SITA

Società Italiana di Terapia Antinfettiva
Antibatterica Antivirale Antifungina

12° CONGRESSO NAZIONALE

CATANIA | 17-18 novembre 2022

Oxygen supply in COVID-19 Respiratory Insufficiency: what we learned from a 3-year pandemic

Francesco Amati

Assistant Professor

IRCCS Humanitas Research Hospital

Conflitto di interessi

DICHIARAZIONE AI SENSI DELLA LEGGE 24 Nov 2003, N. 326- ART 48 comma 25 AUTOCERTIFICAZIONE 2022
Ai sensi dell'art. 76.4 sul Conflitto di Interessi dell'Accordo Stato-Regione del 2 febbraio 2017

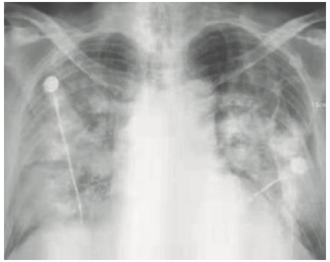
Nessun conflitto di interesse da dichiarare riguardo questa presentazione

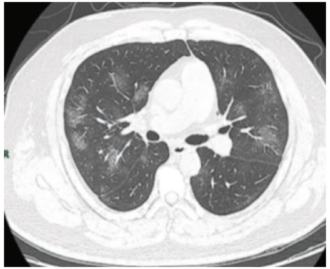
COI: My COVID-19 Background

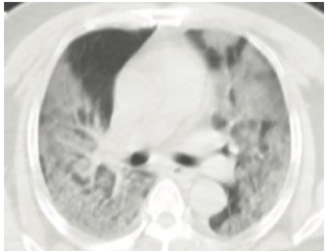
- Policlinico Hospital, Milan, Italy
- Opened March 11, 2020
- COVID-19 HDU
- 43 beds
- hARF COVID19 patients
- CPAP, NIV, HFNC, ETI
- Multidisciplinary team

Aliberti S et al. Respir Res. 2020 Oct 9;21(1):260

Clinical picture of ARF due to COVID-19 pneumonia in 2020…







- Severe hypoxemia
- Hypocapnia
- Low-grade dyspnea

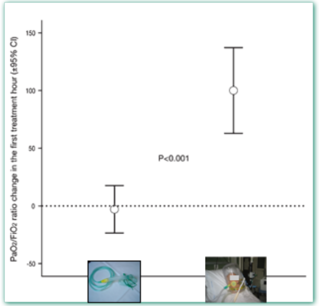
- TEP frequently associated

Rationale: CPAP in ARF due to pneumonia

CAPOVERSO

CHEST Original Research
COMMUNITY-ACQUIRED PNEUMONIA

Helmet Continuous Positive Airway Pressure vs Oxygen Therapy To Improve Oxygenation in Community-Acquired Pneumonia



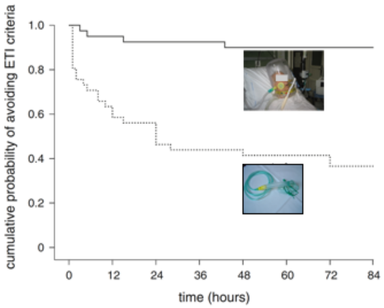
- 47 CAP patients
- P/F 210-285
- CPAP vs VM
- Objective: P/F > 315

Cosentini R. Chest 2010; 138:114

SCAPOVERSO

Intensive Care Med
DOI 10.1007/s00134-014-3325-5
ORIGINAL

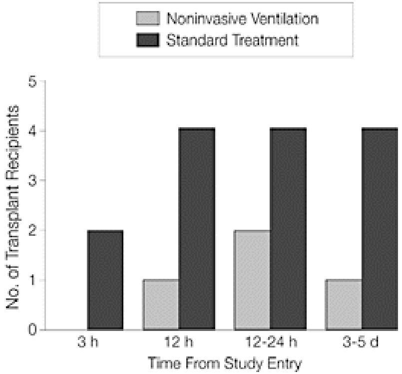
Helmet CPAP vs. oxygen therapy in severe hypoxemic respiratory failure due to pneumonia

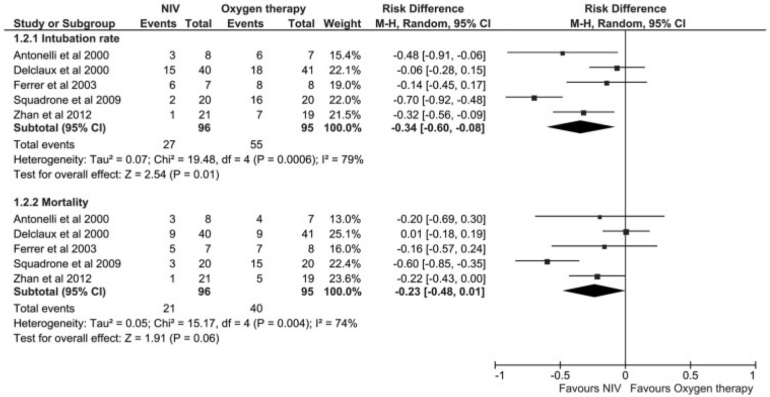


- 81 pts with hARF due to pneumonia (P/F: 140)
- ETI Criteria
  15% CPAP vs. 63% VM
  p<0.001; NNT: 2

Brambilla AM. Intensive Care Med 2014; 40:942

Rationale: CPAP in ARDS





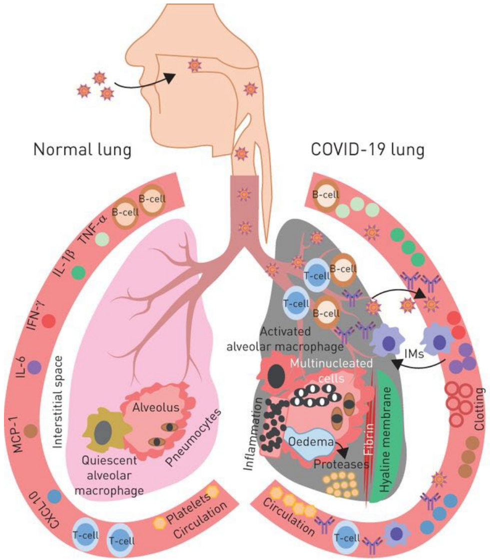
- 40 haemotological malignancy pts with ARDS
- Intubation required in 70% of the standard treatment group vs 20%) in the CPAP group(*P* = .002)

Antonelli; JAMA 2000

Pooled analysis demonstrated superiority of CPAP over standard treatment with oxygen supplementation

Sehgal; Ann Transl Med. 2016 Sep; 4(18): 349.

CPAP in COVID-19 ARF



Lymphopenia ↑
(CD4+ T, CD8+ T, NK and B-cell number) ↓

Lymphocyte activation and dysfunction
Cytokine production, TNF-α, INF-γ, IL-2 ↑

T-cells exhaustion markers
(PD-1, TIM3, NKG2A) ↑

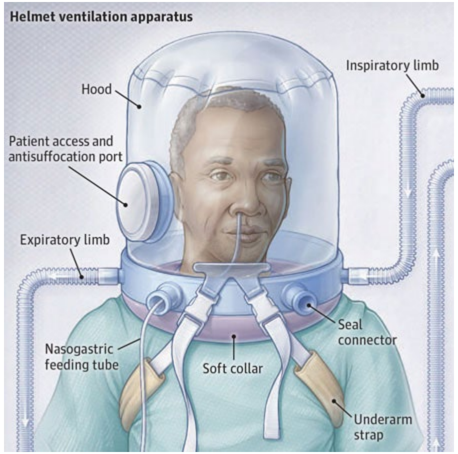
Granulocytes
Neutrophil ↑ Eosinophil ↓ Basophils ↓

Monocytes ↓

Cytokine storm ↑
Inflammatory cytokines, IL-1β, IL-2, IL-6, IL-7, IL-8, IL-10; G-CSF, GM-CSF, IP10, MCP1, IFY-γ and TNF-α

Complement activation
(C3a, C5a, C5b–9) ↑

Antibodies
(IgM and IgG) ↑



ERJ Open Research 2020 6: 00405-2020

CPAP in COVID-19 ARF

Helmet CPAP treatment in patients with COVID-19 pneumonia: a multicentre cohort study

- Multicentric, observational, prospective study
- 7 March 2020 and 21 April 2020

Indications for helmet CPAP included all of the following:
- a diagnosis of pneumonia **as the only cause** of hARF
- **P/F ratio <300** evaluated during oxygen therapy

The primary outcome
- **CPAP failure** defined as the occurrence of **either intubation or death** due to any cause during HDU stay

Aliberti; ERJ 2020 56: 2001935;

CPAP in COVID-19 ARF

Helmet CPAP treatment in patients with COVID-19 pneumonia: a multicentre cohort study

157 patients, median age: 64, median (IQR) P/F ratio 143

- An **increase of at least 30% in P/F ratio** during helmet CPAP application in comparison to oxygen therapy **was found only in 52% of the population**
- Median duration of helmet CPAP treatment: **6 days**

CPAP failure was observed in 70 **(44.6%)** patients:

- 34 (21.7%) were intubated
- 36 (22.9%) died during the HDU stay

Aliberti; ERJ 2020 56: 2001935;

CPAP in COVID-19 ARF

Helmet CPAP treatment in patients with COVID-19 pneumonia: a multicentre cohort study

At the **multivariable analysis** (adjusted for sex, age, severe community-acquired pneumonia, interleukin-6, and ΔP aO2 /FIO2 ratio ⩾30%), **CPAP failure** was associated with:

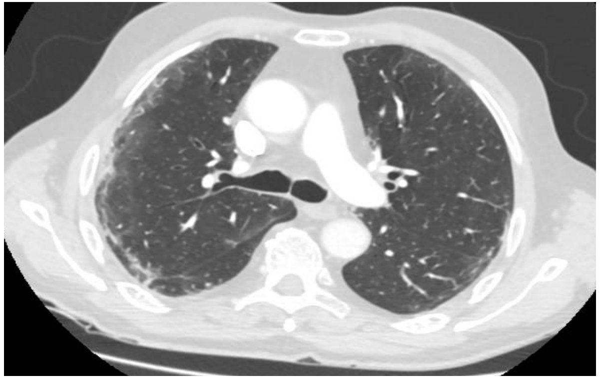
- **severity of pneumonia on admission** (HR (95%CI) 2.9 (1.3–6.2), p=0.009)
- **higher baseline values of interleukin-6** (HR (95%CI) 1.0 (1.0–1.0), p<0.009)

- All-cause in-hospital mortality: 28.7%

Aliberti; ERJ 2020 56: 2001935;

Different phenotypes or COVID-19 evolution?

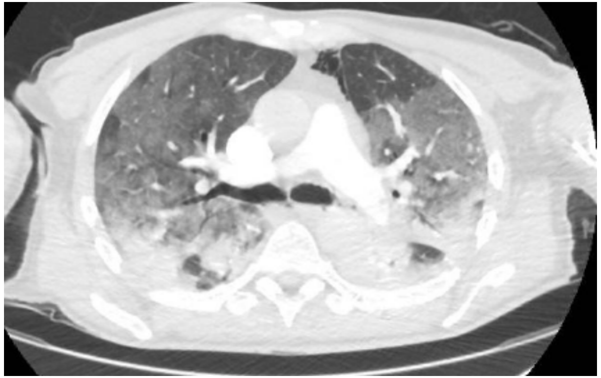
Type L



P-SILI

COVID-19 Evolution

Type H

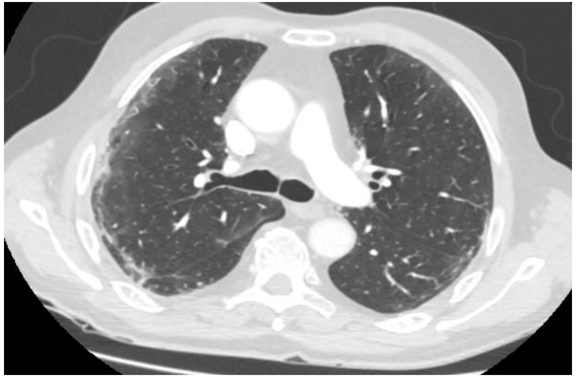


Type L		Type H
Low	V/Q Ratio	High
Low	Lung weight	High
High	Recruitability	Low

Gattinoni et al. Intensive Care Med 2020

Different phenotypes or COVID-19 evolution?

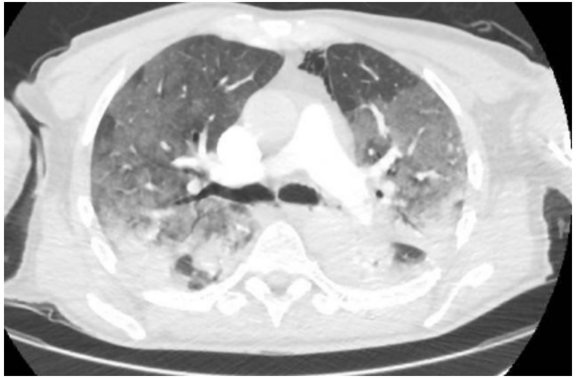
Type L



P-SILI

COVID-19 Evolution

Type H



TREATMENT:

- **Increase FiO2**: low flow oxygen nasal cannula, Venturi Mask, Non rebreather mask
- **Non invasive support:** high-fow nasal cannula (HFNC), continuous positive airway pressure (CPAP), noninvasive ventilation (NIV).

TREATMENT:

- **Treat as severe ARDS**, including higher PEEP, if compatible with hemodynamics, prone positioning and extracorporeal support.

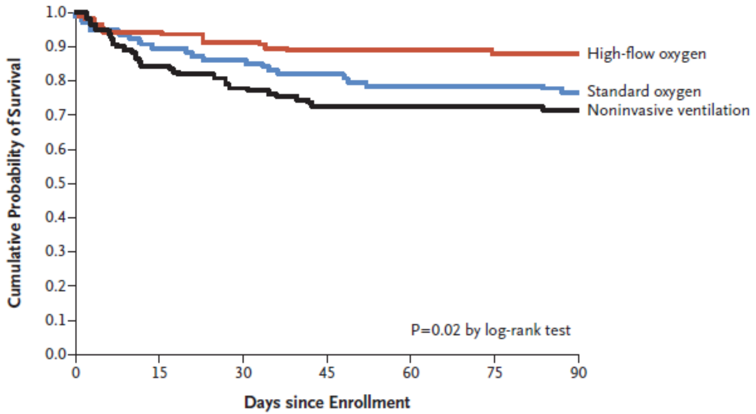
Gattinoni et al. Intensive Care Med 2020

HFNC in ARF

High-Flow Oxygen through Nasal Cannula in Acute Hypoxemic Respiratory Failure

Jean-Pierre Frat, M.D., Arnaud W. Thille, M.D., Ph.D., Alain Mercat, M.D., Ph.D., Christophe Girault, M.D., Ph.D., Stéphanie Ragot, Pharm.D., Ph.D., Sébastien Perbet, M.D., Gwénael Prat, M.D., Thierry Boulain, M.D.,

- 310 pz
- RR >25 a/min; PaO2/FiO2 ≤300, PaCO2 ≤45 mmHg
- No chronic respiratory diseases



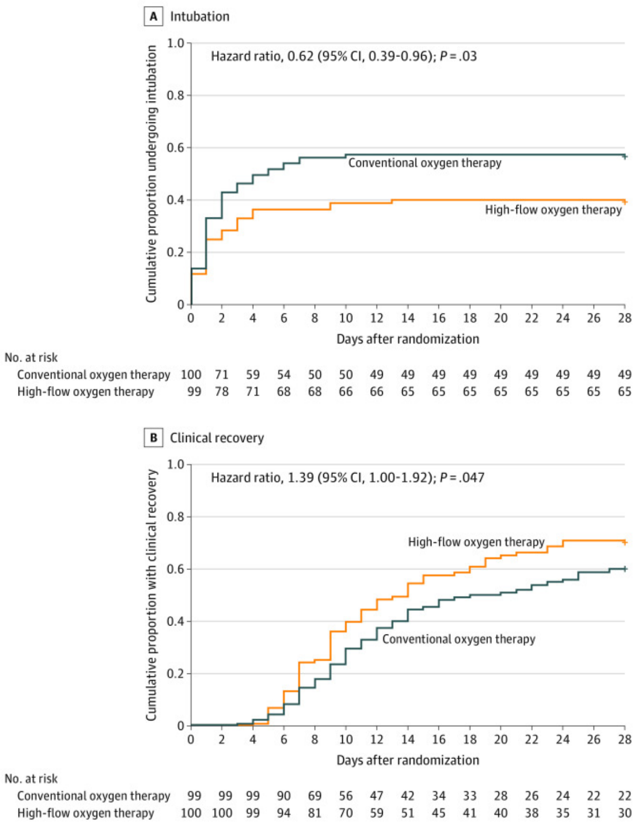
No. at Risk							
High-flow oxygen	106	100	97	94	94	93	93
Standard oxygen	94	84	81	77	74	73	72
Noninvasive ventilation	110	93	86	80	79	78	77

Figure 3. Kaplan–Meier Plot of the Probability of Survival from Randomization to Day 90.

N Engl J Med 2015;372:2185-96.

HFNC in COVID-19 ARF

- Adult patients with **ARF (Pao_2/Fio_2 <200)**
- Clinical signs of **respiratory distress** (e.g.: use of accessory muscles and respiratory rate greater than 25/min
- Less than 6 hours elapsed since fulfilling the criteria of ARF

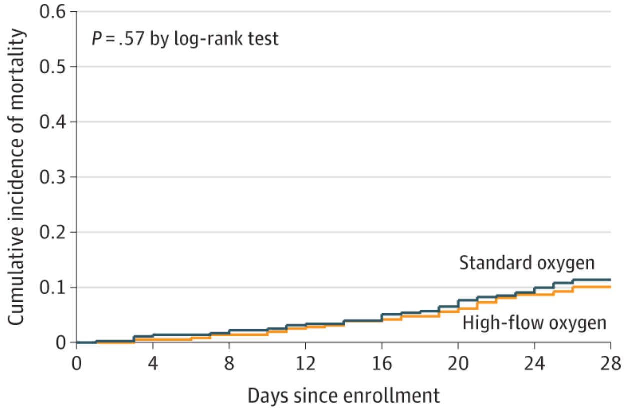


Ospina-Tascon; JAMA 2021 Dec 7; 326(21): 1–11.

HFNC in COVID-19 ARF

- Adult patients with **ARF (Pao_2/Fio_2 <200)**
- **Pulmonary inflitrates**
- Less than 6 hours elapsed since fulfilling the criteria of ARF

A Cumulative incidence of mortality (primary outcome)



No. at risk								
High-flow oxygen	357	355	352	348	343	337	326	321
Standard oxygen	354	349	347	342	337	328	319	311

Frat; JAMA. 2022;328(12):1212-1222.

Prone positioning

The New England Journal of Medicine

EFFECT OF PRONE POSITIONING ON THE SURVIVAL OF PATIENTS WITH ACUTE RESPIRATORY FAILURE

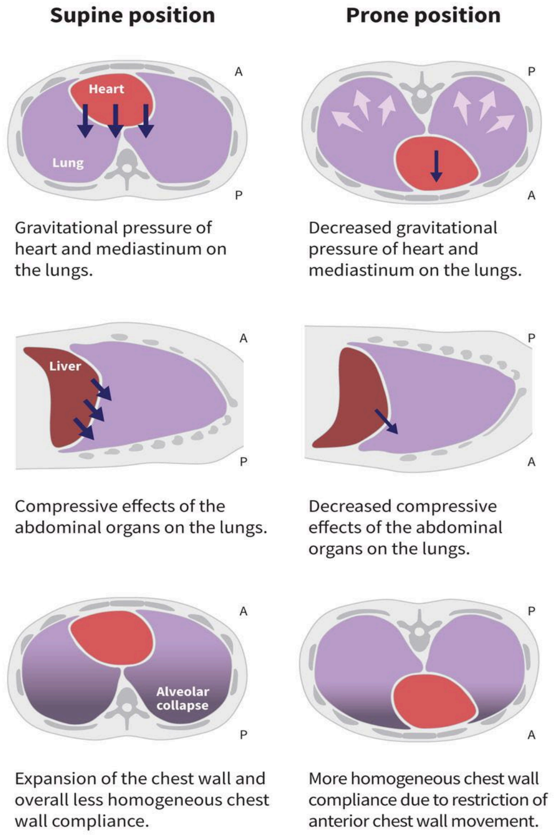
LUCIANO GATTINONI, M.D., GIANNI TOGNONI, M.D., ANTONIO PESENTI, M.D., PAOLO TACCONE, M.D., DANIELE MASCHERONI, M.D., VIOLETA LABARTA, M.S., ROBERTO MALACRIDA, M.D., PAOLA DI GIULIO, R.N., M.S.C., ROBERTO FUMAGALLI, M.D., PAOLO PELOSI, M.D., LUCA BRAZZI, M.D., AND ROBERTO LATINI, M.D., FOR THE PRONE–SUPINE STUDY GROUP*

The NEW ENGLAND JOURNAL of MEDICINE

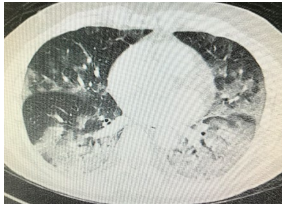
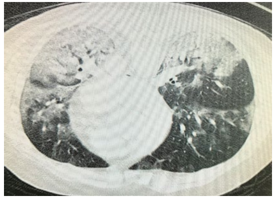
ESTABLISHED IN 1812 JUNE 6, 2013 VOL. 368 NO. 23

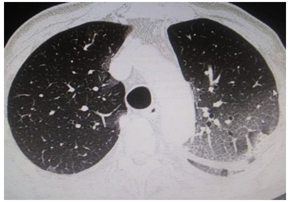
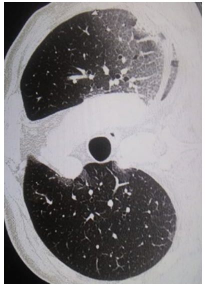
Prone Positioning in Severe Acute Respiratory Distress Syndrome

Claude Guérin, M.D., Ph.D., Jean Reignier, M.D., Ph.D., Jean-Christophe Richard, M.D., Ph.D., Pascal Beuret, M.D., Arnaud Gacouin, M.D., Thierry Boulain, M.D., Emmanuelle Mercier, M.D., Michel Badet, M.D., Alain Mercat, M.D., Ph.D., Olivier Baudin, M.D., Marc Clavel, M.D., Delphine Chatellier, M.D., Samir Jaber, M.D., Ph.D., Sylvène Rosselli, M.D., Jordi Mancebo, M.D., Ph.D., Michel Sirodot, M.D., Gilles Hilbert, M.D., Ph.D., Christian Bengler, M.D., Jack Richecoeur, M.D., Marc Gainnier, M.D., Ph.D., Frédérique Bayle, M.D., Gael Bourdin, M.D., Véronique Leray, M.D., Raphaele Girard, M.D., Loredana Baboi, Ph.D., and Louis Ayzac, M.D., for the PROSEVA Study Group*



Prone and lateral positioning for awake, non-intubated patients with COVID-19 pneumonia

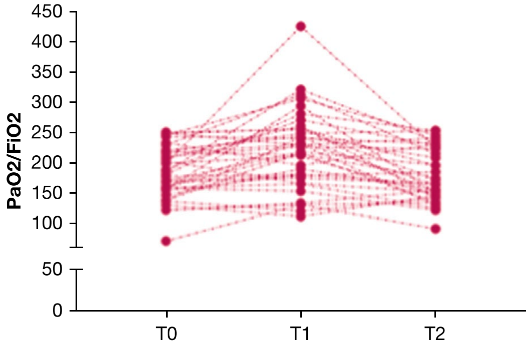



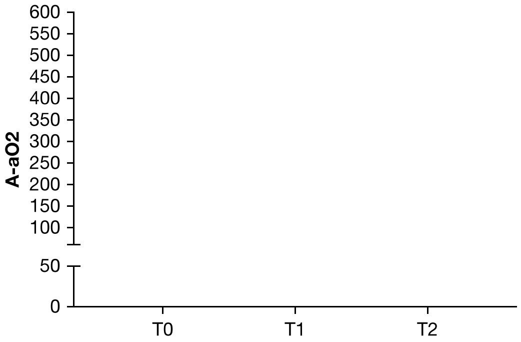





Prone positioning

Prone and Lateral Positioning in Spontaneously Breathing Patients With COVID-19 Pneumonia Undergoing Noninvasive Helmet CPAP Treatment

- A pilot, observational, prospective study
- March and April 2020
- **PaO2:FIO2** ratio during helmet CPAP treatment was persistently **<250 after at least 48 hours**
- Prone or lateral positioning **(at least 1 hour)**
- CPAP with a median P/F ratio of 180 and A-aO2 of 207





Retucci M. Chest. 2020 Dec;158(6):2431-2435

Prone positioning

Prone and Lateral Positioning in Spontaneously Breathing Patients With COVID-19 Pneumonia Undergoing Noninvasive Helmet CPAP Treatment

The primary outcome was the **success of the prone/lateral positioning trial,** defined as the occurrence of all of the following criteria at T1 in comparison with T0:

1. a decrease of the alveolar–arterial gradient (A-aO2) of at least 20%
2. Equal or reduced respiratory rate
3. Equal or reduced dyspnea (BORG scale)
4. SBP >=90 mm Hg.

15% of trials were successful:

- The median decrease of A-aO2 of 20%
- 7.7% showed a A-aO2 decrease of at least 30% in comparison with baseline values
- 46% showed a decrease of <20% of A-aO2

38% of trials failed

Retucci M. Chest. 2020 Dec;158(6):2431-2435

Prone positioning

Prone and Lateral Positioning in Spontaneously Breathing Patients With COVID-19 Pneumonia Undergoing Noninvasive Helmet CPAP Treatment

The primary outcome was the **<u>success of the prone/lateral positioning trial,</u>** defined as the occurrence of <u>all of the following criteria</u> at T1 in comparison with T0:

1. a decrease of the alveolar–arterial gradient (A-aO2) of at least 20%
2. Equal or reduced respiratory rate
3. Equal or reduced dyspnea (BORG scale)
4. SBP >=90 mm Hg.

Prone positioning:

- 33% trials succeeded
- 41% trials showed a decreased A-aO2 (<20%)
- 25% trials failed

Lateral positioning:

- 8% trials succeeded

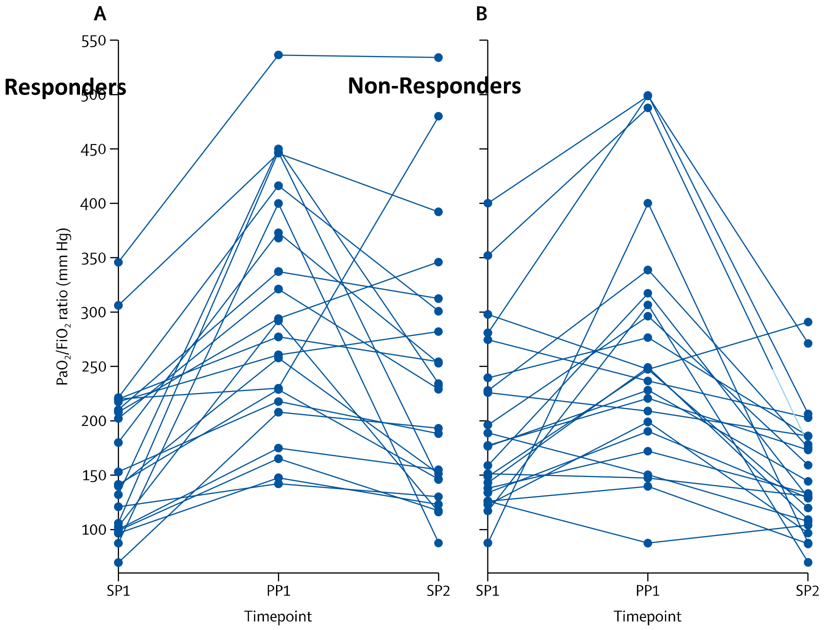
  52% trials showed a decrease of A-aO2 (<20%)
- 40% trials failed

Retucci M. Chest. 2020 Dec;158(6):2431-2435

Prone positioning

Feasibility and physiological effects of prone positioning in non-intubated patients with acute respiratory failure due tc COVID-19 (PRON-COVID): a prospective cohort study

- 56 adults patients with COVID-19 pneumonia
- Supplemental oxygen or non-invasive continuous positive airway pressure
- Prone positioning was **feasible in 84%**
- **PaO_2/FiO_2 ratio 180 →285, p<0.0001**



- After resupination, improved oxygenation was **maintained in 50%** but not significant
- **No difference in rates of intubation** was seen in those who maintained oxygenation (responders) compared with those who did not (non-responders).

Lancet Respir Med 2020; 8: 765–74

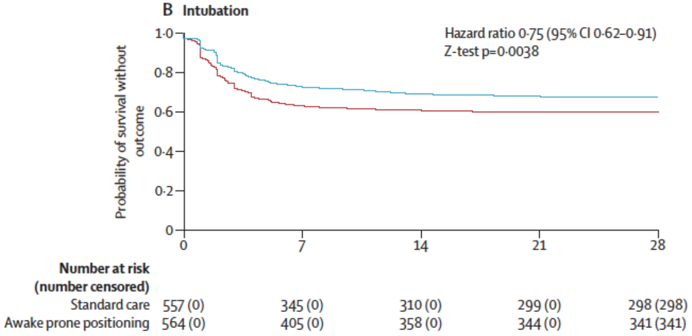
Prone positioning

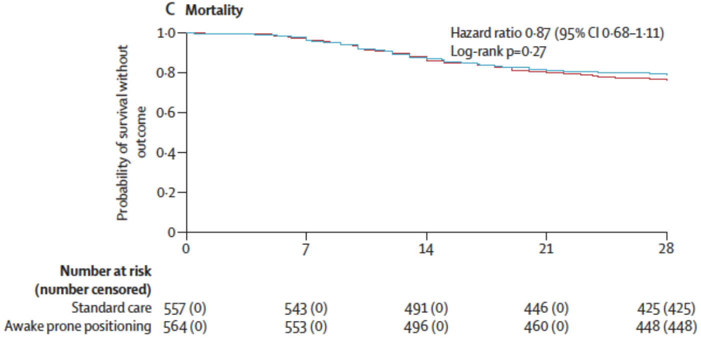
Awake prone positioning for COVID-19 acute hypoxaemic respiratory failure: a randomised, controlled, multinational, open-label meta-trial

- Prospective, meta-trial of **six open-label superiority RCTs**
- Adults who required respiratory support with HFNC for **hARF** due to COVID-19
- **Awake prone positioning vs standard care**
- **Primary composite outcome:** treatment failure, defined as the proportion of patients intubated or dying within 28 days of enrolment
- 1126 patients

Lancet Respir Med 2021
Published Online
August 20, 2021

Prone positioning





	Awake prone positioning group (n=564)	Standard care group (n=557)	RR (95% CI), HR (95% CI), or mean difference (95% CI)
Secondary outcomes			
Intubation rate at day 28	185/564 (33%)	223/557 (40%)	..
Mortality at day 28			
All patients	117/564 (21%)	132/557 (24%)	RR 0·87 (0·71 to 1·07)
Invasively mechanically ventilated patients	79/185 (43%)	98/223 (44%)	..

Lancet Respir Med 2021

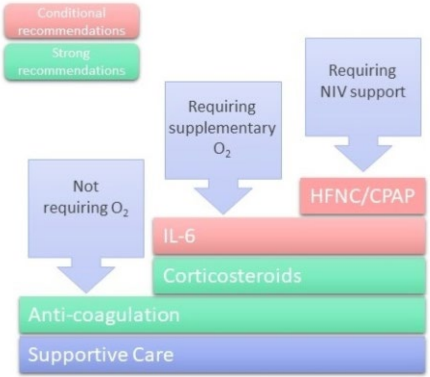
Published Online
August 20, 2021

14 patients needed to be treated with awake prone positioning to avoid one intubation

Prone positioning

Management of hospitalised adults with coronavirus disease-19 (COVID-19): A European Respiratory Society living guideline

James D. Chalmers, Megan L. Crichton, Pieter C. Goeminne, Bin Cao, Marc Humbert, Michal Shteinberg, Katerina M. Antoniou, Charlotte Suppli Ulrik, Helen Parks, Chen Wang, Thomas Vandendriessche, Jieming Qu, Daiana Stolz, Christopher Brightling, Tobias Welte, Stefano Aliberti, Anita K. Simonds, Thomy Tonia, Nicolas Roche



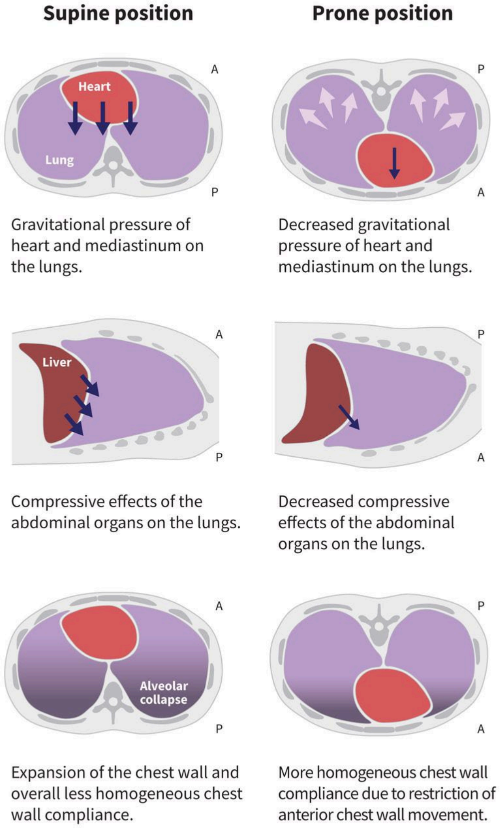
PICO 11: In patients with hospitalised COVID-19 should continuous positive airway pressure or high flow nasal cannula oxygen with or without adjunctive strategies such as prone positioning be used versus standard of care (defined as the absence of these interventions or invasive mechanical ventilation)?

Recommendation: We suggest high flow nasal cannula oxygen (HFNC) or non-invasive continuous positive airway pressure (CPAP) delivered through either a helmet or a face-mask for patients with COVID-19 and hypoxaemic acute respiratory failure in the absence of immediate indications for invasive mechanical ventilation (conditional recommendation, very low quality of evidence)

Notes accompanying this recommendation: HFNC and non-invasive CPAP are classified as aerosol generating and should therefore be delivered in a safe environment with staff wearing appropriate personal protecting equipment

HFNC and non-invasive CPAP should not delay mechanical ventilation in patients who are not responding to treatment

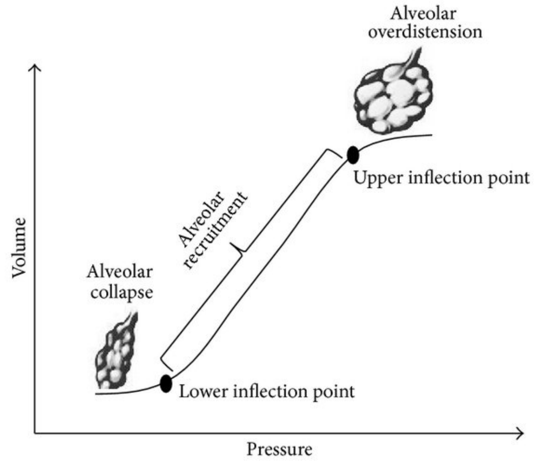
Prone positioning may improve oxygenation in non-intubated patient with acute hypoxaemic respiratory failure and is widely used for mechanically ventilated patients with COVID-19.

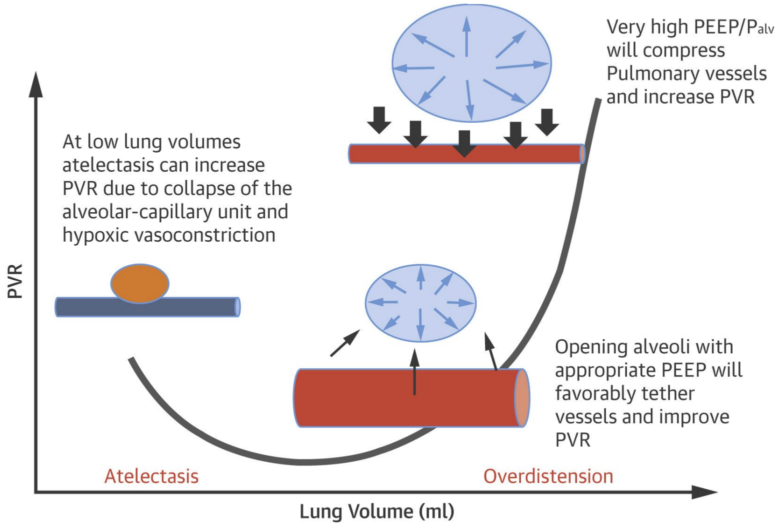


CMAJ November 23, 2020 192 (47) E1532-E1537;

ZEEP-PEEP Test

- To identify the **lowest PEEP**
- Recruitment vs. Over distention
- **Changes over time**
- Hemodynamic and Respiratory parameters



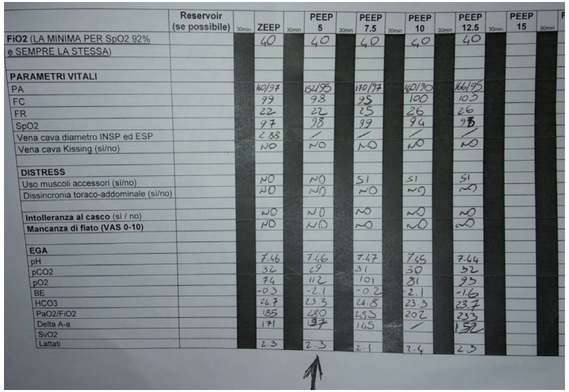


ZEEP-PEEP Test

- Consecutive adults (≥18 years) with **hARF** and with an indication for helmet CPAP

- Indications for helmet CPAP treatment:
  1. Diagnosis of COVID-19 **pneumonia as the only cause** of hARF
  2. **P/F <300**

- Standardized and non-invasive lung recruitability test (LRT) through the evaluation of **vitals and blood gas analysis parameters every 30 minutes** at **different PEEP values** (0–baseline-, 2.5, 5, 7.5, 10, 12.5, and 15 cmH2O)



	Reservoir (se possibile)	30min	ZEEP	30min	PEEP 5	30min	PEEP 7.5	30min	PEEP 10	30min	PEEP 12.5	30min	PEEP 15	30min
FiO2 (LA MINIMA PER SpO2 92% e SEMPRE LA STESSA)			40		40		40		40		40			
PARAMETRI VITALI														
PA			160/97		152/95		170/97		160/90		166/95			
FC			99		98		95		100		103			
FR			22		22		25		26		26			
SpO2			97		98		99		94		9[illegible]			
Vena cava diametro INSP ed ESP			2.88		/		/		/		/			
Vena cava Kissing (si/no)			NO		NO		NO		NO		NO			
DISTRESS														
Uso muscoli accessori (si/no)			NO		NO		SI		SI		SI			
Dissincronia toraco-addominale (si/no)			NO		NO		NO		NO		NO			
Intolleranza al casco (si / no)			NO		NO		NO		NO		NO			
Mancanza di fiato (VAS 0-10)			NO		NO		NO		NO		NO			
EGA														
pH			7.46		7.46		7.47		7.45		7.44			
pCO2			32		29		31		30		32			
pO2			74		112		101		81		93			
BE			-0.3		-2.1		-0.2		-2.1		-1.6			
HCO3			24.7		23.3		24.8		23.3		23.7			
PaO2/FiO2			185		280		253		202		233			
Delta A-a			171		137		145		/		152			
SvO2														
Lattati			2.3		2.3		2.1		2.4		2.3			

Lung Recruitability of COVID-19 Pneumonia in Patients Undergoing Helmet CPAP

Amati F; Arch Bronconeumol. 2021 Jan;57:92-94.

ZEEP-PEEP Test

Successful LTR was defined as the occurrence of all the following:
(1) A decrease of the alveolar-arterial gradient (A-aO2) of at least 20% compared to baseline
(2) Equal or reduced respiratory rate (RR) compared to baseline
(3) Absence of hemodynamic instability
(4) Equal or increase SpO2 values compared to baseline
(5) Absence of patient's discomfort

Failure of LRT was defined as the occurrence of at least one of the following before reaching success criteria:
(1) An increase in RR compared to baseline
(2) An increase of A-aO2 compared to baseline
(3) hemodynamic instability
(4) SpO2 <90%
(5) Respiratory distress
(6) Patient's discomfort.

Partial success of LTR was defined by all the criteria mentioned above but decrease of A-aO2 less than 20%

Amati F; Arch Bronconeumol. 2021 Jan;57:92-94.

ZEEP-PEEP Test

RESULTS

LRT was successful in 9 (26.5%) patients

60% at 10 cmH2O

Partial success of LRT occurred in 17 (50%) patients

LTR failed in 8 (23.5%) patients

- hemodynamic instability (14.7%)
- respiratory distress (2.9%)
- increase in RR (5.9%)

Lung Recruitability of COVID-19 Pneumonia in Patients Undergoing Helmet CPAP

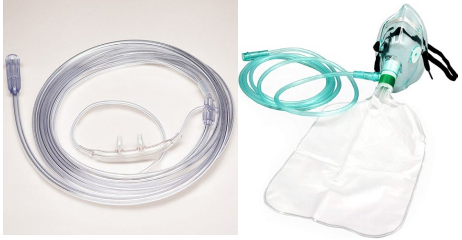
Amati F; Arch Bronconeumol. 2021 Jan;57:92-94.

Bottom line...

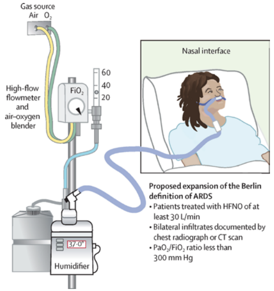
The RECOVERY-RS Randomized Clinical Trial

- Parallel group, open-label, adaptive, **3-group, randomized clinical trial**
- 1273 patients with **ARF due to COVID**
- Required O_2 at a fraction of inspired oxygen **(FiO_2) of at least 40%**
- **Suitable for tracheal intubation** if treatment escalation was required

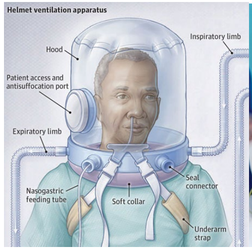
Conventional oxygen



HFNC



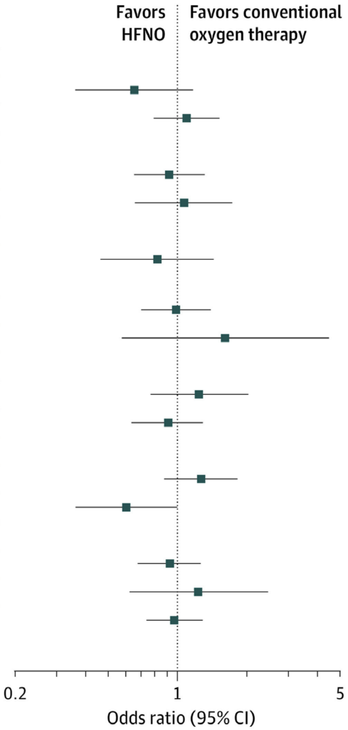
CPAP



JAMA. 2022;327(6):546-558. doi:10.1001/jama.2022.0028

Recovery Trial

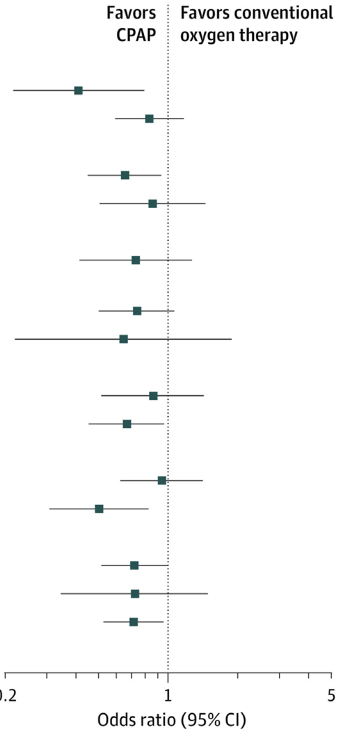
Subgroup	HFNO (No./total (%) of patients)	Conventional oxygen therapy (No./total (%) of patients)	Absolute difference (95% CI), %	Odds ratio (95% CI)	*P* value for interaction[a]
Age group, y					
<50	31/108 (29)	37/97 (38)	-9 (-22 to 3)	0.65 (0.36 to 1.17)	.13
≥50	153/307 (50)	129/271 (48)	2 (-6 to 10)	1.09 (0.79 to 1.52)	
Sex					
Male	126/271 (46)	116/239 (49)	-2 (-11 to 7)	0.92 (0.65 to 1.31)	.63
Female	58/144 (40)	50/129 (39)	2 (-10 to 13)	1.07 (0.66 to 1.73)	
Race and ethnicity					
Black, Asian, or racial and ethnic minority group	46/106 (43)	44/91 (48)	-5 (-19 to 9)	0.82 (0.47 to 1.44)	.53
White	122/275 (44)	110/246 (45)	-0.4 (-9 to 8)	0.99 (0.70 to 1.39)	
Not given	16/34 (47)	10/28 (36)[b]	11 (-13 to 36)	1.60 (0.57 to 4.46)	
Time from onset to randomization, d					
≤7	75/132 (57)	68/132 (52)	5 (-7 to 17)	1.24 (0.76 to 2.01)	.31
>7	107/280 (38)	94/232 (41)	-2 (-11 to 6)	0.91 (0.64 to 1.30)	
F_{IO_2}					
≤0.60	106/263 (40)	83/238 (35)	5 (-3 to 14)	1.26 (0.88 to 1.81)	.02
>0.60	72/139 (52)	75/117 (64)	-12 (-24 to -0.3)	0.60 (0.36 to 1.00)	
Body mass index[c]					
≤35	141/333 (42)	137/309 (44)	-2 (-10 to 6)	0.92 (0.67 to 1.26)	.45
>35	42/80 (53)	26/55 (47)	5 (-12 to 22)	1.23 (0.62 to 2.45)	
Overall	184/415 (44)	166/368 (45)	-1 (-8 to 6)	0.97 (0.73 to 1.29)	



JAMA. 2022;327(6):546-558. doi:10.1001/jama.2022.0028

Recovery Trial

Subgroup	No./total (%) of patients: CPAP	No./total (%) of patients: Conventional oxygen therapy	Absolute difference (95% CI), %	Odds ratio (95% CI)	P value for interaction[a]
Age group, y					
<50	20/102 (20)	34/92 (37)	-17 (-30 to -5)	0.42 (0.22 to 0.79)	.06
≥50	117/275 (43)	124/264 (47)	-4 (-13 to 4)	0.84 (0.60 to 1.17)	
Sex					
Male	92/257 (36)	110/239 (46)	-10 (-19 to -2)	0.65 (0.46 to 0.94)	.39
Female	45/120 (38)	48/117 (41)	-4 (-16 to 9)	0.86 (0.51 to 1.45)	
Race and ethnicity					
Black, Asian, or racial and ethnic minority group	40/103 (39)	47/101 (47)	-8 (-21 to 6)	0.73 (0.42 to 1.27)	.98
White	88/241 (37)	97/221 (44)	-7 (-16 to 2)	0.74 (0.51 to 1.07)	
Not given	9/33 (27)	11/30 (37)[b]	-9 (-32 to 14)	0.65 (0.22 to 1.88)	
Time from onset to randomization, d					
≤7	56/122 (46)	59/119 (50)	-4 (-16 to 9)	0.86 (0.52 to 1.43)	.42
>7	81/254 (32)	96/233 (41)	-9 (-18 to -1)	0.67 (0.46 to 0.97)	
F_{IO_2}					
≤0.60	67/215 (31)	70/216 (32)	-1 (-10 to 8)	0.94 (0.63 to 1.42)	.06
>0.60	68/146 (47)	79/125 (63)	-17 (-28 to -5)	0.51 (0.31 to 0.83)	
Body mass index[c]					
≤35	110/314 (35)	127/296 (43)	-8 (-16 to -0.2)	0.72 (0.52 to 0.99)	.99
>35	26/62 (42)	28/56 (50)	-8 (-26 to 10)	0.72 (0.35 to 1.49)	
Overall	137/377 (36)	158/356 (44)	-8 (-15 to -1)	0.72 (0.53 to 0.96)	



JAMA. 2022;327(6):546-558. doi:10.1001/jama.2022.0028

Recovery Trial

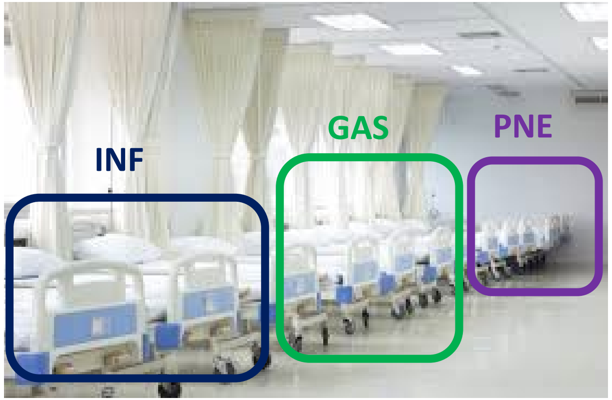
LIMITATIONS

- **Crossover** between interventions occurred in **17.1%** of participants (15.3% in the CPAP group, 11.5% in the HFNC group, and 23.6% in the conventional oxygen therapy group).
- **Lack of blinding**
- **Low recruitment** due to declining COVID-19 case numbers in the UK and the end of the funded recruitment period
- **No standardized criteria for intubation**

JAMA. 2022;327(6):546-558. doi:10.1001/jama.2022.0028

Bottom line…

UO COVID



1 UO COVID

1 Coordinator

Each UO take responsability of patients

UO INTERNAL MEDICINE

COVID beds within each UO

Bottom line: moving to a tailored approach

Conclusion: a tailored approach

- CPAP or HFNC treatment choice should be based on several factors **not limited on P/F ratio** (e.g.: respiratory distress)
- **Prone positioning** might be a valid option in a selected category of patients
- In case of CPAP treatment use the **lowest PEEP possible** (change over time)
- **NIV** with a face mask should be the first choice in case of **chronic obstructive comorbidities or hypoxemic-hypercapnic respiratory failure**

THANK YOU