



Intérêt du décubitus ventral en ventilation spontanée dans la prise en charge des pneumopathies à COVID-19

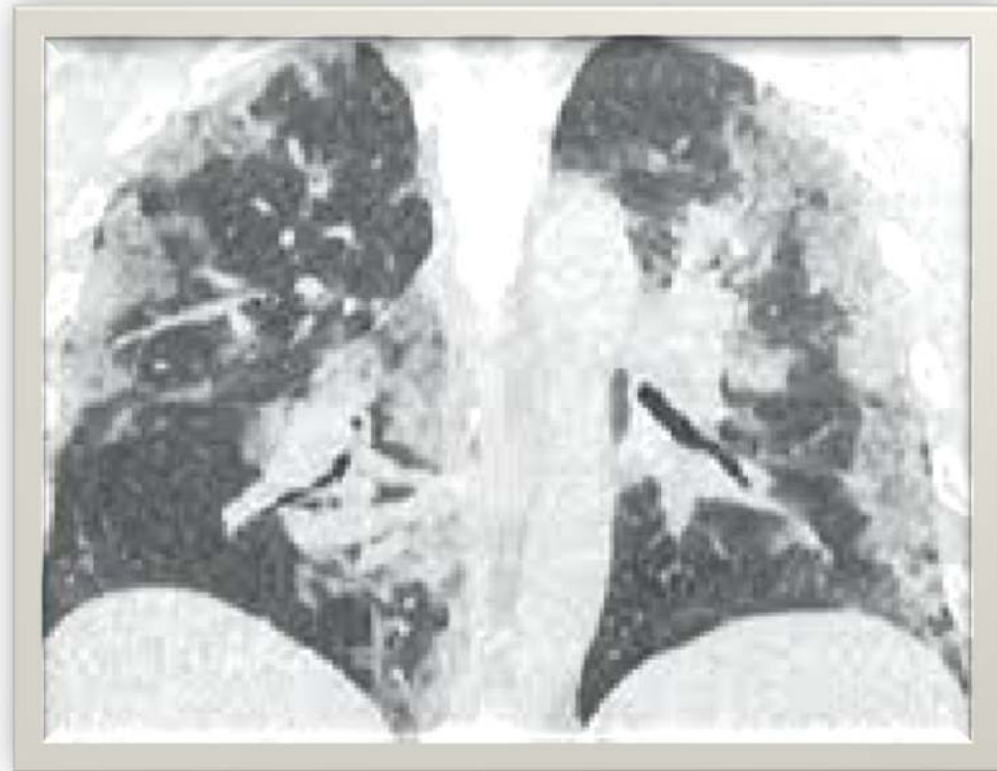
Mabrouk BAHLOUL- Kamilia CHTARA
Service de réanimation polyvalente de
SFAX

25e Congrès National de Réanimation:2,3 et 4 décembre 2021

Introduction

La pneumopathie hypoxémiante est la forme **la plus grave** lors de la pandémie SARS COV2.

PEC: en réanimation obligatoire.
Oxygénothérapie à fort débit +/- recours à la VMI



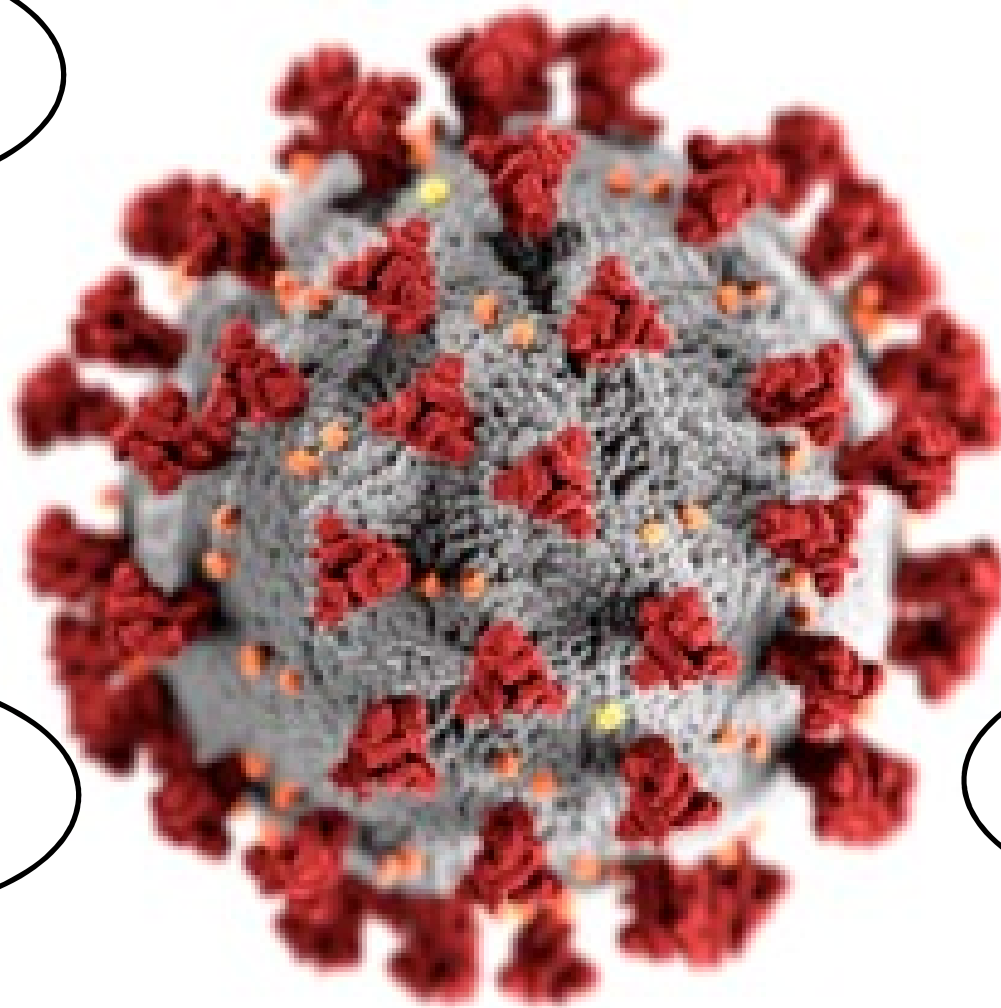
Epidémiologie

- Dans le monde:
 - * 270 Millions
 - * 5,2 Millions décès
- En Tunisie:
 - * 717258 cas
 - * 25363 décès
- Sfax
 - * 765 admissions en Réa
 - * 380 décès

Physiopathologie

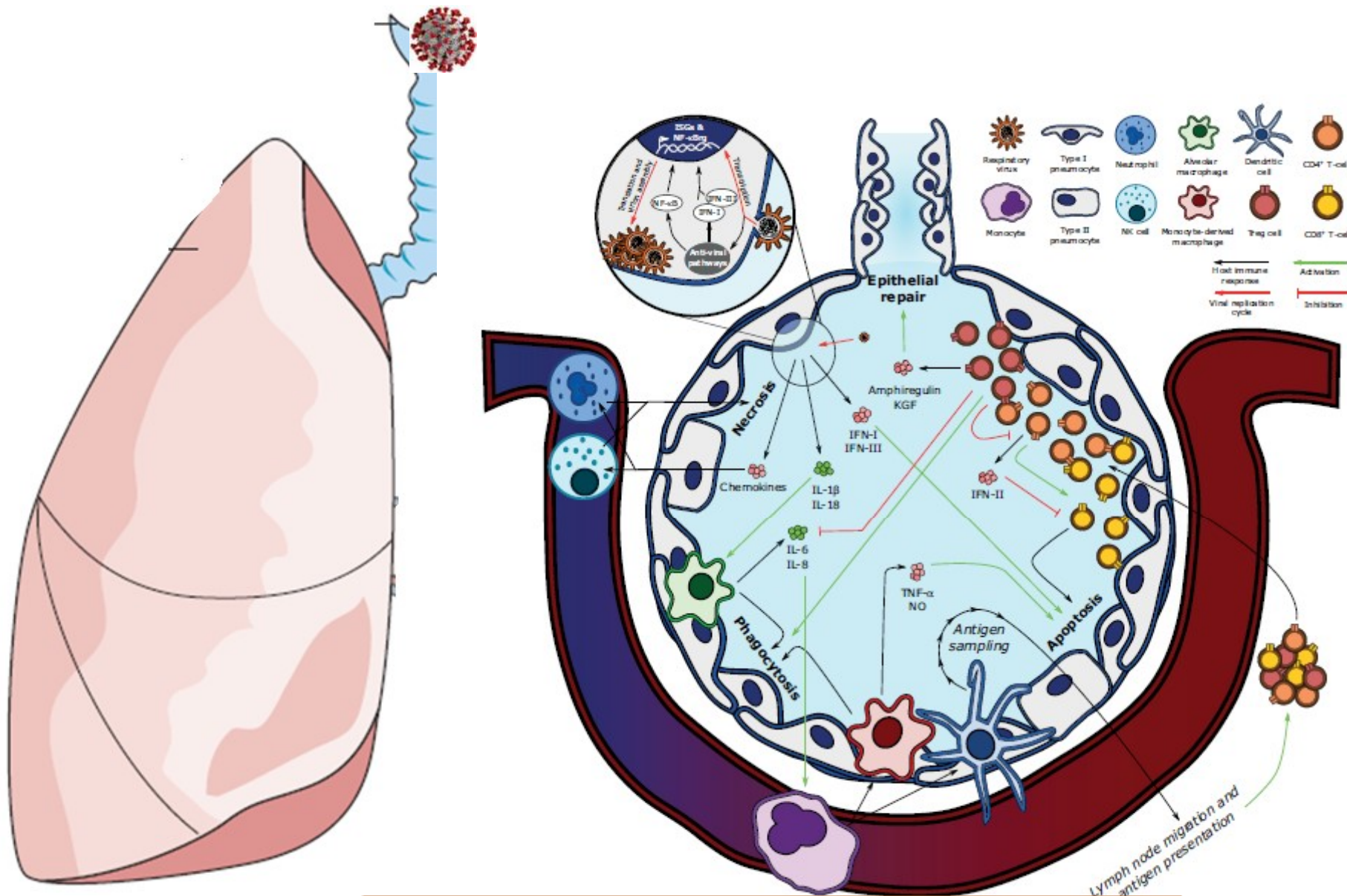
Catastrophe
circulante

Catastrophe
circulante



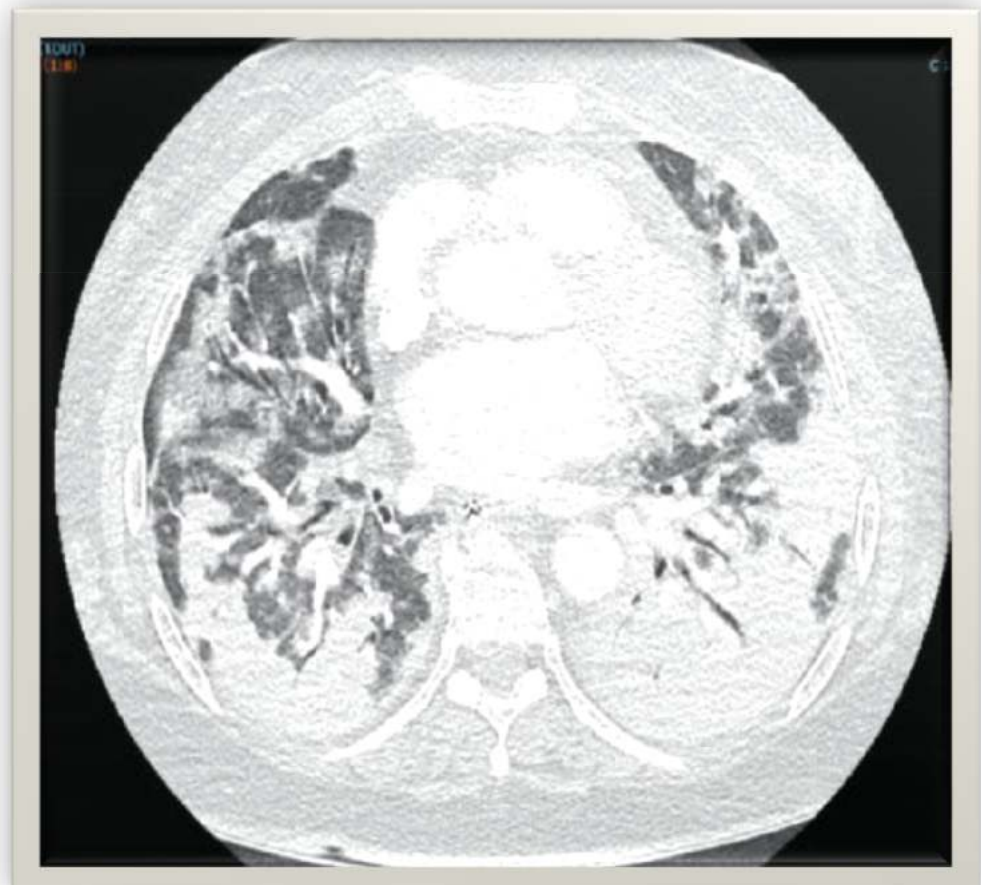
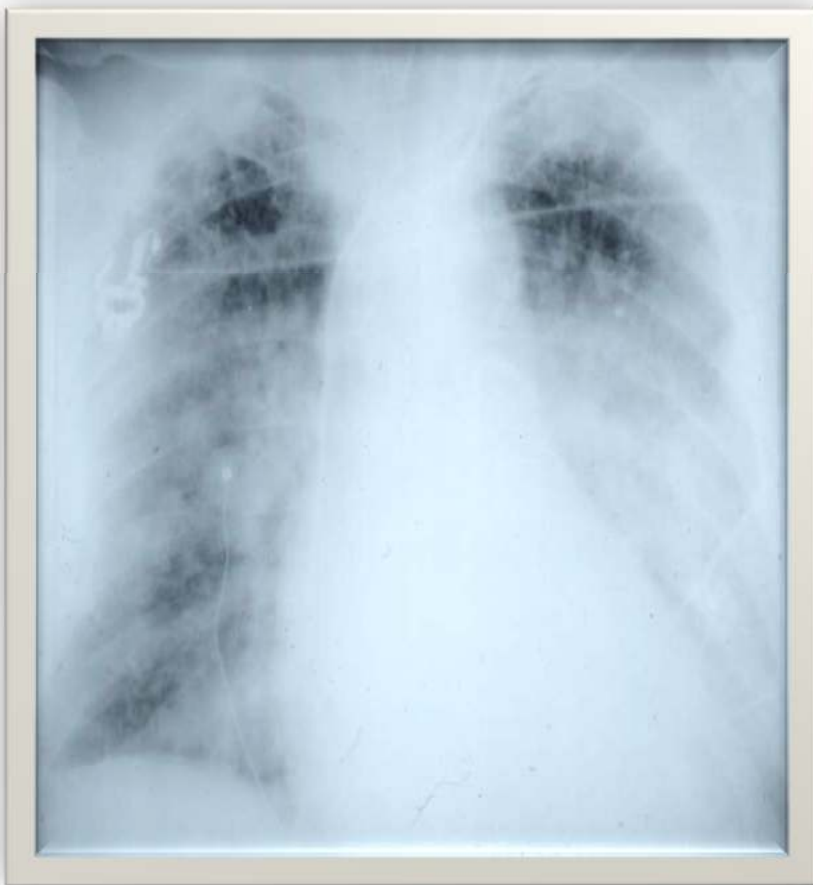
Catastrophe
circulante

Catastrophe
circulante



Lésion de la membrane alvéolo-capillaire

Présentation radiologique des SDRA « diffus »

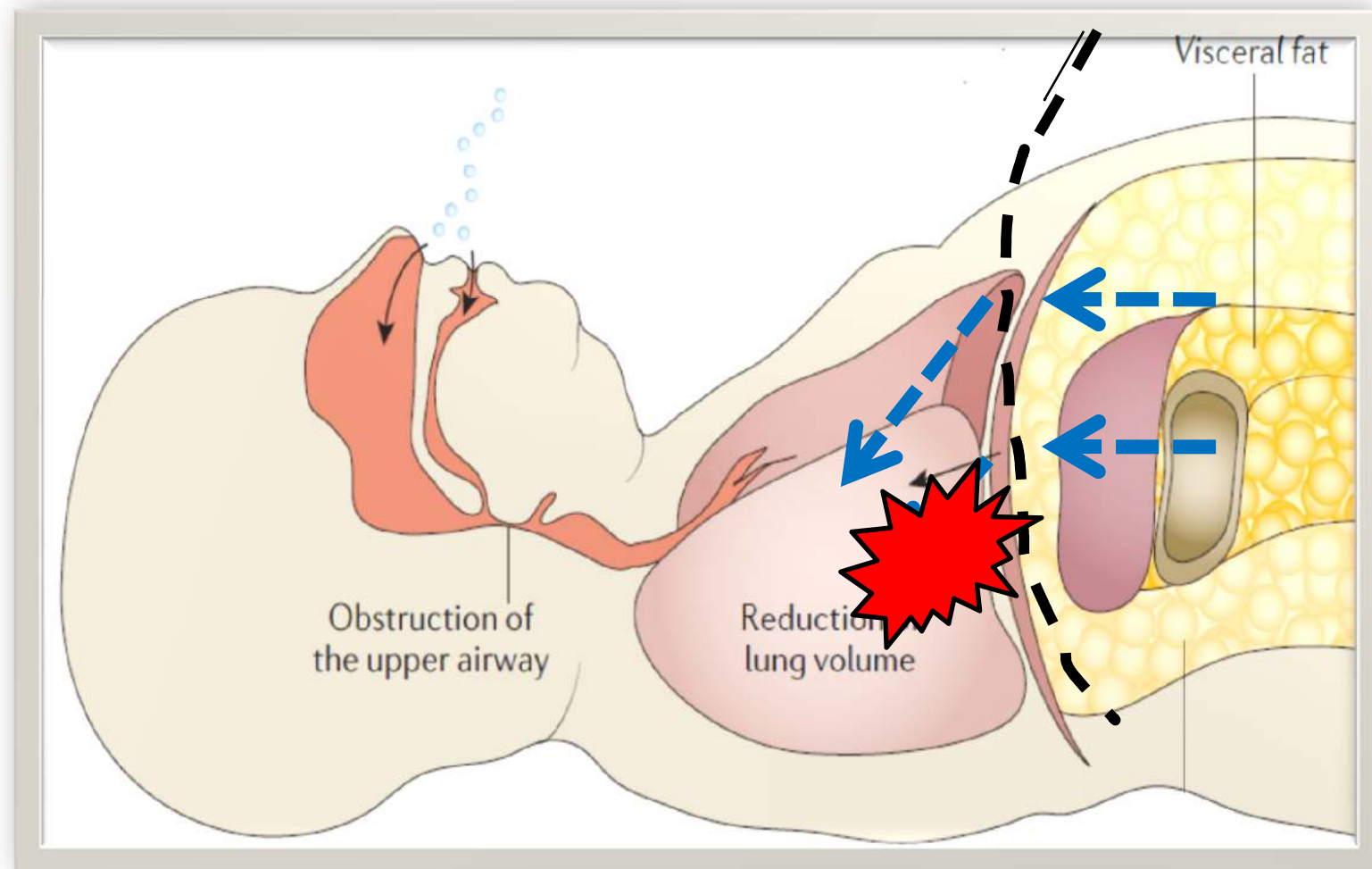


1) En DD, le **coeur** comprime la partie postéro-interne des lobes inférieurs



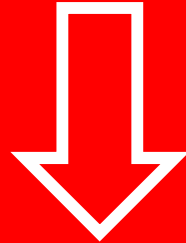
From Gupther Von Hagens 1997

2) En DD, **compression du diaphragme** et **les lobes inférieurs** par les viscères intra abdominaux



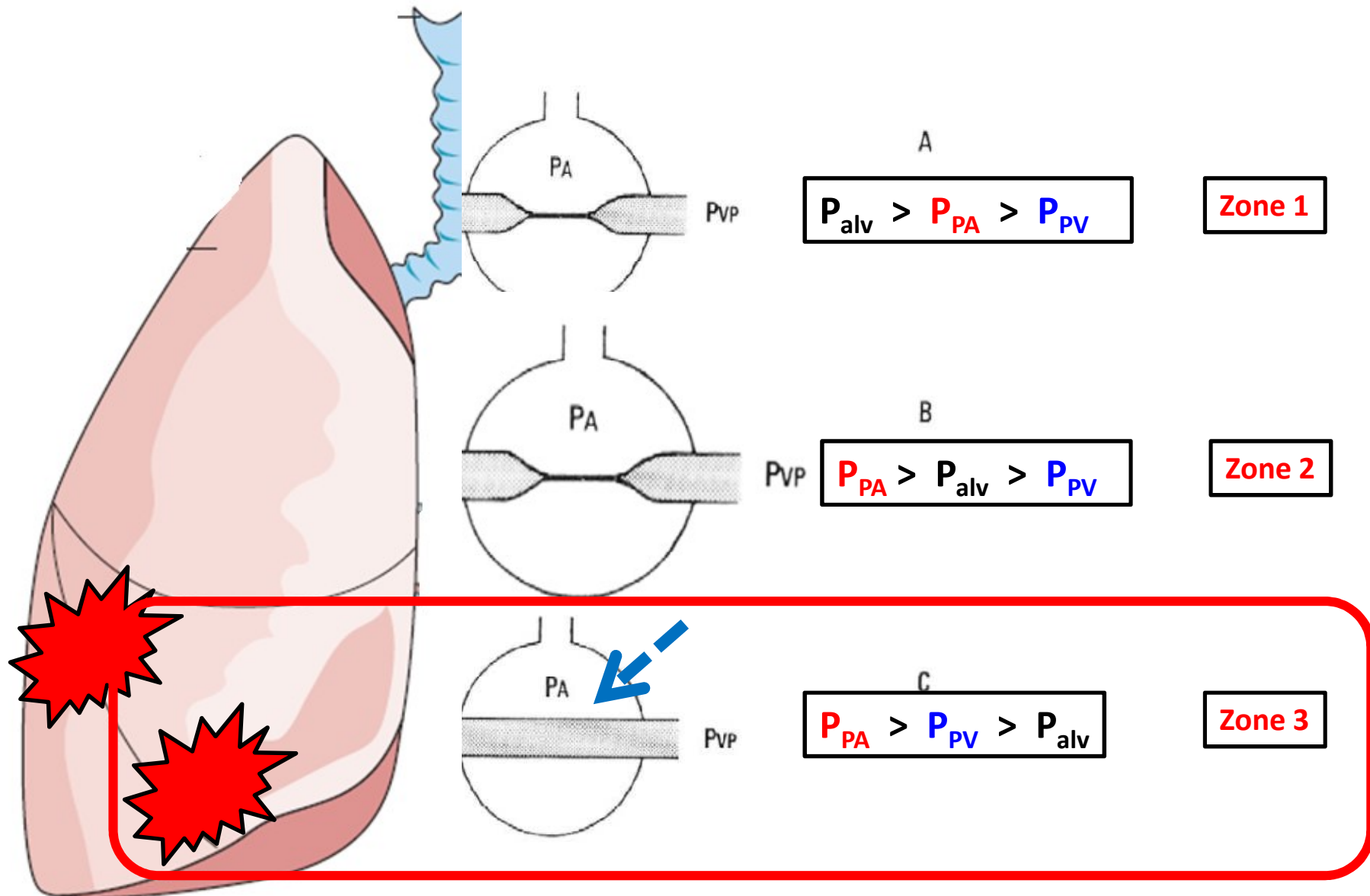
Compression exercée par **le coeur et l'abdomen**
sur les lobes inférieurs en décubitus dorsal

Atteinte des lobes inférieures

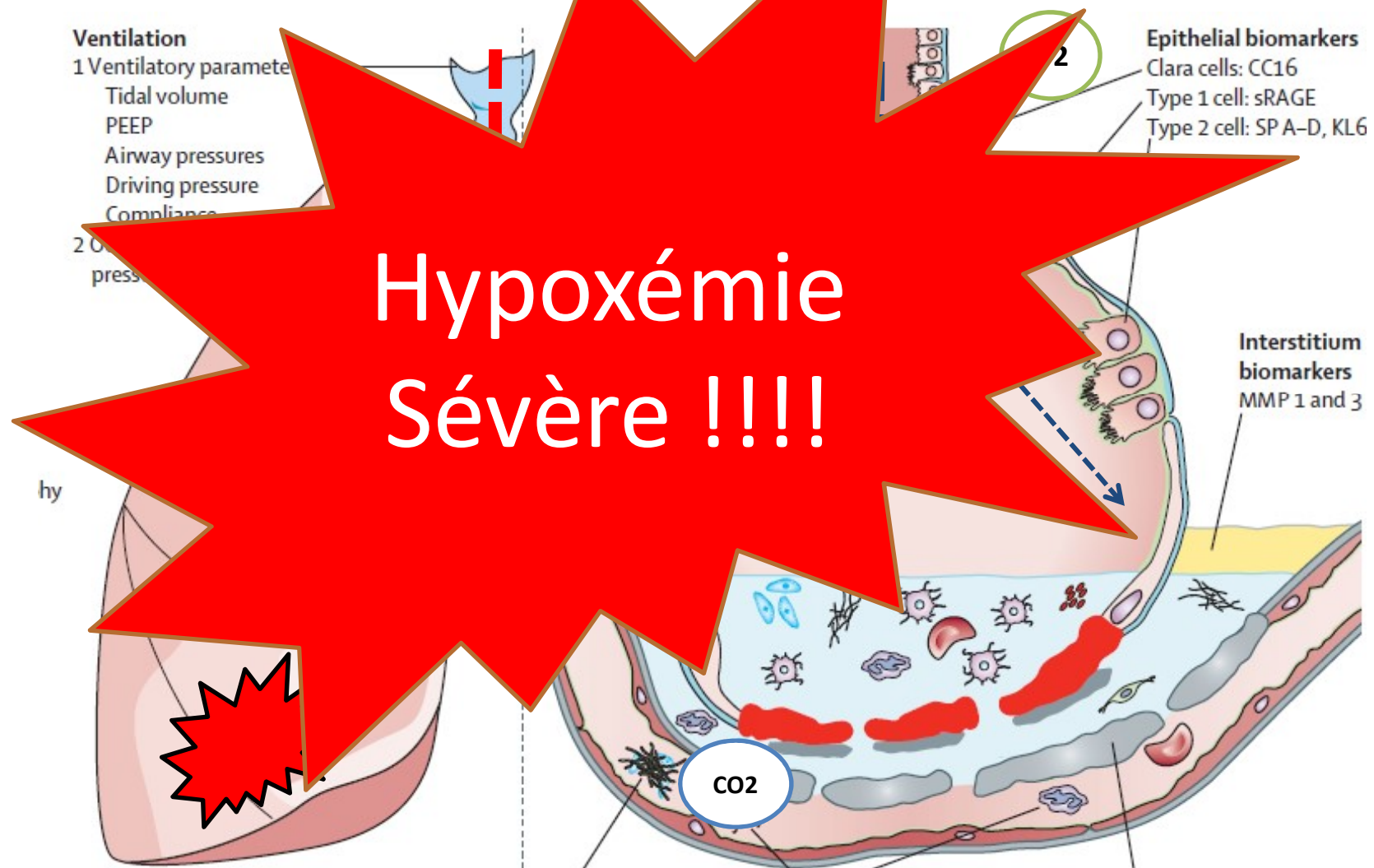


Conséquences Graves

Retentissement Gazométrique

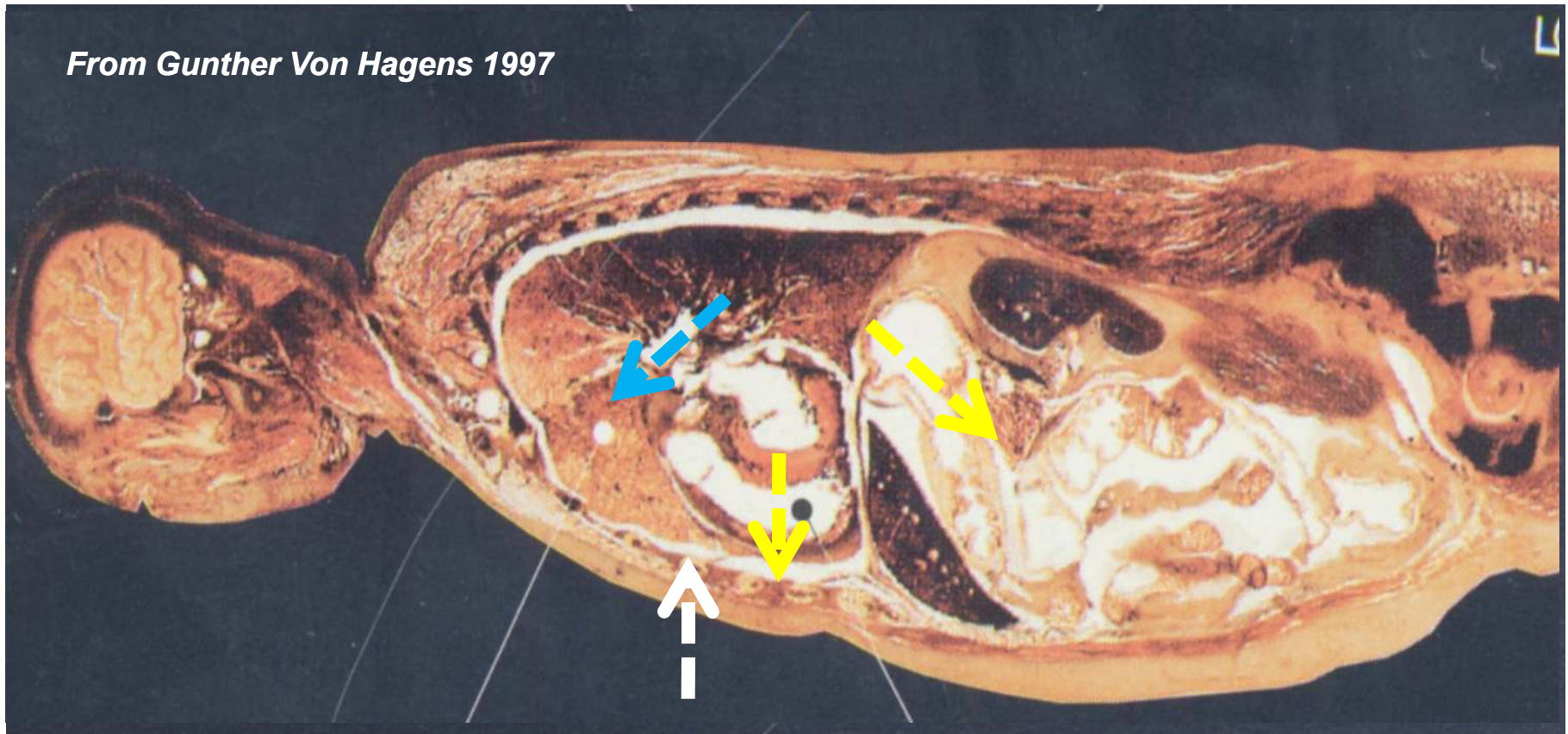


Acute respiratory distress syndrome



Les conséquences du décubitus ventral

From Gunther Von Hagens 1997



Le DV dans la prise en charge des pneumopathies à COVID- 19

**Arguments physiopathologiques très
Solides +++**

Early management of ARDS in 2019

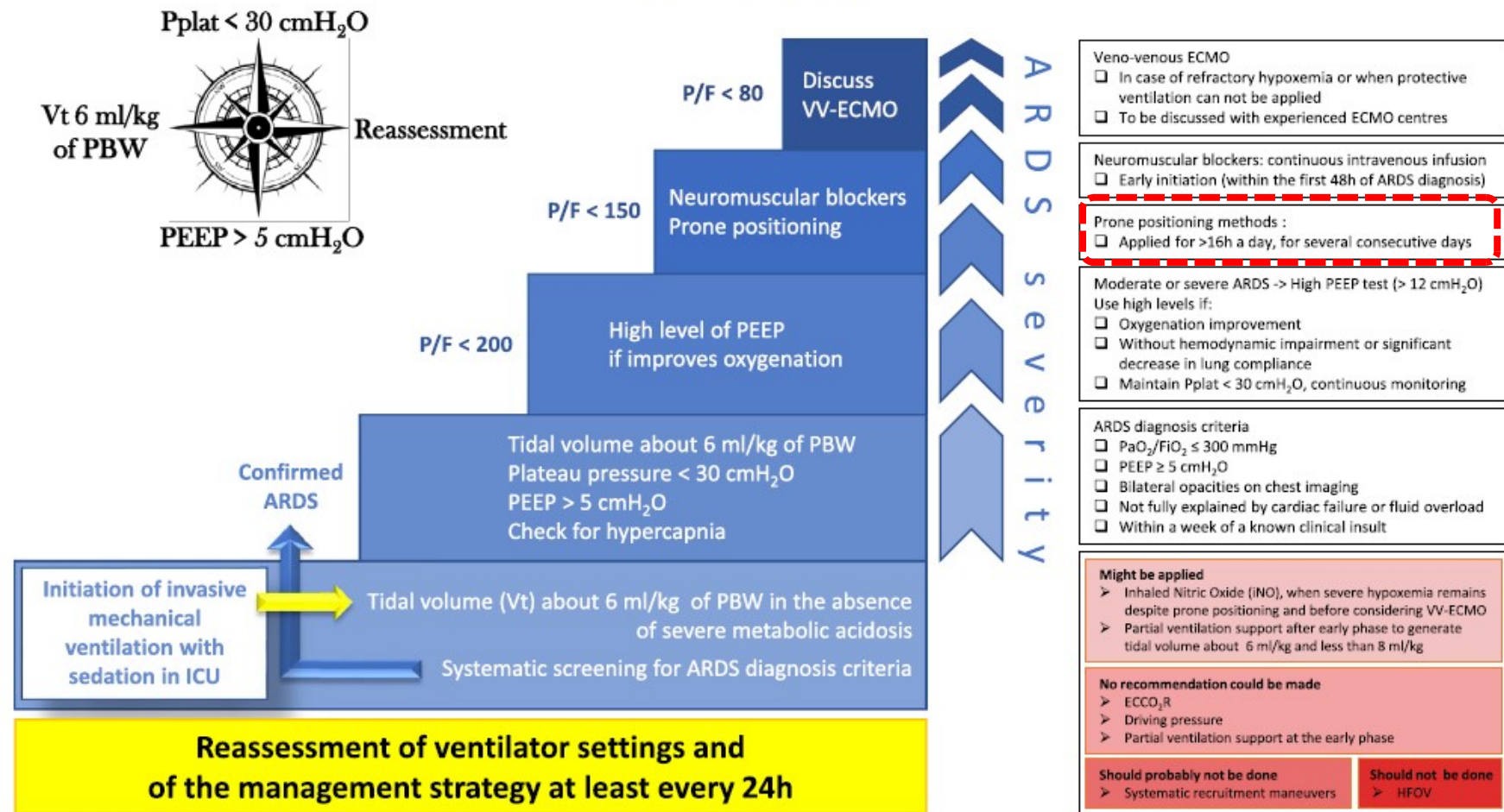


Fig. 1 Therapeutic algorithm regarding early ARDS management (EXPERT OPINION)

DV et Ventilation Spontanée?





Contents lists available at ScienceDirect

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journal homepage: www.journals.elsevier.com/journal-of-critical-care



Awake prone positioning for COVID-19 hypoxemic respiratory failure: A rapid review



Jason Weatherald, MD MSc^{a,1}, Kevin Solverson, MD MSc^{b,1}, Danny J. Zuege, MD MSc^{b,c}, Nicole Loroff, MLIS^a,
Kirsten M. Fiest, PhD^{b,d}, Ken Kuljit S. Parhar, MD MSc^{b,*}

35 études
au total
(414
Patients)

29
études
covid +

6 études
non
covid

- 11 études prospectives +++
- 13 études rétrospectives
- 5 case reports



364
patients

NOMBRES D'ETUDES	NOMBRES DE PATIENTS	LIEU DE L'ETUDE
17 études	128 patients	Réanimation
2 études	60 patients	Urgences
8 études	104 patients	Services oxygène
2 études	73 patients	Plusieurs services
6 études	49 patients	NA

Pratique du DV a été protocolisée dans 15 études : 223 patients

Durée du DV variable de < 1 H - >8 H (non rapporté dans 3 études)

- Amélioration de l'oxygénation prouvée par 34 études.
- Amélioration persistante par 2 études.
- 121 patients (29%) ont nécessité la VMI.

Limites:

- Études non contrôlées
- Rétrospective ou prospectives ou des case reports
- Hétérogénéité de la population (gravité, étiologies, pratiques)

ONLINE SPECIAL ARTICLE

Surviving Sepsis Campaign Guidelines on the Management of Adults With Coronavirus Disease 2019 (COVID-19) in the ICU: First Update

Previous SSC COVID-19 Guideline	New SSC COVID-19 Guideline	
Recommendation/Statement	Recommendation/Statement	Justification
Ventilation		
Not applicable	1. <u>There is insufficient evidence to issue a recommendation on the use of awake prone positioning in nonintubated adults with severe COVID-19.</u>	• Uncertainty about the balance between benefit and harm • <u>Awaiting the results of ongoing RCTs</u>



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



Stephan Ehrmann, Jie Li*, Miguel Ibarra-Estrada*, Yonatan Perez*, Ivan Pavlov*, Bairbre McNicholas*, Oriol Roca*, Sara Mirza, David Vines, Roxana Garcia-Salcido, Guadalupe Aguirre-Avalos, Matthew W Trump, Mai-Anh Nay, Jean Dellamonica, Saad Nseir, Idrees Mogri, David Cosgrave, Dev Jayaraman, Joan R Masclans, John G Laffey, Elsa Tavernier, for the Awake Prone Positioning Meta-Trial Group†*

- Méta-analyse (6 études Prospectives)
- 10 mois (Avril2020 -Janv2021)
- **1121** patients: **564 DV+/ 557 traitement standard.**

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



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Mexique	430 patients	38 %
France	402 patients	36 %
USA	222 patients	20 %
Espagne	30 patients	3 %
Irlande	24 patients	2 %
Canada	13 patients	1%

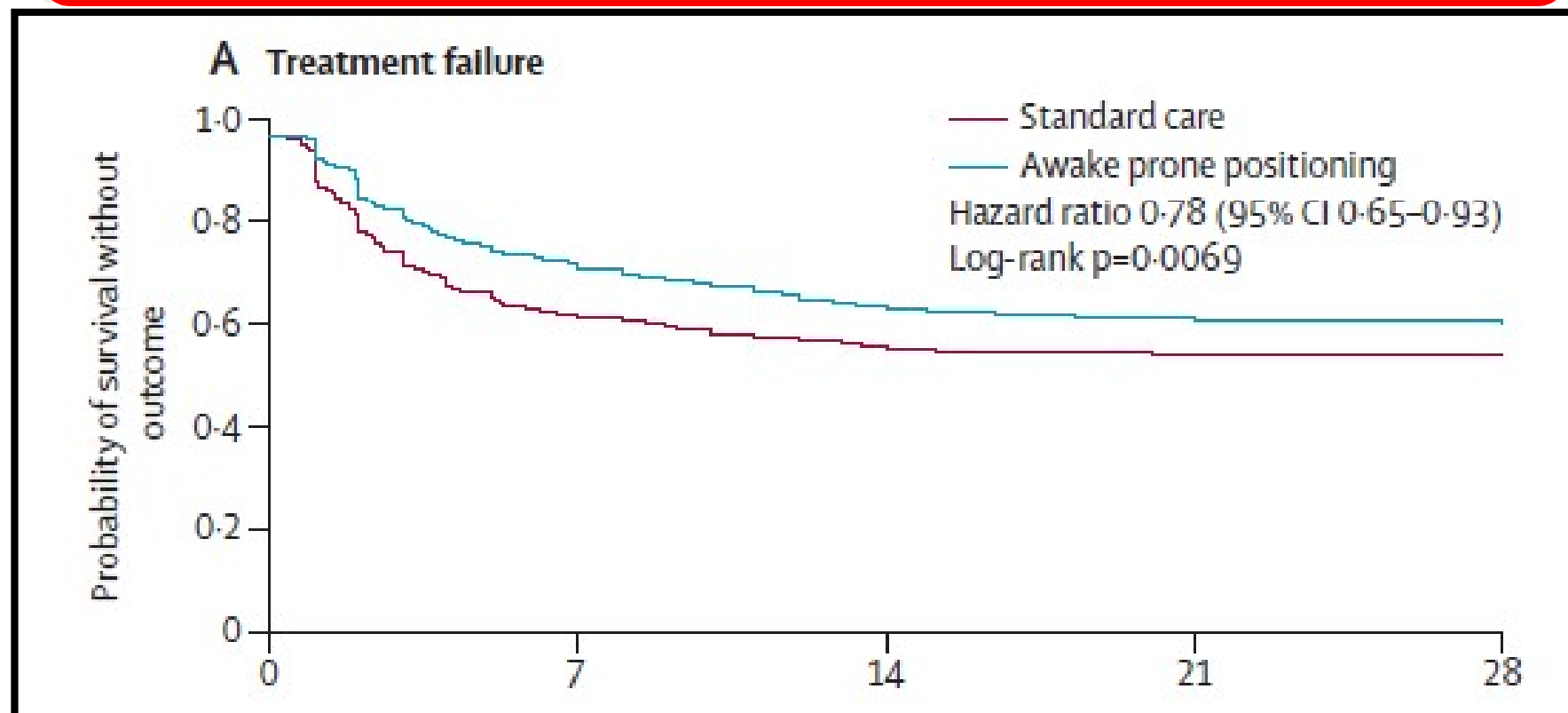
Critères d'inclusion

- Age > 18 ans
- Insuffisance respiratoire aigue hypoxémiante:
 $SpO_2/FiO_2 \leq 315$ [$PaO_2 / FiO_2 \leq 300$]
- Pneumopathie à COVID 19.

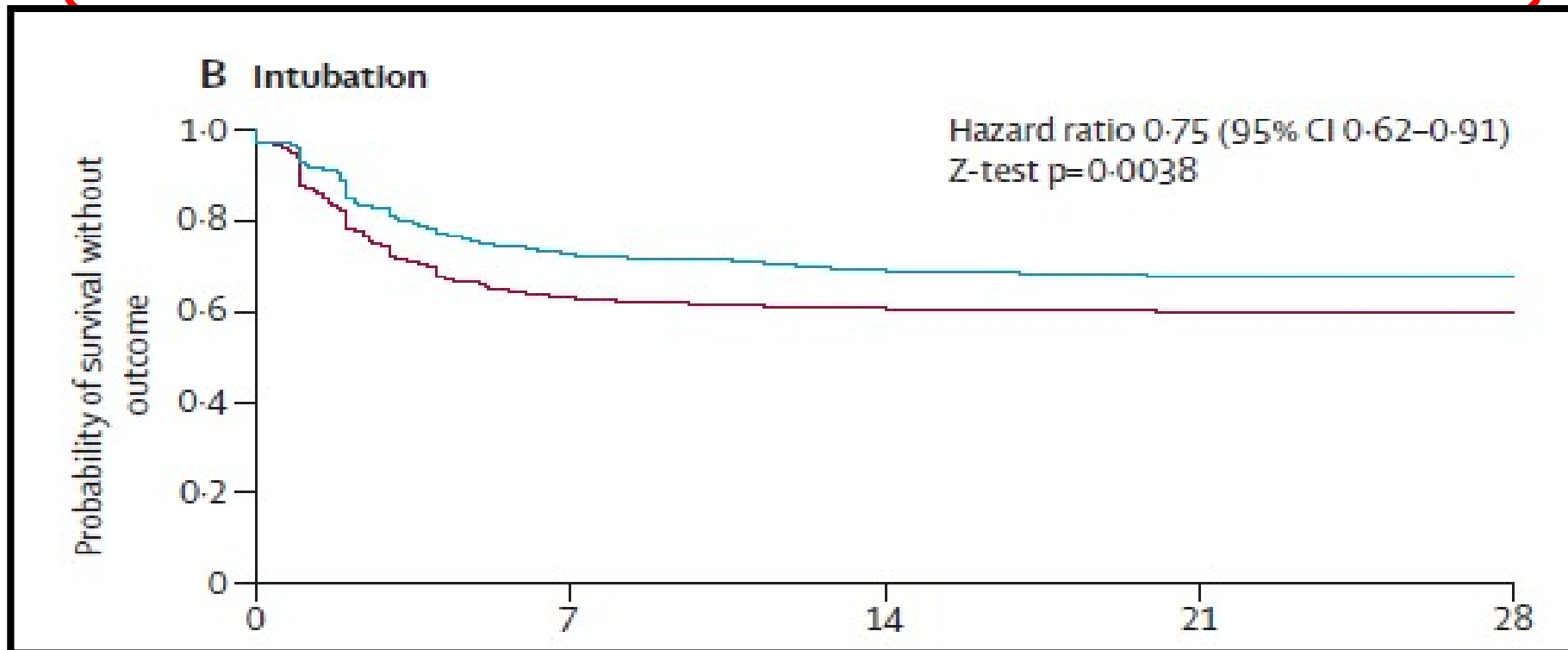
Critères d'exclusion

- État de choc
- Grossesse
- BMI > 40 kg/m²
- Contre indication du DV

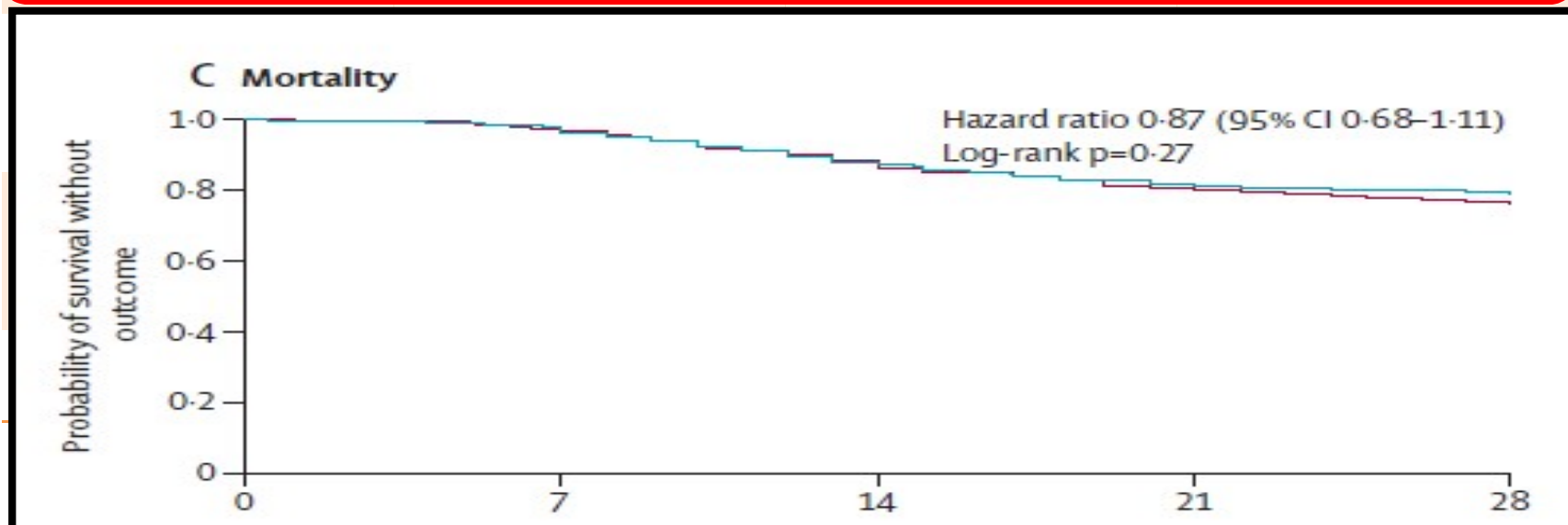
	DV+	Traitement conventionnel	RR (95%,IC) ou OR (95%,IC)
Echec TTT	223 (40%)	257 (46%)	0,86 (0,75-0,98)



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Echec TTT	223 (40%)	257 (46%)	0,86 (0,75-0,98)
Incidence cumulée de VMI	185 (33%)	223 (40 %)	0,75 (0,62-0,91)

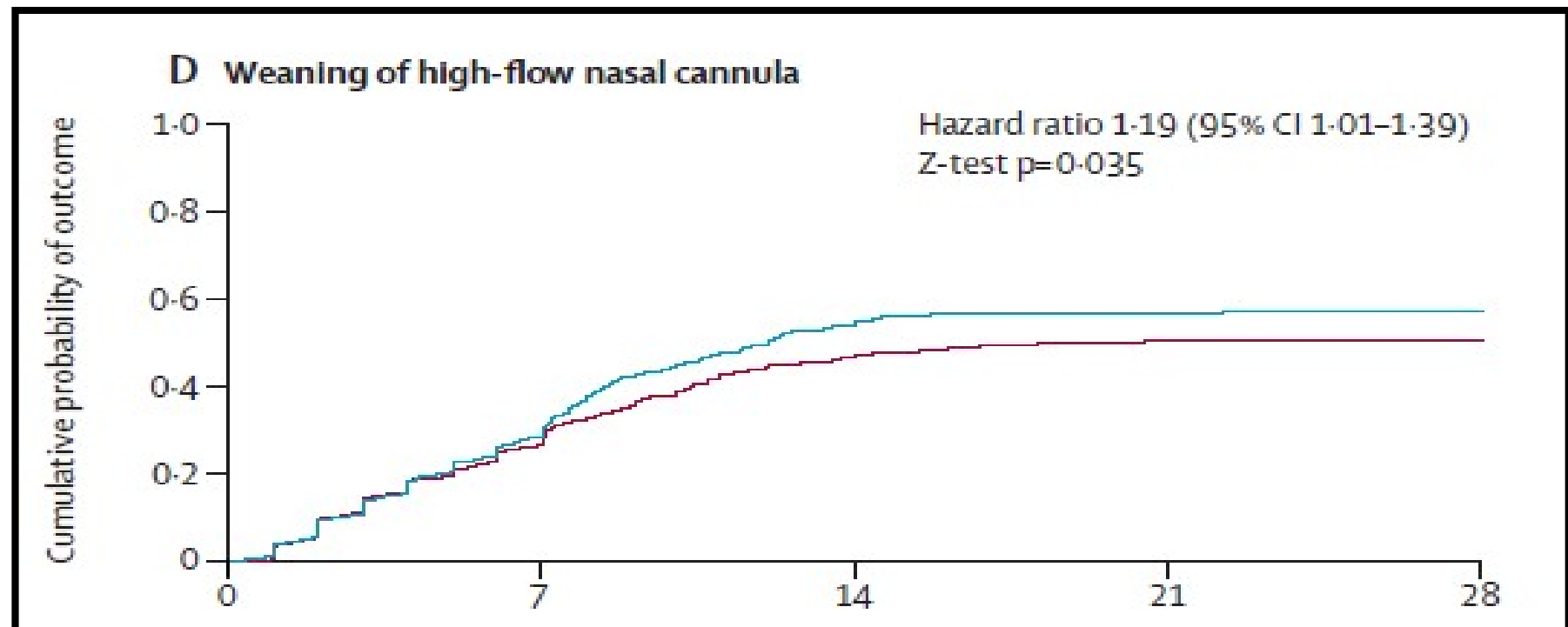


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Incidence cumulée de VMI	185 (33%)	223 (40 %)	0,75 (0,62-0,91)
Mortalité globale à 28J	117 (21%)	132 (24%)	0,87 (0,71-1,07)

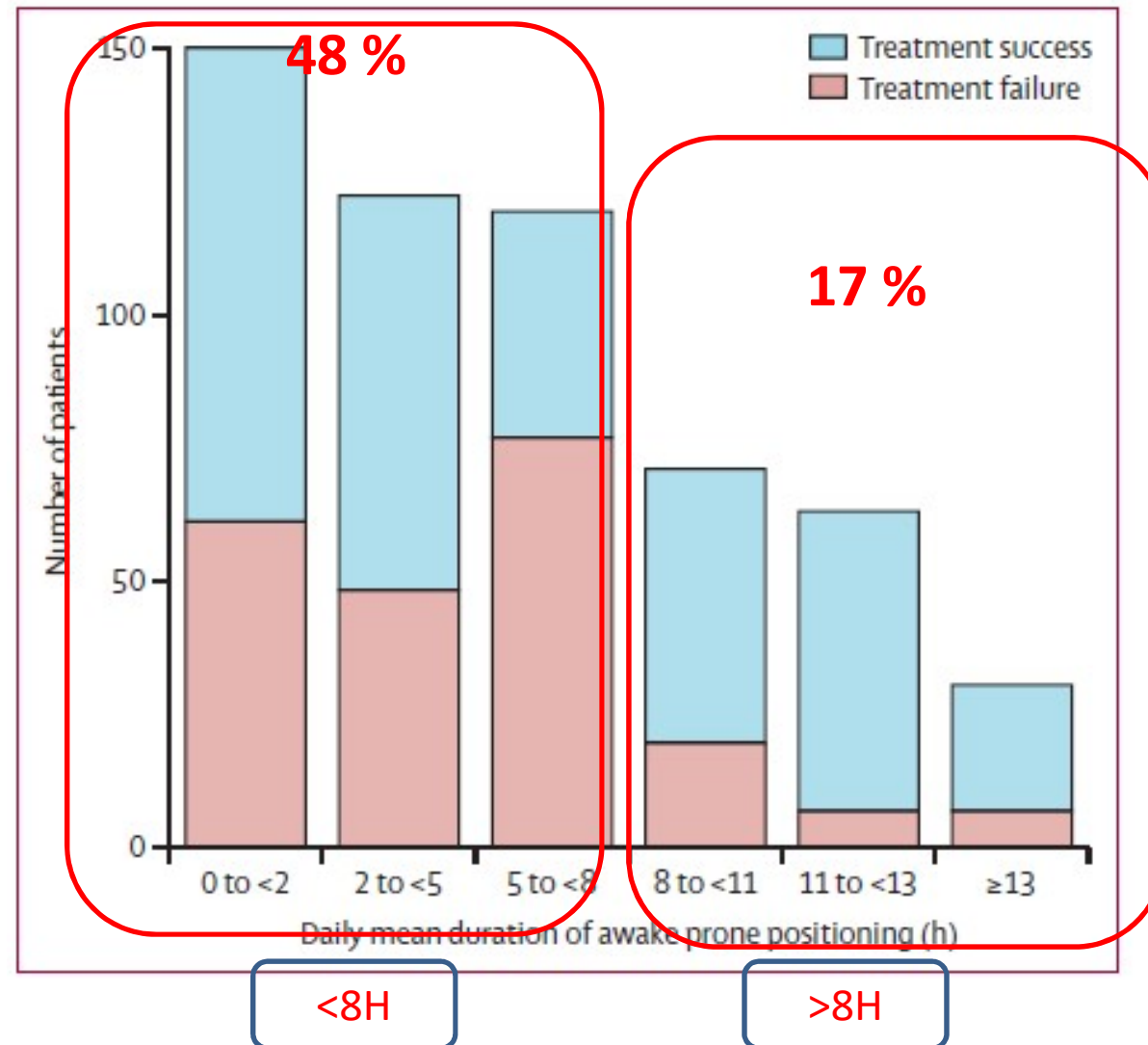


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Incidence cumulée de VMI	185 (33%)	223 (40 %)	0,75 (0,62-0,91)
Mortalité globale à 28J	117 (21%)	132 (24%)	0,87 (0,71-1,07)
Mortalité chez les intubés	79 (43 %)	98 (44%)	Pas de différence significative
Durée de la VMI	12,4 ±9j	12,4 ± 8,4j	
Recours à la VNI	94 (17%)	111 (20%)	

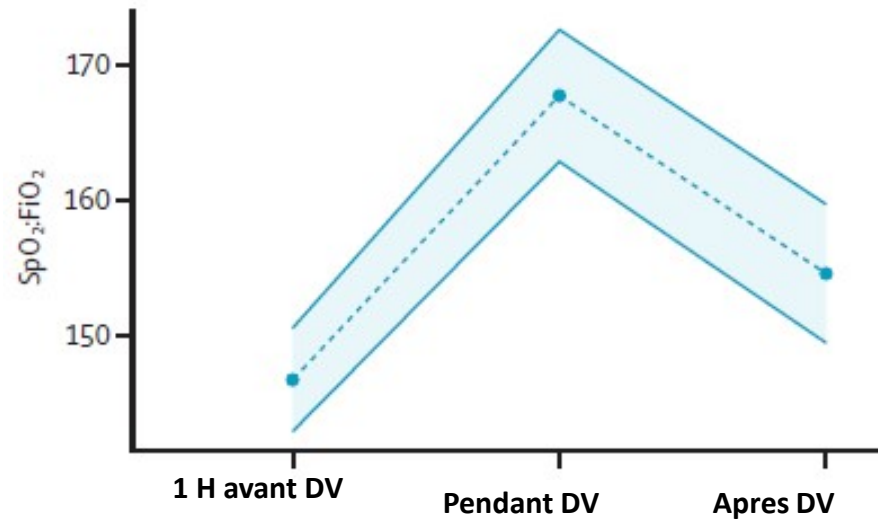
Sevrage du HDN



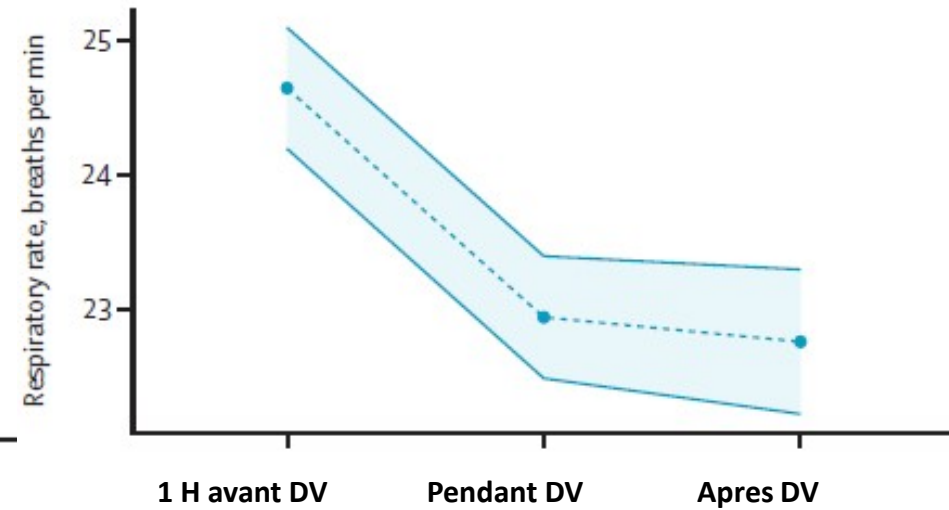
Durée du DV/j: médiane 5H (1,6-8,8)



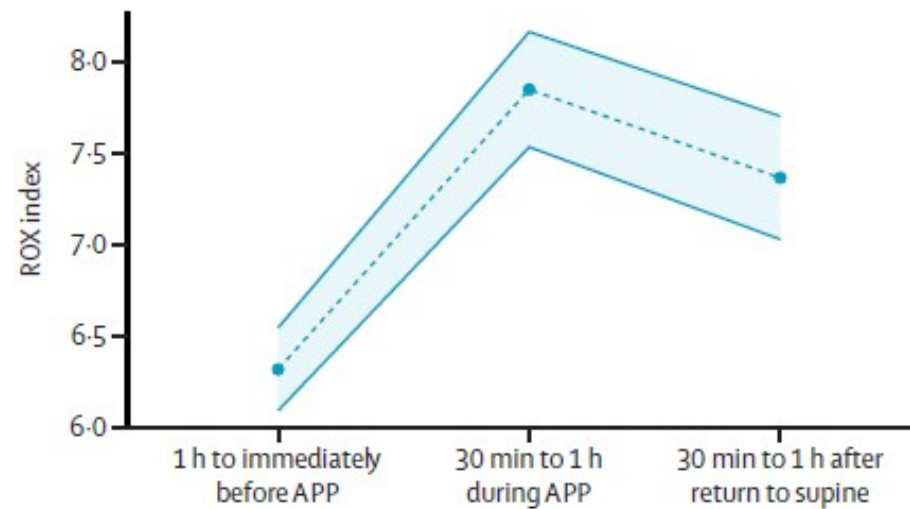
SpO₂/FiO₂



**Fréquence
respiratoire**



ROX index



Impact of prone position on outcomes of COVID-19 patients with spontaneous breathing

Mabrouk Bahloul¹, Sana Kharrat¹, Malek Hafdhi¹, Anis Maalla², Olfa Turki¹, Kamilia Chtara¹, Rania Ammar¹, Basma Suissi², Chokri Ben Hamida¹, Hedi Chelly¹, Khaiereddine Ben Mahfoudh², Mounir Bouaziz¹

Departments of ¹Intensive Care and ²Radiology, Habib Bourguiba University Hospital and Sfax University, Sfax, Tunisia

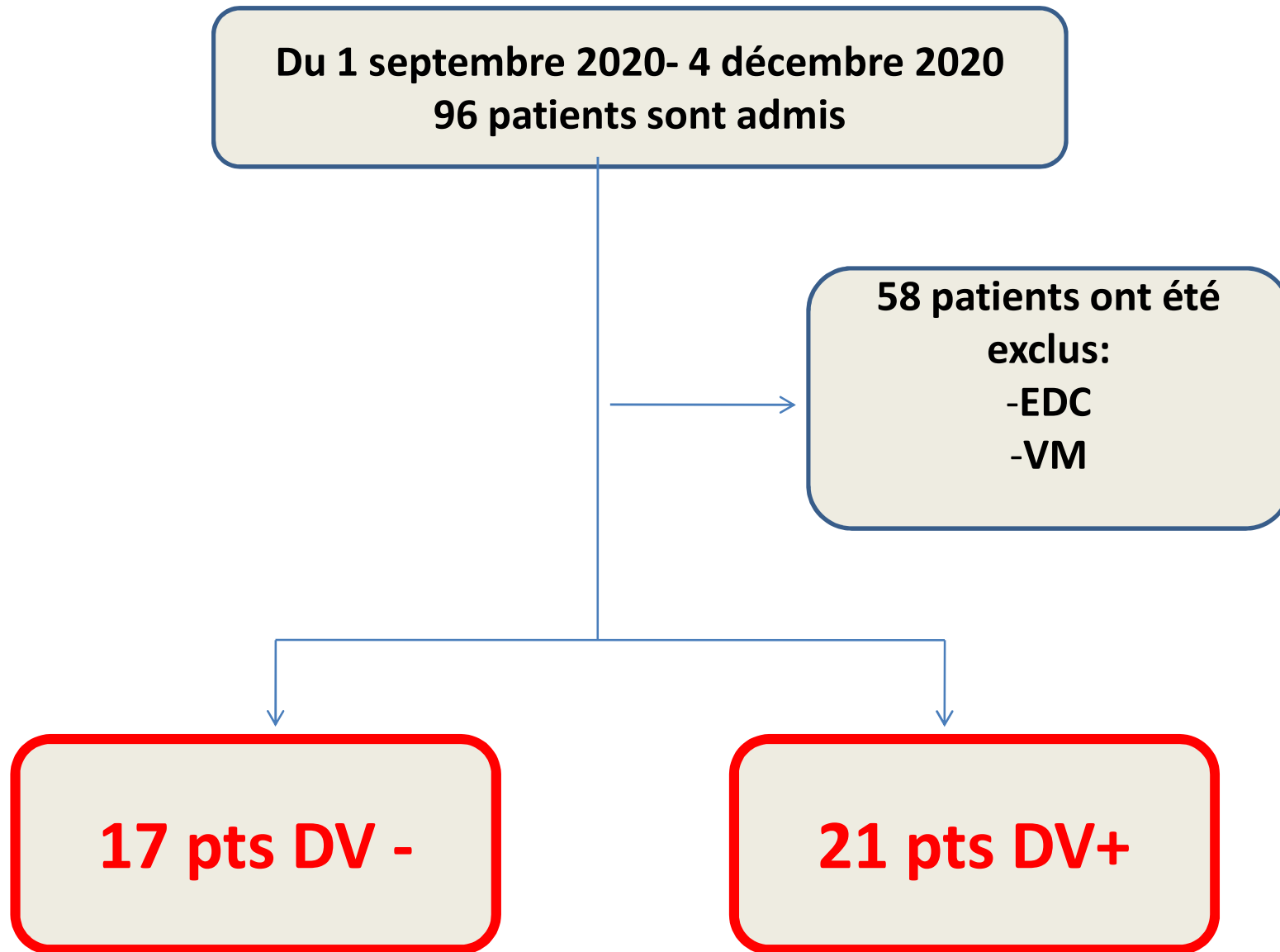
- Étude prospective, observationnelle.
- 38 patients sont inclus.

**Du 1 septembre 2020- 4 décembre 2020
96 patients sont admis**

**58 patients ont été
exclus:
-EDC
-VM**

17 pts DV -

21 pts DV+



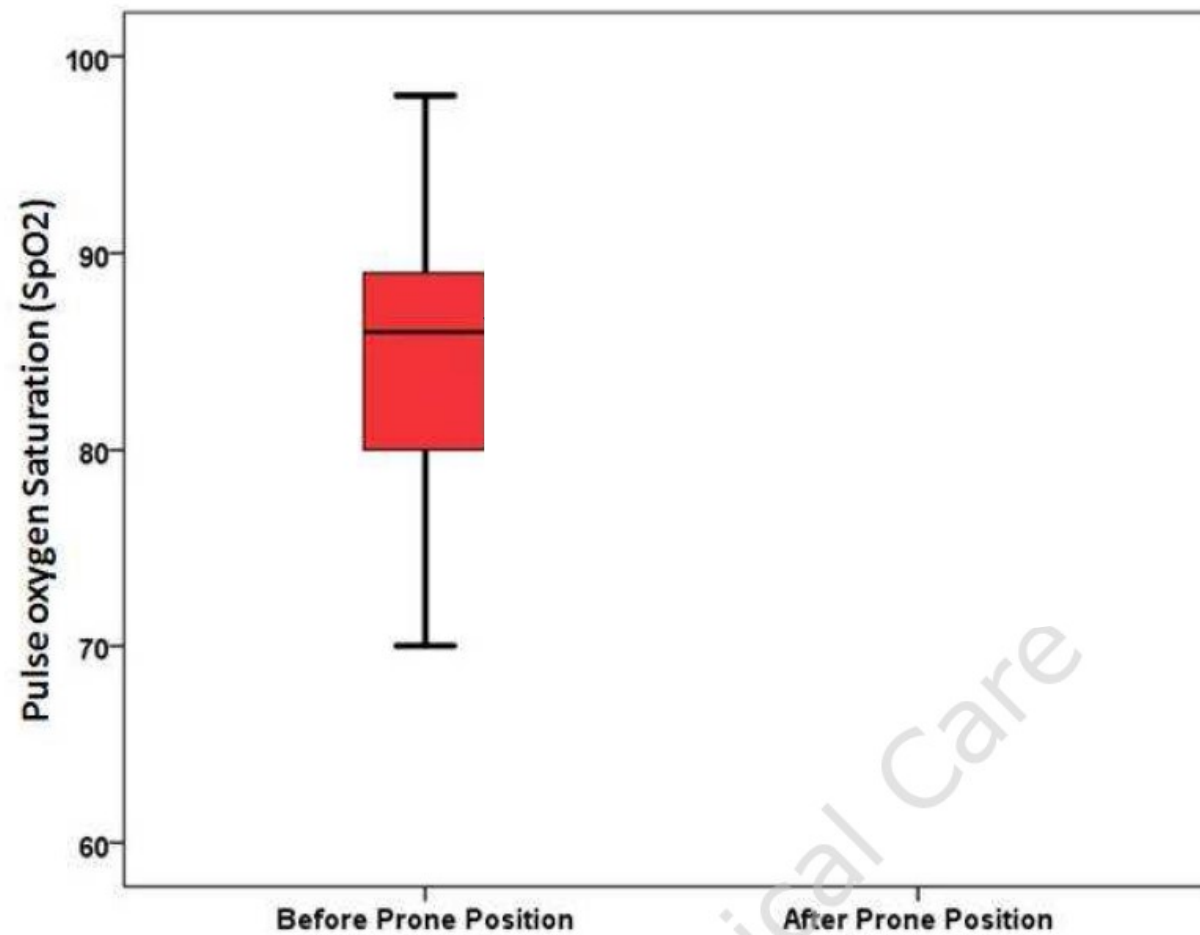


Figure 1. Evolution of pulse oxygen saturation (SpO2) one hour after prone positioning. Early prone position improve significantly SpO2. Black lines, medians; boxes, 25–75%; error bars, ranges.

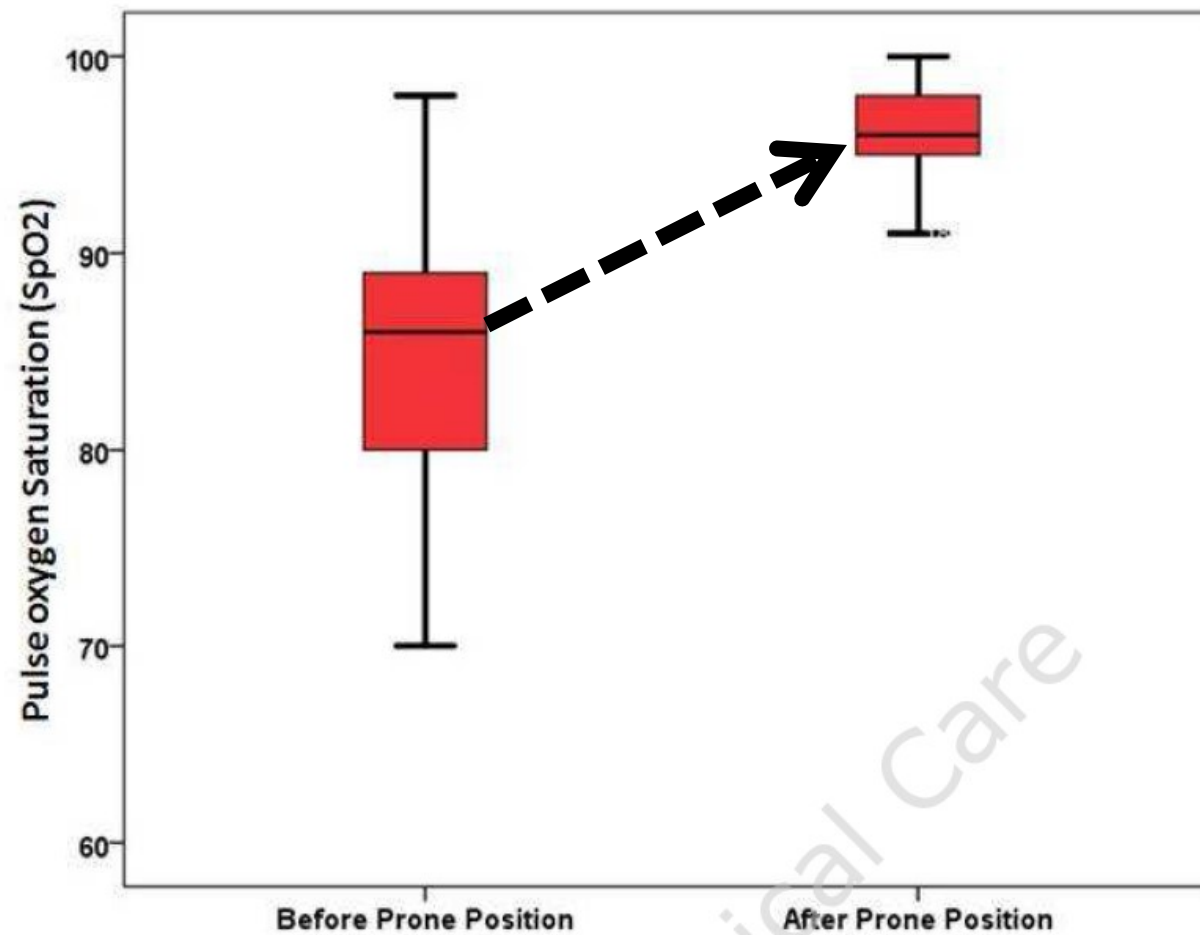


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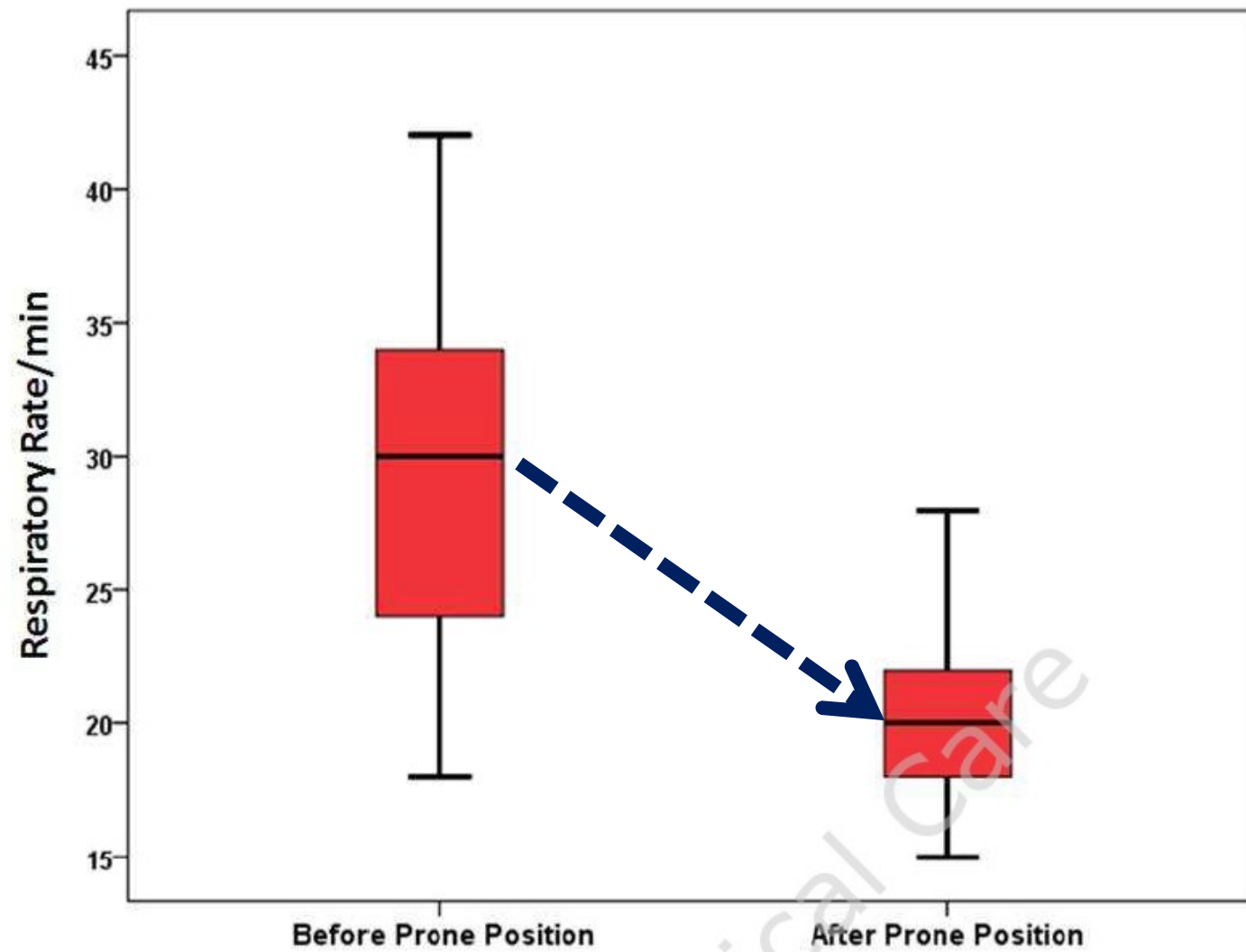
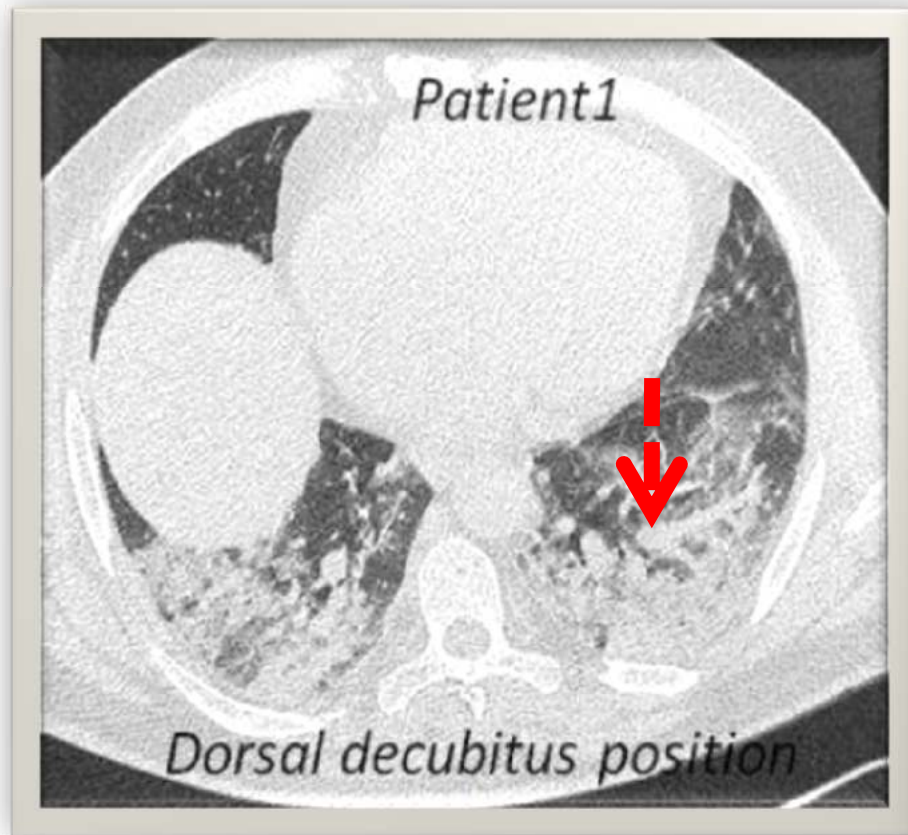
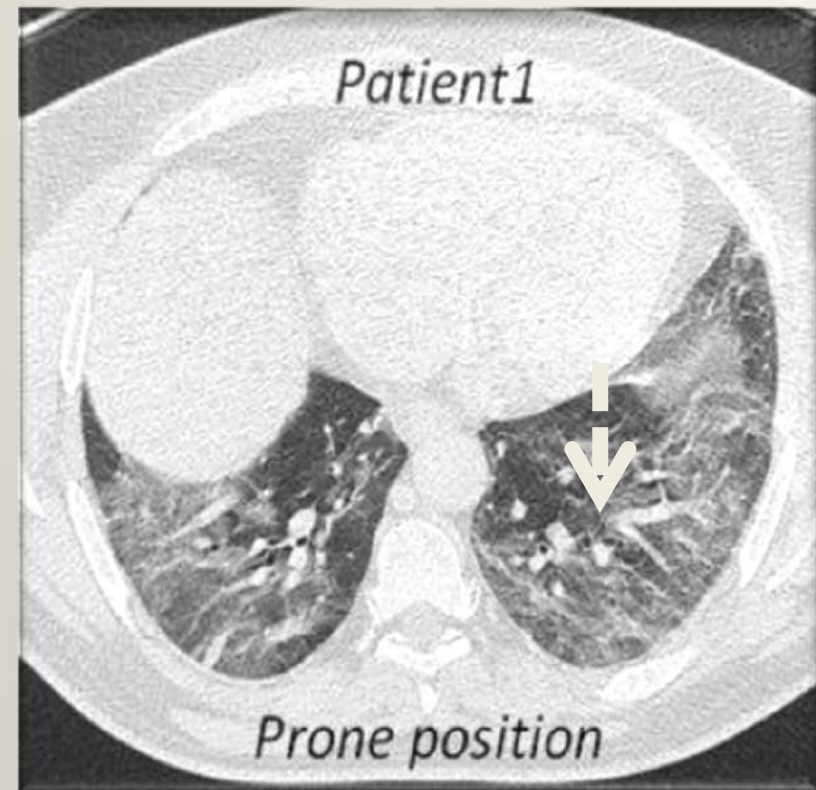


Figure 2. Evolution of Respiratory rate one hour after prone positioning. Early prone position improve significantly respiratory rate. Black lines, medians; boxes, 25–75%; error bars, ranges.

TDM Thoracique en DD et en DV

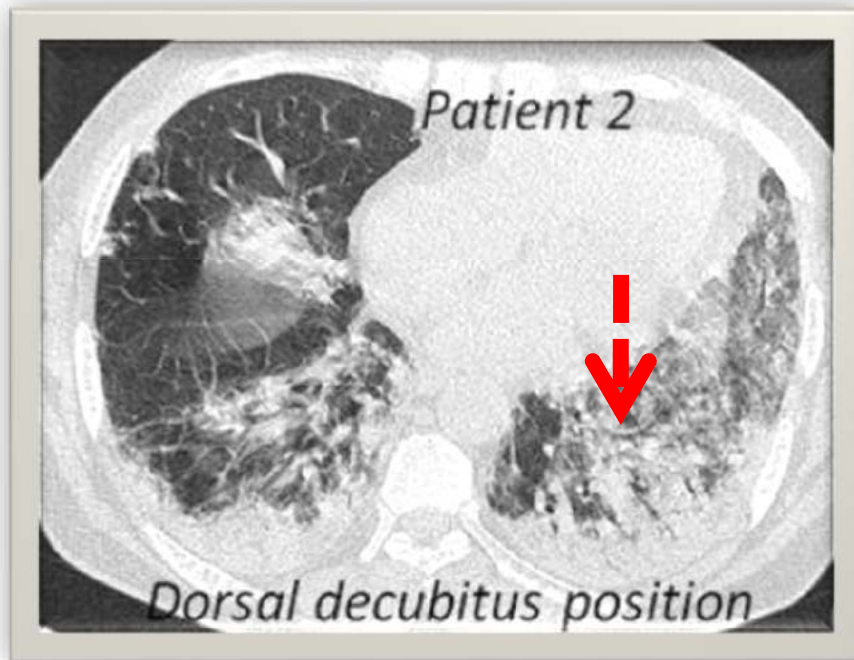


Décubitus dorsal

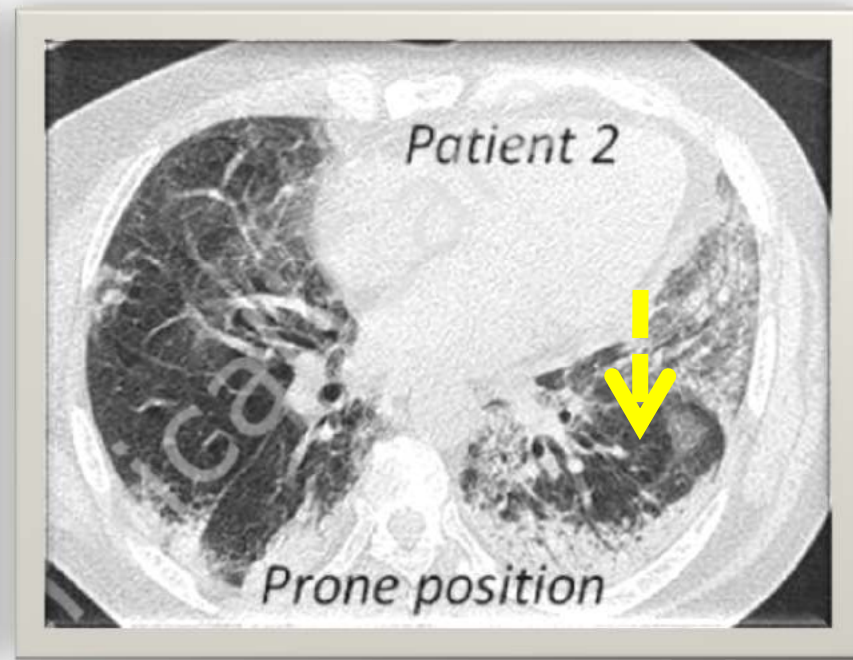


Décubitus ventral

TDM Thoracique en DD et en DV



Décubitus dorsal



Décubitus ventral

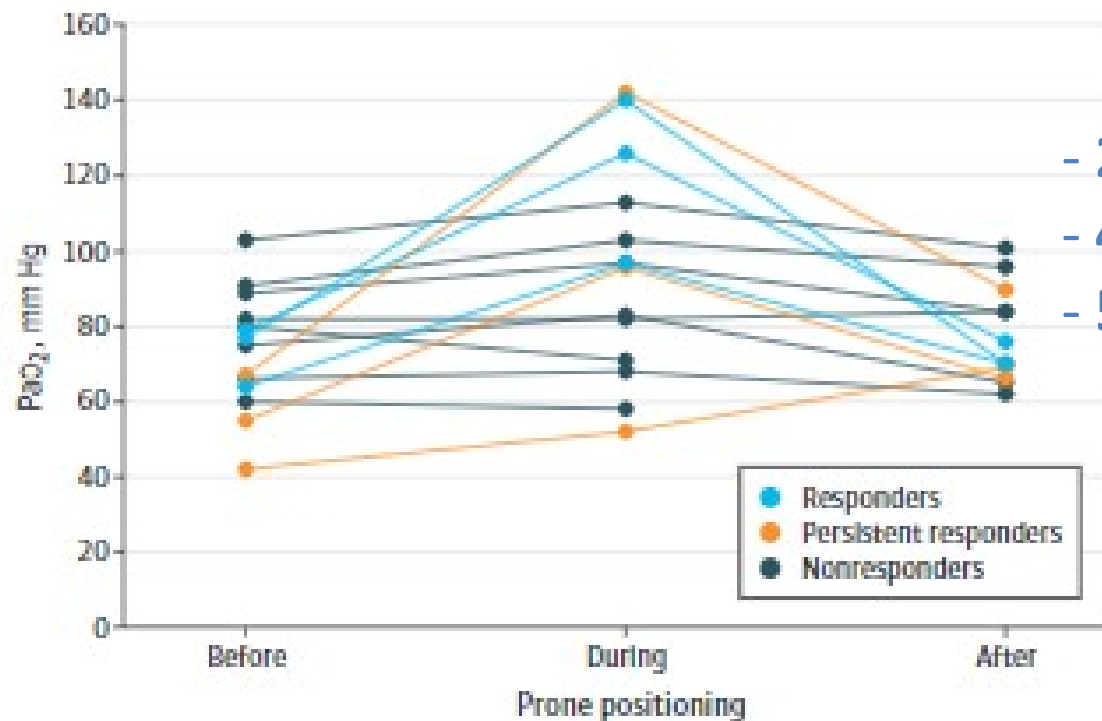
Table 1. The clinical presentation of the study group on hospital admission and on the day of ICU admission

Variable	PP group (n=21)	PP-free group (n=17)	P-value
Demographic characteristics			
Age (yr)	61 ± 10	60 ± 12	0.68
Obesity (BMI >30 kg/m ²)	10	4	0.18
Diabetes mellitus	7	7	0.74
Arterial hypertension	10	6	0.52
COPD	2	0	0.49
Symptom on hospital admission			
Dyspnea	21	10	0.02
Cough	15	6	0.48
Fever	13	5	0.06
Headache	5	1	0.19
Anosmia/ageusia	3	2	0.60
Vomiting	3	2	0.60
Abdominal pain	5	0	0.05
Diarrhea	4	0	0.11

Variable	PP group (n=21)	PP-free group (n=17)	P-value
Treatment and outcome			
High-flow nasal oxygen	12	4	0.05
Invasive mechanical ventilation	9	4	0.30
Corticosteroid	21	17	1
Diuretics	19	10	0.05
ICU stay (day)	9.5±6.6	7.6±3.7	0.13
Delay of invasive mechanical ventilation (day)	8.1±5.8	6.0±3.2	0.17
Survivor	7	5	0.79

Our study confirms that early application of the PP can improve severe hypoxemia and respiratory failure in COVID-19 patients with spontaneous breathing. However, early application of PP was not associated with a reduction in mortality rate or in the use of invasive mechanical ventilation. Randomized controlled trials are needed to confirm the beneficial effects of PP in COVID-19 patients with spontaneous breathing.

Use of Prone Positioning in Nonintubated Patients With COVID-19 and Hypoxemic Acute Respiratory Failure



- 25 % de bonne réponse au DV
- 40 % des répondeurs : DV>3 H
- 50% persistent répondeurs

Systematic Review

Awake prone positioning in non-intubated patients with acute hypoxemic respiratory failure due to COVID-19: A systematic review of proportional outcomes comparing observational studies with and without awake prone positioning in the setting of COVID-19

Conclusions: APP was associated with improvement of oxygenation but did not reduce the intubation rate in patients with acute respiratory failure due to COVID-19. This finding is limited by the high heterogeneity and the observational nature of included studies. Randomized controlled clinical studies are needed to definitively assess whether APP could improve key outcome such as intubation and mortality rate in these patients.

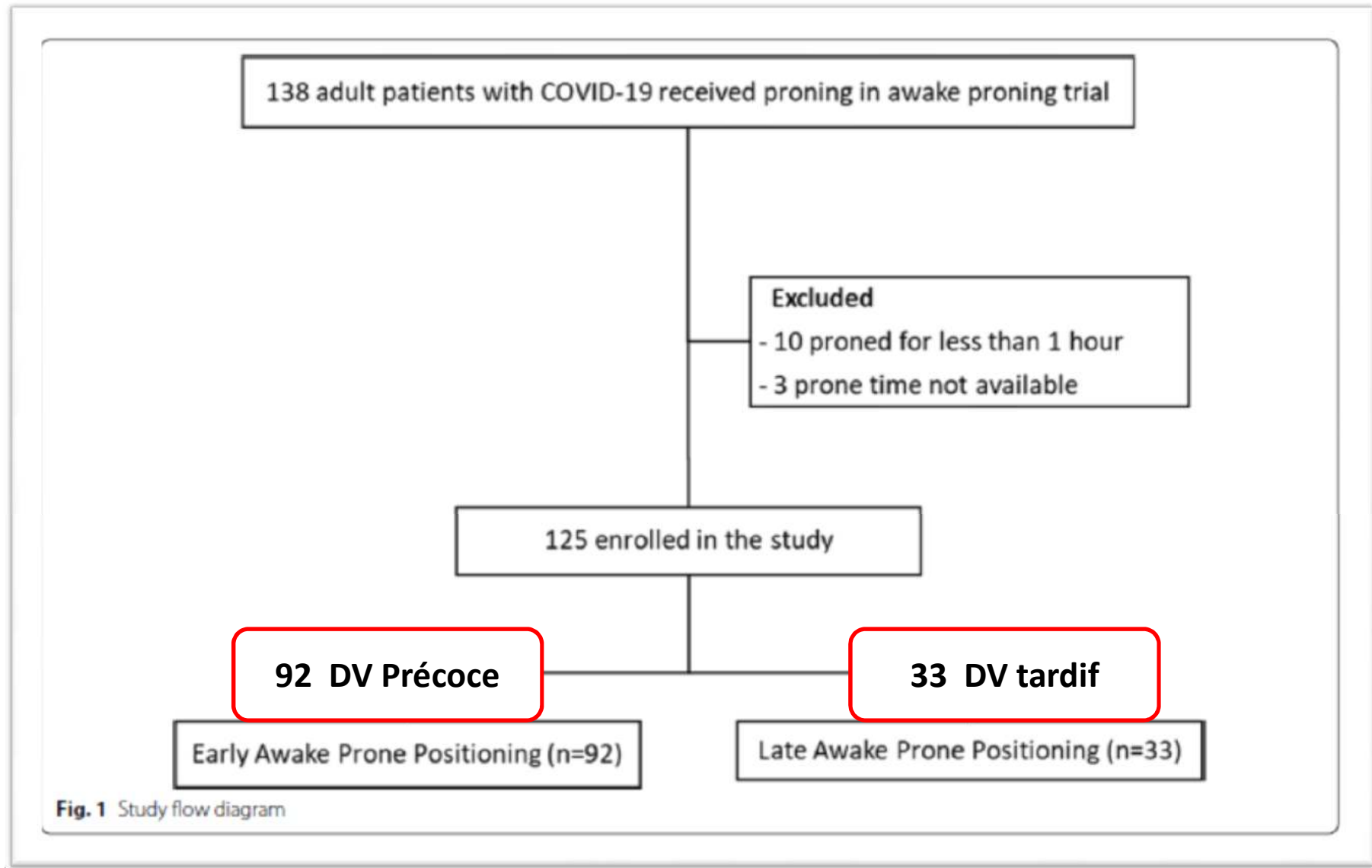
RESEARCH

Open Access

Early versus late awake prone positioning in non-intubated patients with COVID-19

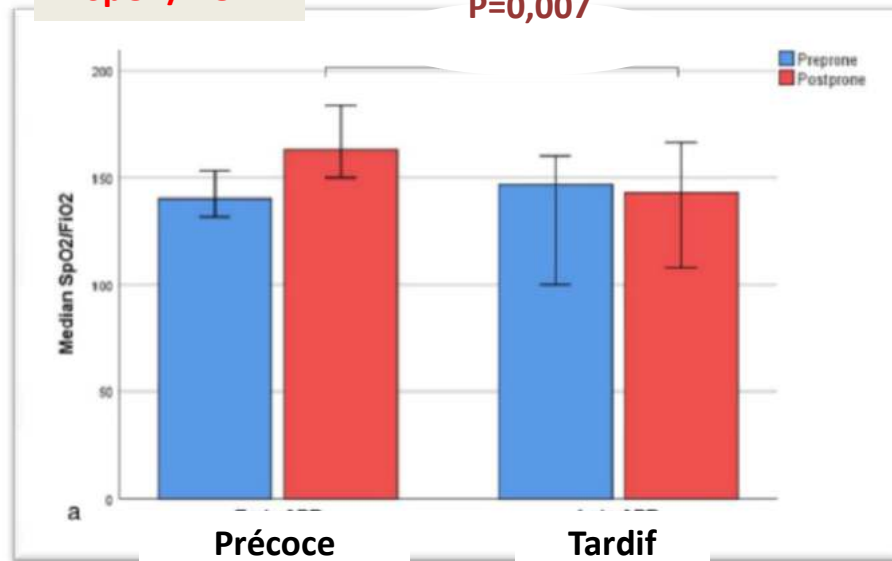


Ramandeep Kaur¹, David L. Vines¹, Sara Mirza², Ahmad Elshafei¹, Julie A. Jackson³, Lauren J. Harnois¹, Tyler Weiss¹, J. Brady Scott¹, Matthew W. Trump⁴, Idrees Mogri⁵, Flor Cerda⁶, Amnah A. Alolaiwat¹, Amanda R. Miller¹, Andrew M. Klein¹, Trevor W. Oetting³, Lindsey Morris⁵, Scott Heckart³, Lindsay Capouch³, Hangyong He⁷ and Jie Li^{1*} 



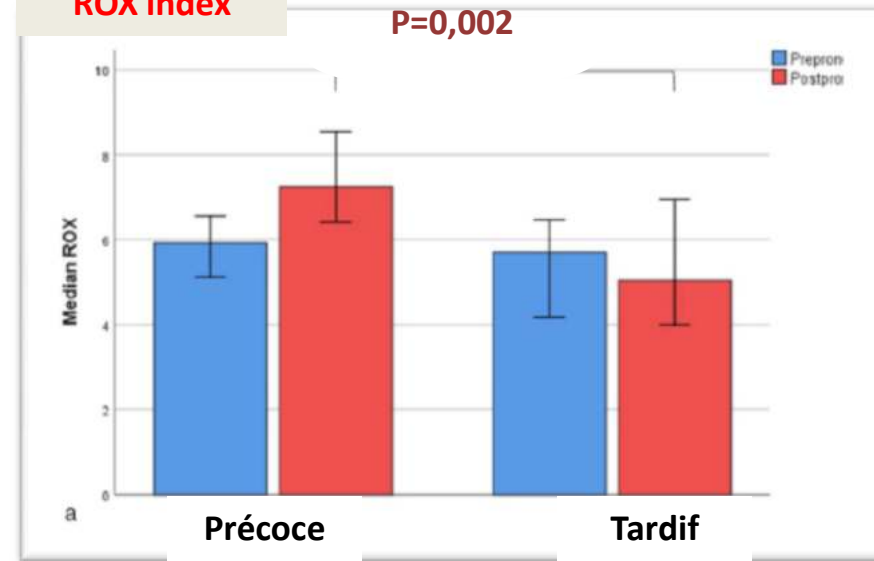
SpO₂/FiO₂

P=0,007



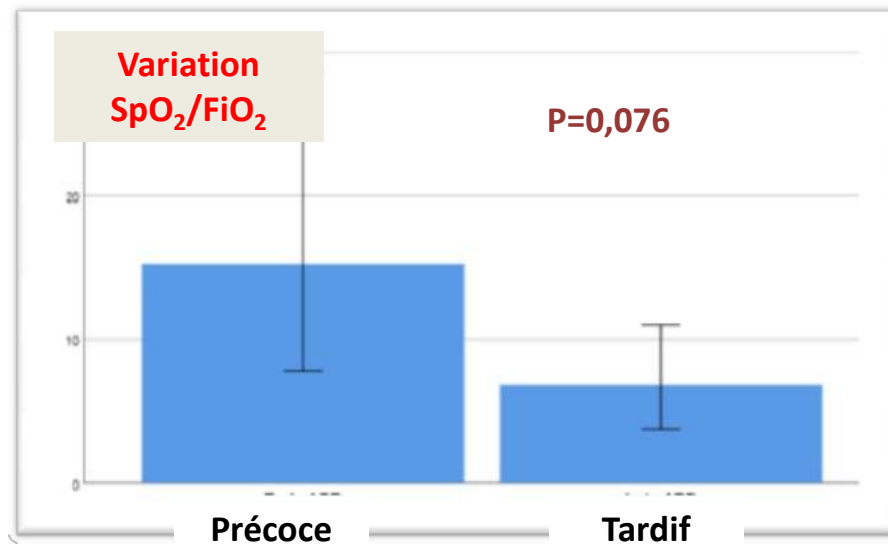
ROX index

P=0,002



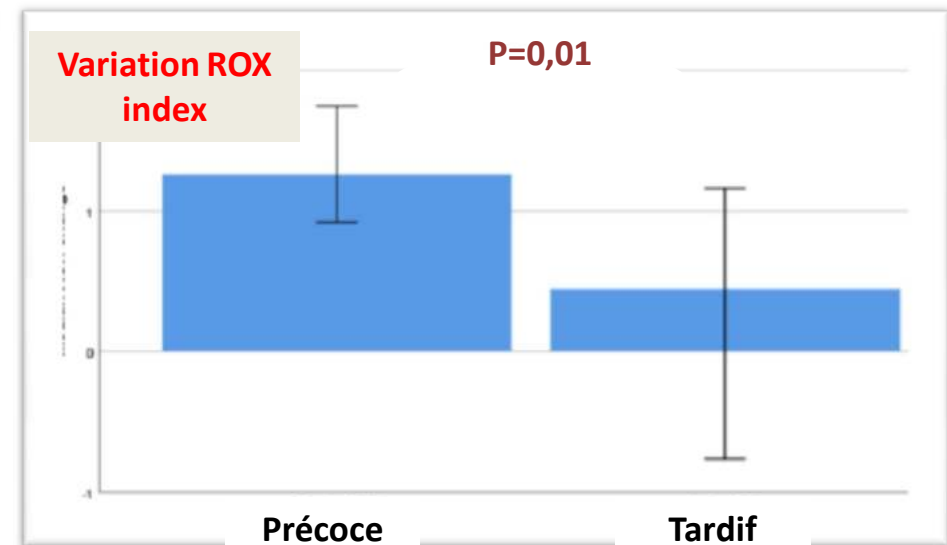
**Variation
SpO₂/FiO₂**

P=0,076



**Variation ROX
index**

P=0,01



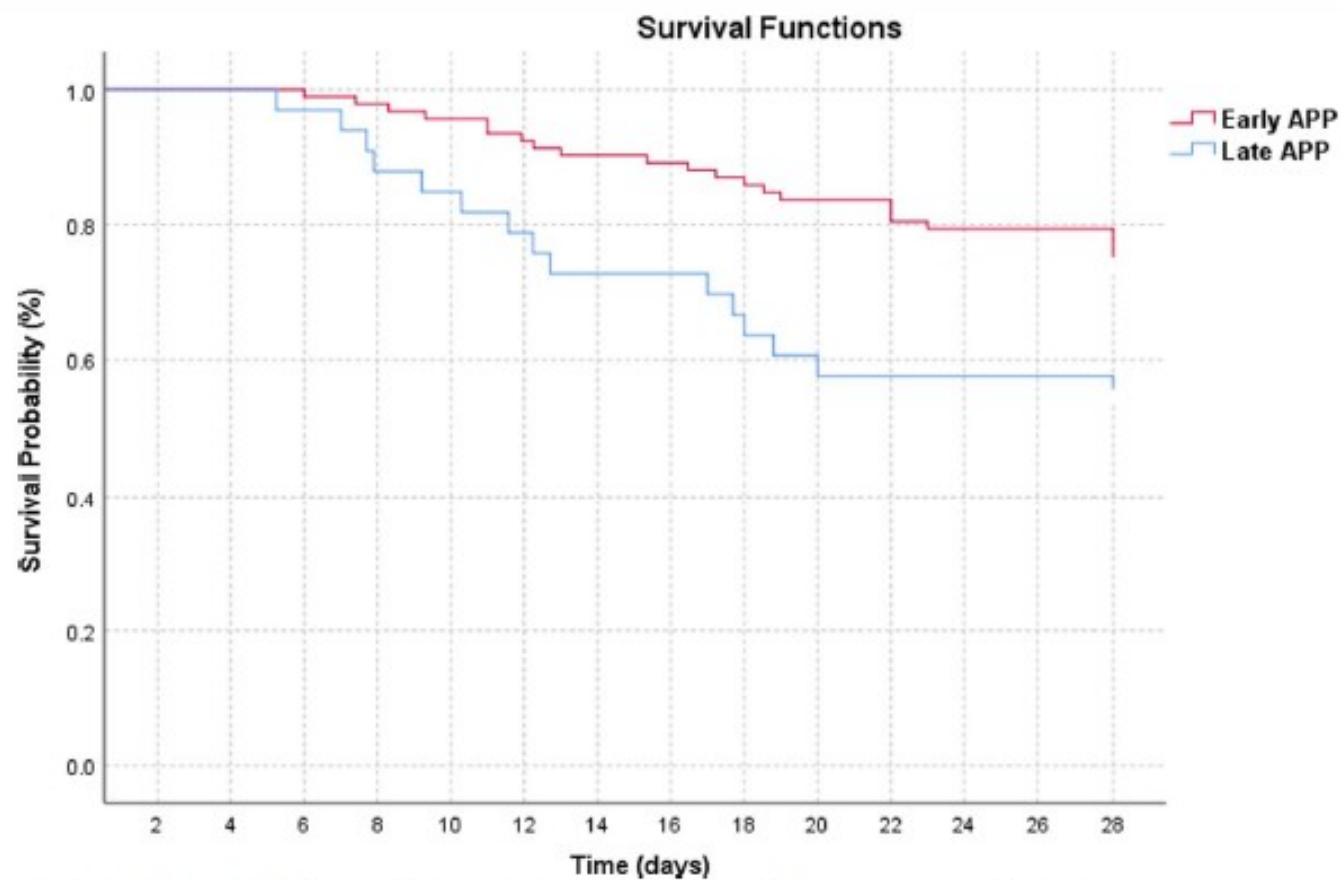
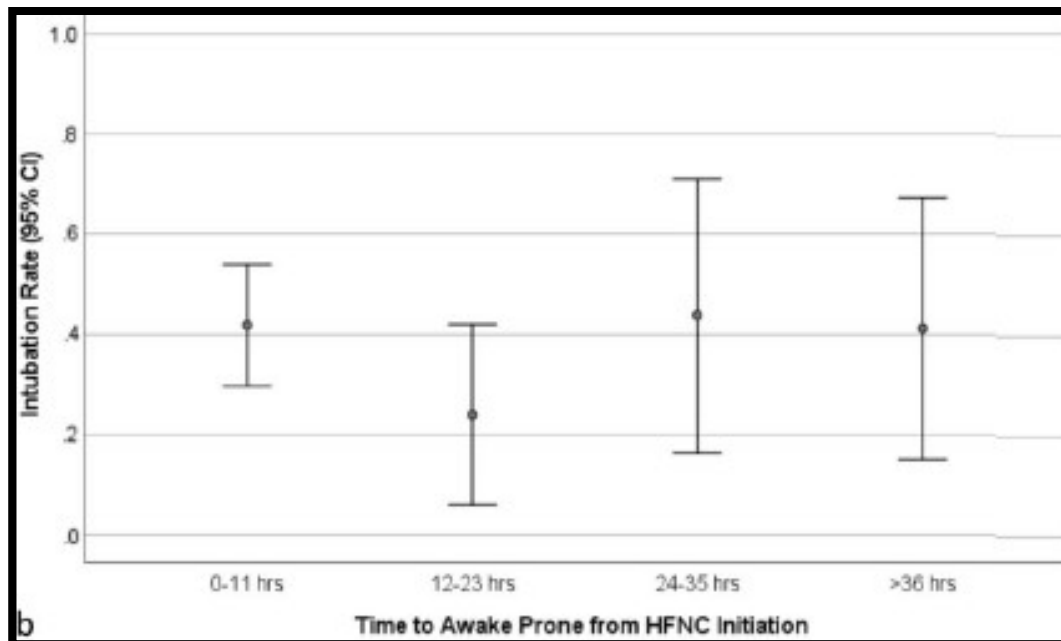
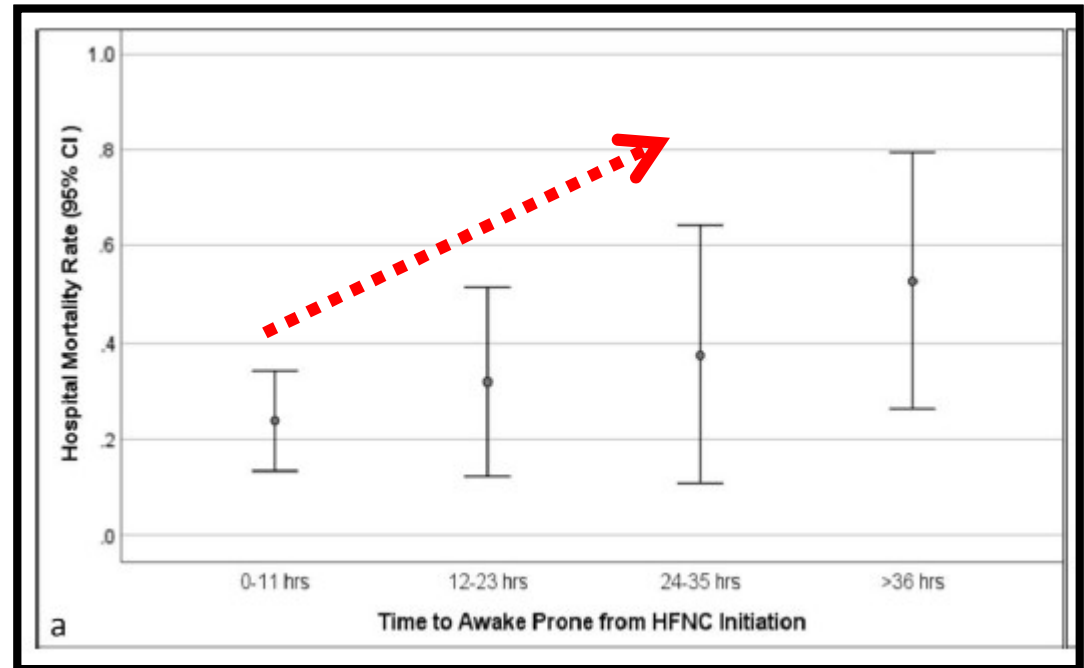


Fig. 5 Kaplan–Meier Survival probabilities over 28 days after hospital admission (APP, awake prone positioning)

As the duration between HFNC initiation to APP increased, the hospital mortality increased



No impact on the intubation rate

Table 2 Study outcome comparison between the early and late awake prone group

Outcomes	Early Awake Prone (<i>n</i> = 92)	Late Awake Prone (<i>n</i> = 33)	<i>P</i> value
28 day mortality, <i>n</i> (%)	24 (26)	15 (45)	0.039
Death without intubation, <i>n</i> (%)	7 (7.6)	6 (18.2)	0.088
Hospital LOS (d), median (IQR)	13.97 (9.64–24.9)	12.53 (9–20.9)	0.66
ICU LOS (d), median (IQR)	7.91 (4.25–21)	8 (3.38–16.9)	0.55
IMV use, <i>n</i> (%)	34 (37)	14 (42.4)	0.58
IMV duration (d), median (IQR)	10.59 ± 6.12	8.89 ± 6.10	0.43
Time from HFNC start to intubation (d), median (IQR)	5.13 (1.89–10.85)	5.27 (3.2–9.56)	0.65
Time from APP start to intubation (d), median (IQR)	4.73 (1.85–10.6)	3.12 (1.31–8.23)	0.37
NIV use, <i>n</i> (%)	23 (25)	5 (15.2)	0.24
Time from HFNC start to NIV (d), median (IQR)	3.74 (0.83–9.61)	2.11 (0.7–8.95)	0.77
ECMO use, <i>n</i> (%)	2 (2.2)	0	0.54
Inhaled vasodilator use, <i>n</i> (%)	26 (28.3)	9 (27.3)	0.28

LOS length of stay, IQR interquartile range, ICU intensive care unit, IMV invasive mechanical ventilation, NIV noninvasive ventilation, HFNC high-flow nasal cannula, ECMO extracorporeal membrane oxygenation, APP Awake Prone Positioning

Hétérogénéité

- Publications sont très **hétérogènes** (prospectives /rétrospectives....)
- **Délai** de l'application du DV n'a pas été pris en considération par les études.

Hétérogénéité

- Un meilleur pronostic a été observé lors du DV précoce : **Phase exsudative du SDRA.**

Coppo A, et Lancet Respir Med. 2020;8(8):765–74.

- Une meilleure réponse au DV sera observée avec des **séances prolongées de DV.**

Guérin C et al. N Engl J Med. 2013;368(23):2159–68.

DV en ventilation spontanée

Améliore **l'oxygénation +++** (démontré par plusieurs études)

Diminue le recours à **la ventilation mécanique** invasive (certaines études)

Diminue **la mortalité** quant il est précocement appliqué

Conclusion

- DV en ventilation spontanée: **Améliore L'hypoxémie** des patients ayant une pneumopathie à COVID-19
- **Probablement améliore le pronostic vital?**

Conclusion

Nous **recommandons** la pratique du décubitus
ventral **précoce** avec des séances **prolongées**
tant que notre patient l'accepte et le tolère

**Merci pour votre
attention**