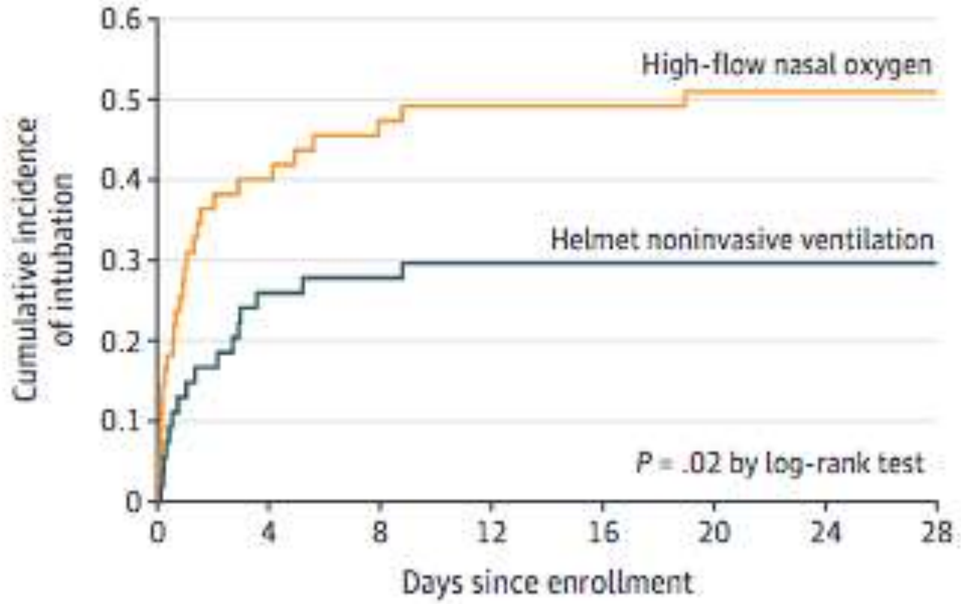
Effect of Helmet Noninvasive Ventilation vs High-Flow Nasal Oxygen on Days Free of Respiratory Support in Patients With COVID-19 and Moderate to Severe Hypoxemic Respiratory Failure

The HENIVOT Randomized Clinical Trial

Figure 3. Cumulative Incidence of Intubation Over Time in the Helmet Noninvasive Ventilation and High-Flow Nasal Oxygen Groups to Day 28



No. at risk								
High-flow nasal oxygen	55	34	30	28	28	27	27	27
Helmet noninvasive ventilation	54	41	39	38	38	38	38	38

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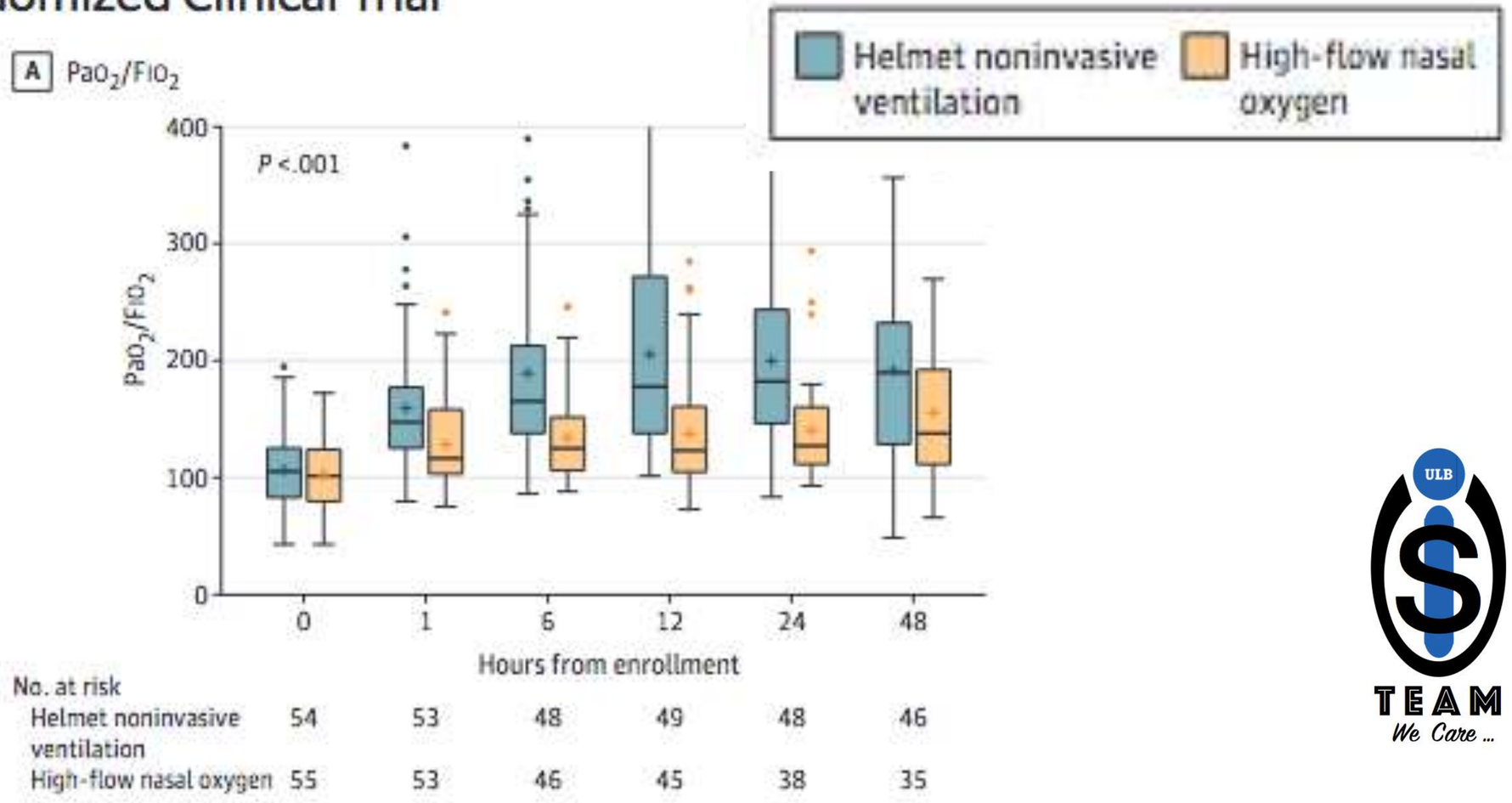

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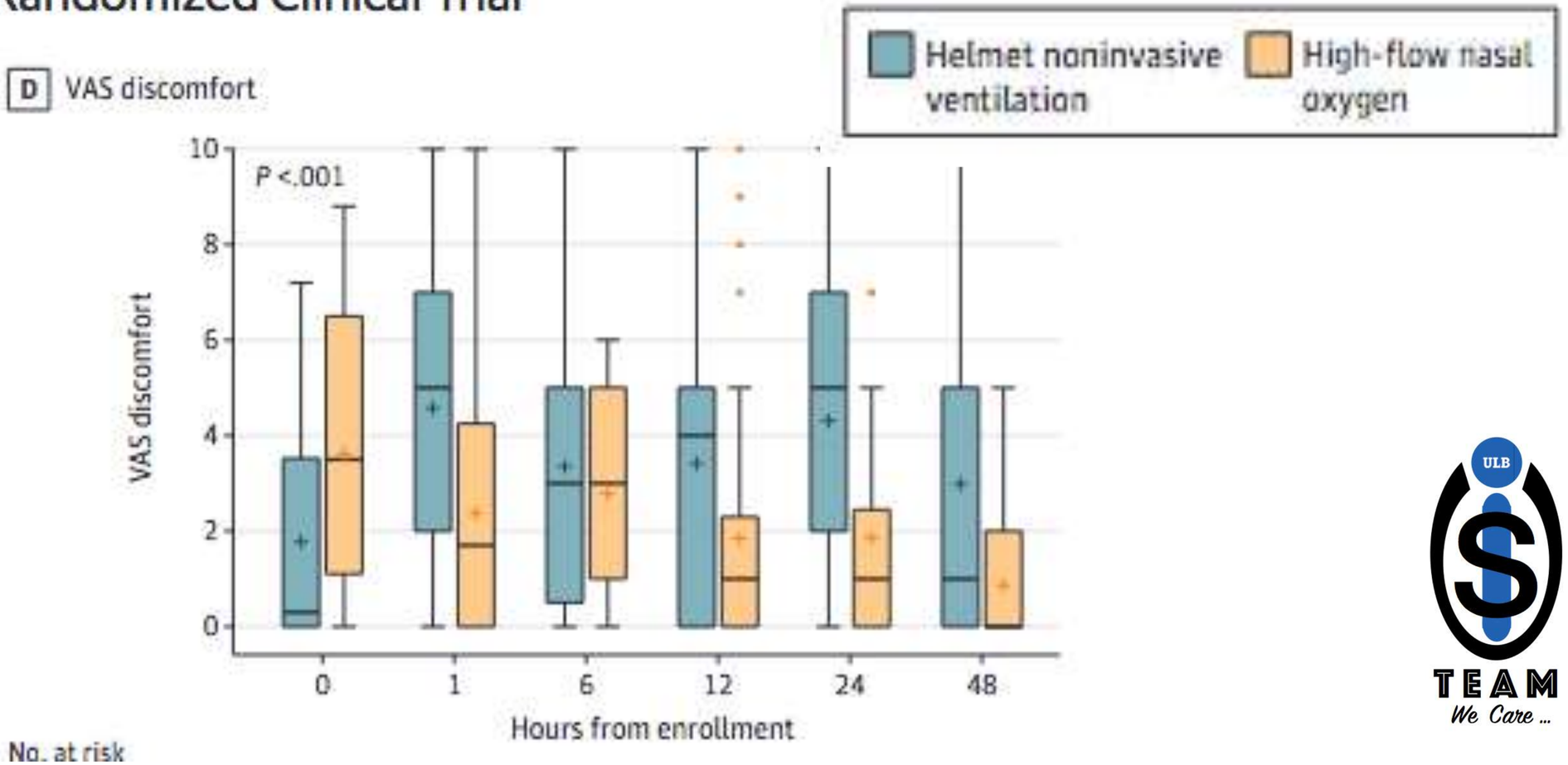

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Minerva Anestesiologica 2022 Jun 15

DOI: **10.23736/S0375-9393.22.16511-9**

language: English

Delirium incidence and risk factors in patients undergoing non-invasive ventilation for acute respiratory failure: a multicenter observational trial

Luca TABBÌ [1], Roberto TONELLI [1, 2] ✉, Vittoria COMELLINI [3], Roberto DONGILLI [4], Sara SORGENTONE [5], Antonella SPACONE [6], Maria C. PAONESSA [7], Marianna SACCHI [8], Laura FALSINI [9], Elisa BONI [10], Viviana RIBUFFO [11], Giulia BRUZZI [1], Ivana CASTANIERE [1, 2], Riccardo FANTINI [1], Alessandro MARCHIONI [1], Lara PISANI [3], Stefano NAVA [3], Enrico CLINI, for the Respiratory Intensive Care Study group

Scores were significantly associated with delirium:

Older age.	OR=2.7 [1.9-9], p=0.01
Presence of cancer	OR=3.7 [2-5.4], p=0.002
Sepsis	OR=1.7 [1.1-3.4], p=0.01
SOFA score	OR=1.8 [1.1-3.1], p=0.01
low tolerance to interface	OR=3.2 [2.1-5], p=0.002
Use of helmet	**OR=1.9** [1.2-4.3] p=0.04
Higher BORG	OR=1.7 [1.1-4.6], p=0.02

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OHD vs PPC

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RESPIRATORY CARE

Systematic Review

High-Flow Nasal Cannula Oxygen versus Non-Invasive Ventilation in Subjects with COVID-19: A Systematic Review and Meta-analysis of Comparative Studies

https://doi.org/10.4187/respcare.09987

Cite as: RESPCARE 2022; 10.4187/respcare.09987

Received: 21 January 2022
Accepted: 17 March 2022

Nineteen studies involving 3606 subjects (1880 received HFNC and 1726 received NIV) were included. There were no differences in intubation (RR 1.01, 95% CI 0.85-1.20, P=0.89) or LOS (MD 0.38 days, 95% CI -0.61, 1.37, P=0.45) between groups with consistent results on the subgroup of RCTs. Mortality was lower in NIV (RR 0.81, 95% CI 0.66-0.98, P=0.03). However, PI was 0.41-1.59, and subgroup analysis of RCTs showed no difference in mortality between groups. There was a greater improvement in PaO2/FiO2 ratio with NIV (MD 22.80, 95% CI 5.30-40.31, P=0.01).**Conclusions:** Our study showed that despite the greater improvement in PaO2/FiO2 ratio with NIV, the intubation and length of hospital stay were similar between HFNC and NIV. Although mortality was lower with HFNC than NIV, the prediction interval included the null value, and there was no difference in mortality between HFNC and NIV on a subgroup of RCTs. Future large-scale RCTs are necessary to prove our findings.

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Physiological Comparison of High-Flow Nasal Cannula and Helmet Noninvasive Ventilation in Acute Hypoxemic Respiratory Failure

Grieco. DL, Menga.LS et al. AJRCCM Volume 201, Issue 3 2019

Table 2. Main Results of the Study

	High-Flow Nasal Cannula	Helmet NIV	*P* Value	Mean Difference (95% CI)*
Gas exchange				
F_{IO_2}	0.50 (0.50 to 0.60)	0.50 (0.40 to 0.50)	0.008	−0.07 (−0.12 to −0.02)
Pa_{O_2}, mm Hg	69 (61 to 90)	108 (70 to 135)	0.001	34 (20 to 48)
Pa_{O_2}/F_{IO_2}, mm Hg	138 (101 to 172)	255 (140 to 299)	0.001	86 (56 to 115)
Sp_{O_2}, %	92 (90 to 94)	98 (92 to 99)	0.002	5 (3 to 6)
Sp_{O_2}/F_{IO_2}, %	178 (150 to 188)	198 (182 to 245)	0.001	32 (18 to 45)
Pa_{CO_2}, mm Hg	33 (29 to 35)	31 (28 to 36)	0.80	—
Self-assessed symptoms				
Dyspnea, VAS	8 (6 to 9)	3 (2 to 5)	0.002	−3 (−5 to −2)
Device-related discomfort, VAS	5 (3 to 7)	5 (2 to 6)	0.50	—
Respiratory mechanics				
PEEP, cm H_2O	2.5†	10 (10 to 10)	0.001	8 (7 to 8)
Mean airway expiratory pressure, cm H_2O	2.5†	13 (12 to 15)	0.001	10 (10 to 12)
Esophageal pressure, end-expiratory, cm H_2O	13 (10 to 17)	15 (14 to 21)	0.001	3 (2 to 5)
Transpulmonary pressure, end-expiratory, cm H_2O	−10 (−15 to −7)	−5 (−11 to −4)	0.001	5 (3 to 6)
Transpulmonary pressure, mean expiratory, cm H_2O	−10 (−15 to −7)	−2 (−8 to −1)	0.001	7 (6 to 8)
ΔP_{ES}, cm H_2O	15 (8 to 19)	7 (4 to 11)	0.001	−8 (−11 to −5)
ΔP_L, cm H_2O	15 (8 to 19)	18 (14 to 21)	0.11	—
Muscular inspiratory time, s	0.86 (0.78 to 1.07)	0.87 (0.49 to 1.25)	0.61	—
Muscular expiratory time, s	1.12 (0.96 to 1.35)	1.49 (1.29 to 1.63)	0.015	0.27 (0.06 to 0.47)
Respiratory rate, breaths/min	29 (26 to 32)	24 (23 to 31)	0.027	−3 (−6 to −1)
P_{ES}-simplified pressure–time product per minute, cm $H_2O \cdot s \cdot min^{-1}$	200 (168 to 335)	93 (43 to 138)	0.001	−150 (−228 to −71)
Hemodynamics				
Heart rate, beats/min	93 (87 to 110)	89 (79 to 109)	0.26	—
Systolic arterial pressure, mm Hg	140 (130 to 150)	130 (117 to 144)	0.06	—
Diastolic arterial pressure, mm Hg	73 (60 to 80)	62 (55 to 80)	0.19	—
Mean arterial pressure, mm Hg	100 (85 to 103)	86 (71 to 107)	0.14	—

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Décubitus **V**entral **V**igile

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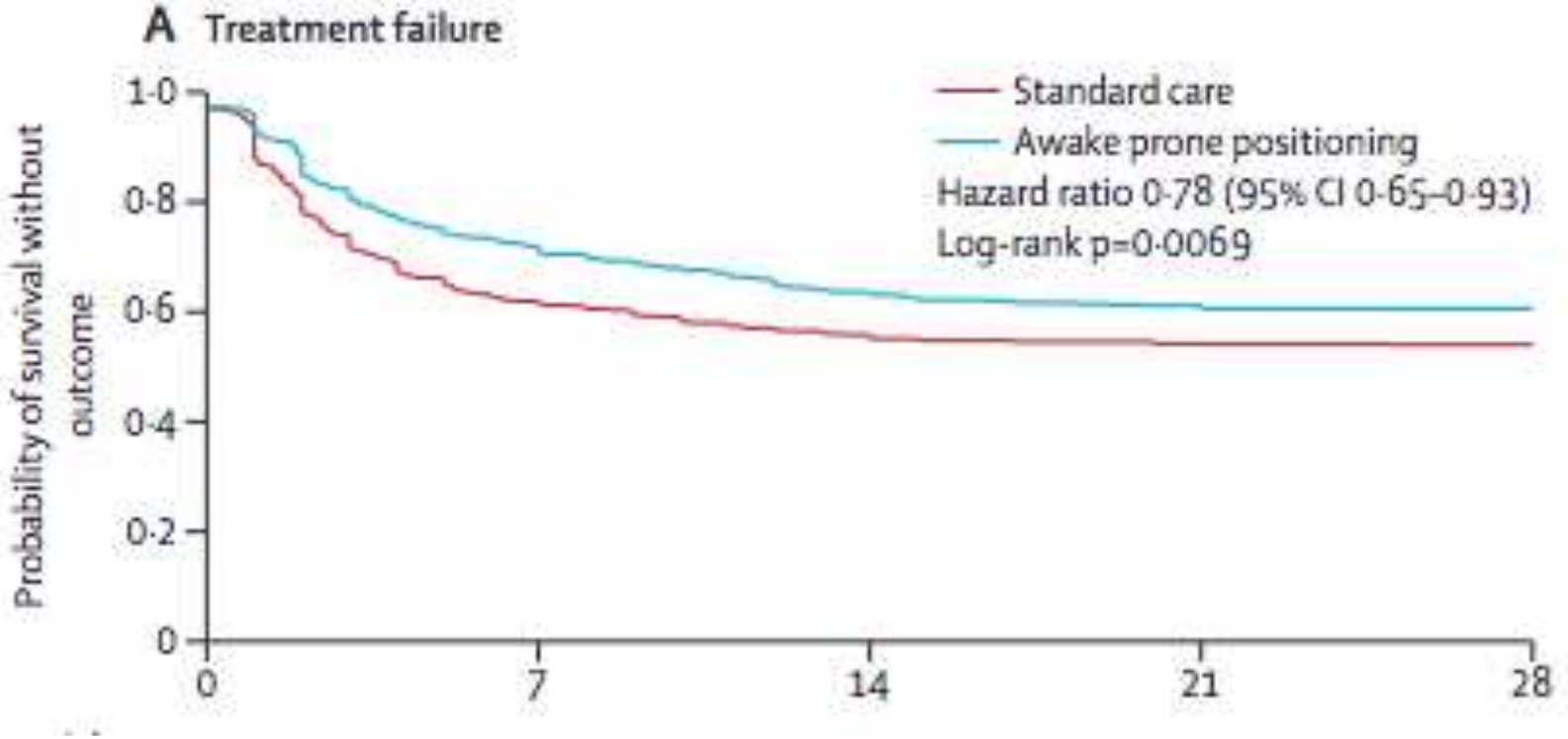
Awake prone positioning for COVID-19 acute hypoxaemic respiratory failure: a randomised, controlled, multinational,open-label meta-trial

Stephan Ehrmann*, Jie Li* et al.

the lancet Vol 9 December 2021



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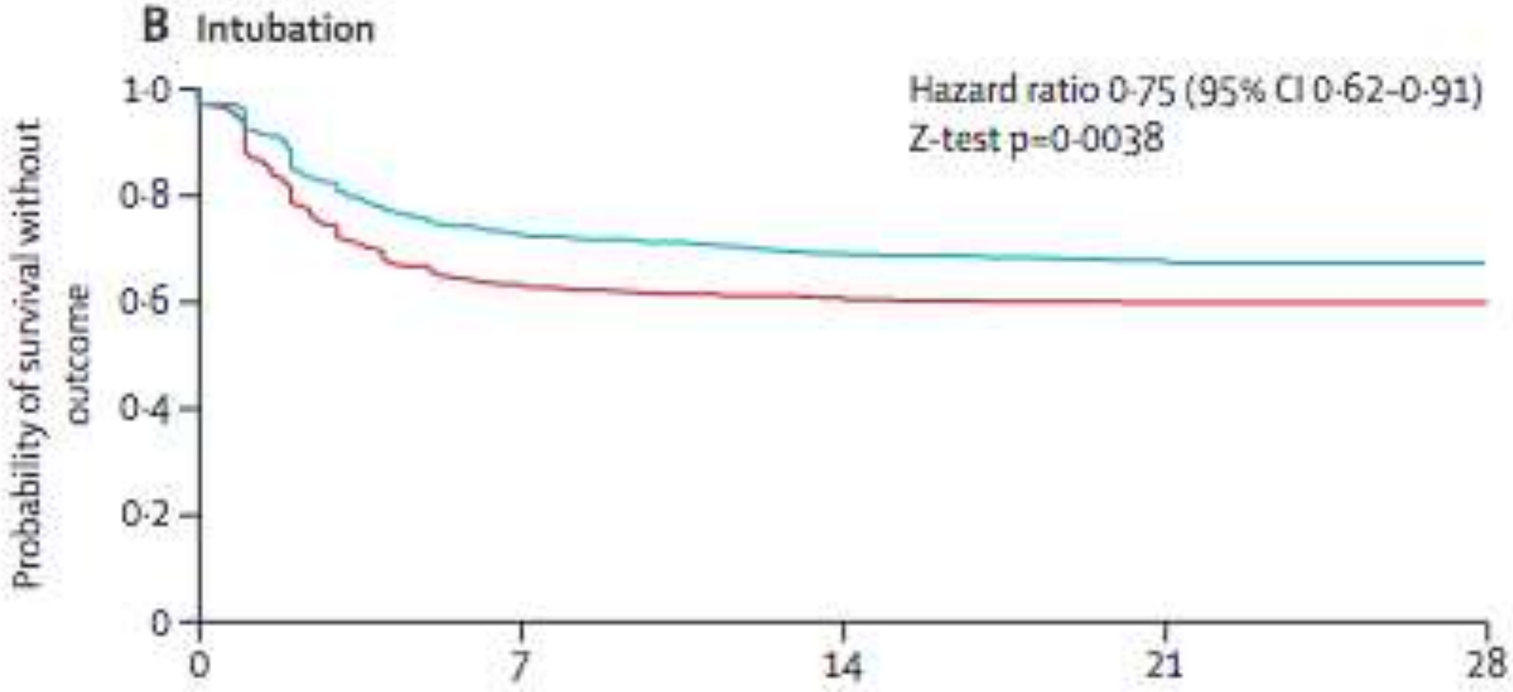

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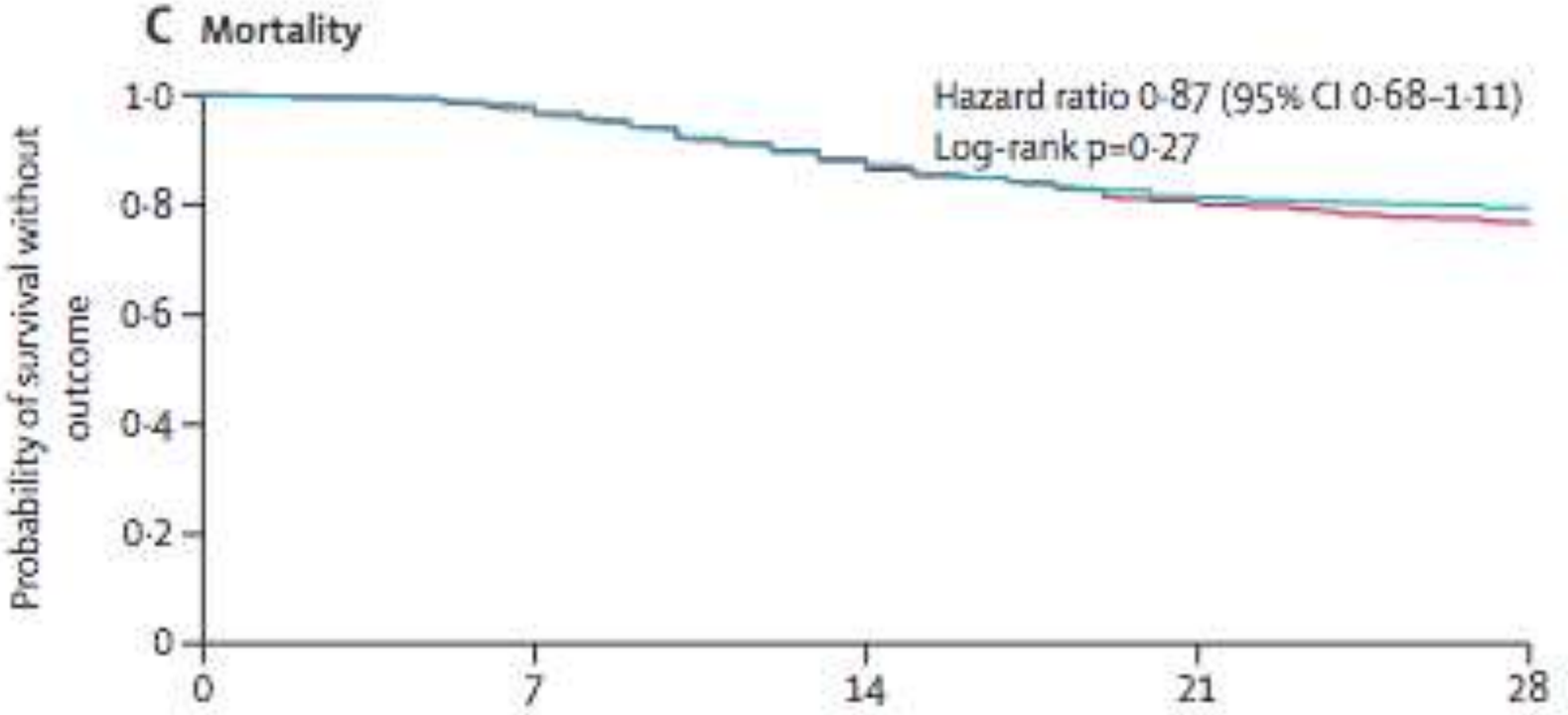

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	Awake prone positioning group (n=564)	Standard care group (n=557)	RR (95% CI), HR (95% CI), or mean difference (95% CI)
Primary outcome			
Treatment failure at day 28 (intubation or death)	223/564 (40%)	257/557 (46%)	RR 0·86 (0·75 to 0·98)
Secondary outcomes			
Intubation rate at day 28	185/564 (33%)	223/557 (40%)	..
Mortality at day 28			
All patients	[illegible]/564 (21%)	132/557 (24%)	RR 0·87 (0·71 to 1·07)
Invasively mechanically ventilated patients	79/185 (43%)	98/223 (44%)	
Time to event analysis, median days*			
Treatment failure (intubation or death)	2·0 (1·0 to 4·3)	2·0 (1·0 to 3·8)	HR 0·78 (0·65 to 0·93)
Intubation	2·3 (1·3 to 5·0)	2·0 (1·0 to 3·8)	HR 0·75 (0·62 to 0·91)
Death	12·0 (9·0 to 17·0)	14·0 (9·8 to 19·0)	HR 0·87 (0·68 to 1·11)
Non-invasive ventilation, intubation or death	3·0 (1·0 to 7·4)	2·3 (1·0 to 5·0)	HR 0·79 (0·67 to 0·94)
Weaning of high-flow nasal cannula	6·9 (3·3 to 9·2)	6·0 (3·0 to 9·8)	HR 1·19 (1·01 to 1·39)
Mean duration, days			
Hospital length of stay	16·4 (10·5)	16·5 (9·7)	Mean difference −0·2 (−1·3 to 1·0)
Mechanical ventilation among intubated patients who survived until day 28	12·4 (9·0)	12·4 (8·4)	Mean difference 0·2 (−1·9 to 2·3)
Safety outcomes			
Skin breakdown	8 (1%)	10 (2%)	..
Vomiting	15 (3%)	18 (3%)	..
Central or arterial line dislodgement	26 (5%)	17 (3%)	..
Cardiac arrest at any time†	3 (1%)	1 (0%)	..

Analytic review and meta-analysis of awake prone positioning in patients with Covid-19

Revisión analítica y meta-análisis de prono vigil en pacientes con Covid-19

R. Santa Cruz[a,b], C. Irrazábal[c], L. Gonzalez[b], A. Geloso[a], C. Nuñez[b], R. Cornejo[d]

Study or Subgroup	Awake prone positioning Events	Total	Usual Care Events	Total	Weight	Risk Ratio M-H, Fixed, 95% CI
Ehrmann/Multicenter	185	564	223	557	89.2%	0.82 [0.70, 0.96]
Gad/Egypt	3	15	3	15	1.2%	1.00 [0.24, 4.18]
Jayakumar/India	4	30	4	30	1.6%	1.00 [0.28, 3.63]
Johnson/USA	2	15	1	15	0.4%	2.00 [0.20, 19.78]
Rosén/Sweden	12	36	13	39	5.0%	1.00 [0.53, 1.90]
Sryma/India	2	30	5	15	2.7%	0.20 [0.04, 0.91]
Taylor/USA	0	27	0	13		Not estimable
Total (95% CI)		717		684	100.0%	**0.82 [0.71, 0.95]**
Total events	208		249			

Heterogeneity: Chi² = 4.43, df = 5 (P = 0.49); I² = 0%
Test for overall effect: Z = 2.60 (P = 0.009)

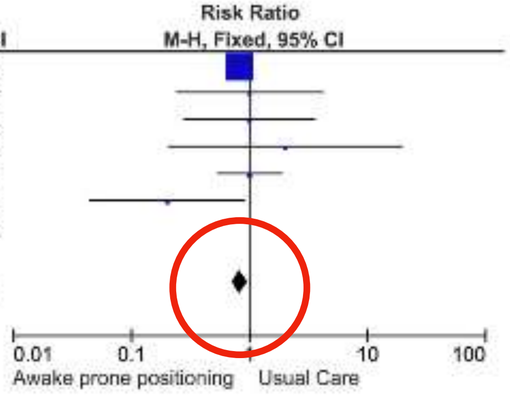

Figure 1 Intubation rate. Forest plot of comparisons between APP and UC.

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Study or Subgroup	Awake prone positioning Events	Total	Usual care Events	Total	Weight	Risk Ratio M-H, Fixed, 95% CI
Ehrmann/Multicenter	117	564	132	557	90.6%	0.88 [0.70, 1.09]
Gad/Egypt	3	15	3	15	2.0%	1.00 [0.24, 4.18]
Jayakumar/India	3	30	2	30	1.4%	1.50 [0.27, 8.34]
Johnson/USA	2	15	0	15	0.3%	5.00 [0.26, 96.13]
Rosén/Sweden	6	36	3	39	2.0%	2.17 [0.58, 8.03]
Sryma/India	2	30	4	15	3.6%	0.25 [0.05, 1.21]
Taylor/USA	0	27	0	13		Not estimable
Total (95% CI)		717		684	100.0%	**0.90 [0.73, 1.11]**
Total events	133		144			

Heterogeneity: Chi² = 5.97, df = 5 (P = 0.31); I² = 16%
Test for overall effect: Z = 0.96 (P = 0.34)

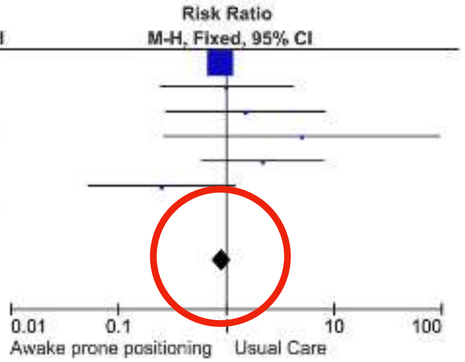

Figure 2 Mortality. Forest plot of comparisons between APP and UC.

Ministry of Health & Family Welfare
Government of India

Help us to help you

COVID-19

Proning for Self care

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For Self-Proning:

- You will need 4-5 Pillows.
- Regular alterations in lying position
- Best is to not spend more than 30 minutes in each position

1. 30 minutes – 2 hours: laying on your belly

2. 30 minutes – 2 hours: laying on your right side

3. 30 minutes – 2 hours: sitting up

4. 30 minutes – 2 hours: lying on your left side

Then back to Position 1. Lying on your belly!

Self Positioning Guide_Elmhurst Hospital_SK

En Résumé…

- Couvrir les besoins du patient
- Préférer l’OHD à la PPC ?
- Confort du malade
- Surveillance +++ (monitoring)
- Ne pas retarder l’intubation
- Score ROX

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