



## **Intensive care unit-to-unit capacity transfers are associated with increased mortality: no hasty conclusions in the event of a crisis**

Benoit Painvin, Stephan Ehrmann, Arnaud W. Thille, Jean-Marc Tadie

### **► To cite this version:**

Benoit Painvin, Stephan Ehrmann, Arnaud W. Thille, Jean-Marc Tadie. Intensive care unit-to-unit capacity transfers are associated with increased mortality: no hasty conclusions in the event of a crisis. *Annals of Intensive Care*, 2022, 12 (1), pp.60. 10.1186/s13613-022-01031-7 . hal-03716457

**HAL Id: hal-03716457**

**<https://hal.science/hal-03716457>**

Submitted on 7 Jul 2022

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution 4.0 International License

LETTER TO THE EDITOR

Open Access



# Intensive care unit-to-unit capacity transfers are associated with increased mortality: no hasty conclusions in the event of a crisis

Benoit Painvin<sup>1\*</sup> , Stephan Ehrmann<sup>2,3</sup>, Arnaud W. Thille<sup>4</sup> and Jean-Marc Tadié<sup>1,5\*</sup>

Dear Editor,

We read with great interest the study of Parenmark et al., a large retrospective study, including 15,588 ICU-to-ICU interhospital transfers in Sweden over a 2-year period [1].

The authors describe three types of interhospital transfers: clinical transfer (need for specialised care not available in the admitting hospital), capacity transfer (making room for patients with more urgent need for intensive care when all ICU beds are occupied) and repatriation (return to the home ICU following initial treatment at another unit) the last one being labelled as reference. Their main result indicates an increase mortality within 30 days following discharge from the referring ICU in the subgroups of clinical and capacity transfers, with adjusted odds ratio of 1.17 (95% CI 1.02–1.36) and 1.25 (95% CI 1.06–1.49), respectively.

As the authors notice, the main result is somewhat surprising as higher mortality has not been reported in recent literature [2, 3]. Reasons could be explained as follow: first, the authors specify that 20% of capacity transfers occurred at night, involving severe critically ill patients with acute lung injury, sepsis, and cardiogenic

shock. In light of these results, one could wonder whether it is safe or not for the patient to undergo a night ICU-to-ICU transfer compared to withholding the interhospital transport for a few hours until the sun rises, since night-shift patient's discharge has been associated with a higher mortality [4].

Second, the authors pointed out that Sweden has a low number of ICU bed which could play a role in the higher mortality rate found following interhospital capacity and clinical transfers [5].

Solutions to tackle this higher mortality related to interhospital transfer would be to build up local resources for critical care: increasing ICU beds, recruiting ICU highly trained staff and Intensivist doctors to avoid transfers of critically ill patients at nights with severe unstable pathologies (especially during wintertime when respiratory sepsis and acute respiratory distress occur more frequently [6]).

Furthermore, the authors' message must be balanced when facing crisis, such as the COVID-19 pandemic. Assuming that interhospital transfers are unsafe and choosing a strategy of implementation of new ICU beds to face surge of critically ill patients could lead to a higher mortality [7]. During the first months of the COVID-19 crisis, countries planned and organized large-scale interhospital transfers either for clinical or capacity reasons and demonstrated that transferred patients did not have a higher mortality rate [2, 3, 8]. However, we agree with the authors and acknowledge that “understanding the impact of ICU-to-ICU transfer on patient outcome is complex and must consider a couple of important aspects” such as identifying appropriate control patients.

This comment refers to the article available online at <https://doi.org/10.1186/s13613-022-01003-x>.

\*Correspondence: benoit.painvin@chu-rennes.fr; jean-marc.tadie@chu-rennes.fr

<sup>1</sup> Service des Maladies Infectieuses et de Réanimation Médicale, Centre Hospitalier Universitaire de Rennes, Hôpital Pontchaillou, 2 rue Henri le Guilloux, 35033 Rennes, France  
Full list of author information is available at the end of the article

Finally, as mentioned by the authors, robust prospective studies including before departure, ongoing transport and arrival data are needed to determine the timing of the transfer, the safest medical condition allowing for transfer, and whether transport impacts ICU mortality.

#### Abbreviations

ICU: Intensive care unit.

#### Acknowledgements

None.

#### Author contributions

BP and JMT conceived the letter; BP wrote the manuscript and SE, AWT and JMT revised it. The authors read and approved the final manuscript.

#### Funding

This study did not receive any funding.

#### Availability of data and materials

Not applicable.

#### Declarations

##### Ethics approval and consent to participate

Not applicable.

##### Consent for publication

Not applicable.

##### Competing interests

The authors declare that they have no competing interests.

#### Author details

<sup>1</sup>Service des Maladies Infectieuses et de Réanimation Médicale, Centre Hospitalier Universitaire de Rennes, Hôpital Pontchaillou, 2 rue Henri le Guilloux, 35033 Rennes, France. <sup>2</sup>Service de Médecine Intensive Et Réanimation, CRICS- Triggersep Research Network, Centre Hospitalier Régional Universitaire de Tours, CIC INSERM 1415 Hôpital Bretonneau 2, boulevard Tonnellé, 27044 Tours, France. <sup>3</sup>Centre d'étude des pathologies respiratoires, INSERM U1100, Université de Tours, Tours, France. <sup>4</sup>Service de Médecine Intensive Et Réanimation, Centre Hospitalier Universitaire de Poitiers, 2 rue de la Milétrie, 90577 86000 Poitiers, France. <sup>5</sup>Faculté de Médecine, Université de Rennes 1, Unité INSERM CIC 1414, IFR 140, Rennes, France.

Received: 4 May 2022 Accepted: 20 May 2022

Published online: 02 July 2022

#### References

1. Parenmark F, Walther SM. Intensive care unit to unit capacity transfers are associated with increased mortality: an observational cohort study on patient transfers in the swedish intensive care register. *Ann Intensive Care*. 2022;12:31.
2. Sanchez M-A, Vuagnat A, Grimaud O, Leray E, Philippe J-M, Lescure F-X, et al. Impact of ICU transfers on the mortality rate of patients with COVID-19: insights from comprehensive national database in France. *Ann Intensive Care*. 2021;11:151.
3. Chen E, Longcoy J, McGowan SK, Lange-Maia BS, Avery EF, Lynch EB, et al. interhospital transfer outcomes for critically ill patients with coronavirus disease 2019 requiring mechanical ventilation. *Crit Care Explor*. 2021;3:e0559.
4. Duke GJ, Green JV, Briedis JH. Night-shift discharge from intensive care unit increases the mortality-risk of ICU survivors. *Anaesth Intensive Care*. 2004;32:697–701.
5. Bauer J, Brüggmann D, Klingelhöfer D, Maier W, Schwettmann L, Weiss DJ, et al. Access to intensive care in 14 european countries: a spatial analysis of intensive care need and capacity in the light of COVID-19. *Intensive Care Med*. 2020;46:2026–34.
6. Danai PA, Sinha S, Moss M, Haber MJ, Martin GS. Seasonal variation in the epidemiology of sepsis. *Crit Care Med*. 2007;35:410–5.
7. Taccone FS, Vangoethem N, Depauw R, Wittebole X, Blot K, Vanoyen H, et al. The role of organizational characteristics on the outcome of COVID-19 patients admitted to the ICU in Belgium. *Lancet Reg Health Europe*. 2020;2:100019.
8. Painvin B, Messet H, Rodriguez M, Lebouvier T, Chatellier D, Soulat L, et al. Inter-hospital transport of critically ill patients to manage the intensive care unit surge during the COVID-19 pandemic in France. *Ann Intensive Care*. 2021;11:54.

#### Publisher's Note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

**Submit your manuscript to a SpringerOpen<sup>®</sup> journal and benefit from:**

- Convenient online submission
- Rigorous peer review
- Open access: articles freely available online
- High visibility within the field
- Retaining the copyright to your article

Submit your next manuscript at ► [springeropen.com](https://www.springeropen.com)