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Outcome of acute hypoxaemic respiratory failure: insights from the LUNG SAFE Study

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Patients with hypoxaemic respiratory failure represent more than one-third of patients requiring mechanical ventilation and their mortality often exceeds 40%. Adjusting for severity, mortality is similar whether it is unilateral or bilateral (as in ARDS). https://bit.ly/2VshdWc

Cite this article as: Pham T, Pesenti A, Bellani G, *et al*. Outcome of acute hypoxaemic respiratory failure: insights from the LUNG SAFE Study. *Eur Respir J* 2021; 57: 2003317 [https://doi.org/10.1183/

13993003.03317-2020].

ABSTRACT

Background: Current incidence and outcome of patients with acute hypoxaemic respiratory failure requiring mechanical ventilation in the intensive care unit (ICU) are unknown, especially for patients not meeting criteria for acute respiratory distress syndrome (ARDS).

Methods: An international, multicentre, prospective cohort study of patients presenting with hypoxaemia early in the course of mechanical ventilation, conducted during four consecutive weeks in the winter of 2014 in 459 ICUs from 50 countries (LUNG SAFE). Patients were enrolled with arterial oxygen tension/inspiratory oxygen fraction ratio $\leqslant$300 mmHg, new pulmonary infiltrates and need for mechanical ventilation with a positive end-expiratory pressure of $\geqslant$5 cmH_2O. ICU prevalence, causes of hypoxaemia, hospital survival and factors associated with hospital mortality were measured. Patients with unilateral *versus* bilateral opacities were compared.

Findings: 12 906 critically ill patients received mechanical ventilation and 34.9% with hypoxaemia and new infiltrates were enrolled, separated into ARDS (69.0%), unilateral infiltrate (22.7%) and congestive heart failure (CHF; 8.2%). The global hospital mortality was 38.6%. CHF patients had a mortality comparable to ARDS (44.1% *versus* 40.4%). Patients with unilateral-infiltrate had lower unadjusted mortality, but similar adjusted mortality compared to those with ARDS. The number of quadrants on chest imaging was associated with an increased risk of death. There was no difference in mortality comparing patients with unilateral-infiltrate and ARDS with only two quadrants involved.

Interpretation: More than one-third of patients receiving mechanical ventilation have hypoxaemia and new infiltrates with a hospital mortality of 38.6%. Survival is dependent on the degree of pulmonary involvement whether or not ARDS criteria are reached.