




Prognostic factors for development of acute respiratory distress syndrome following traumatic injury: a systematic review and meta-analysis

Alexandre Tran ^{1,2,3}, Shannon M. Fernando^{3,4}, Laurent J. Brochard^{5,6}, Eddy Fan^{5,7,8}, Kenji Inaba⁹, Niall D. Ferguson^{5,7,8}, Carolyn S. Calfee¹⁰, Karen E.A. Burns^{5,6,11}, Daniel Brodie^{12,13}, Victoria A. McCredie^{5,14}, Dennis Y. Kim¹⁵, Kwadwo Kyeremanteng³, Jacinthe Lampron¹, Arthur S. Slutsky^{5,6}, Alain Combes^{16,17} and Bram Rochweg^{11,18}

¹Dept of Surgery, University of Ottawa, Ottawa, ON, Canada. ²School of Epidemiology and Public Health, University of Ottawa, Ottawa, ON, Canada. ³Division of Critical Care, Dept of Medicine, University of Ottawa, Ottawa, ON, Canada. ⁴Dept of Emergency Medicine, University of Ottawa, Ottawa, ON, Canada. ⁵Interdepartmental Division of Critical Care Medicine, University of Toronto, Toronto, ON, Canada. ⁶Keenan Research Centre for Biomedical Science, Li Ka Shing Knowledge Institute, St Michael's Hospital, Toronto, ON, Canada. ⁷Institute of Health Policy, Management and Evaluation, Dalla Lana School of Public Health, University of Toronto, Toronto, ON, Canada. ⁸Toronto General Hospital Research Institute, University Health Network, Toronto, ON, Canada. ⁹Division of Acute Care Surgery, Dept of Surgery, University of Southern California, Los Angeles, CA, USA. ¹⁰Division of Pulmonary, Critical Care, Allergy, and Sleep Medicine, University of California San Francisco, San Francisco, CA, USA. ¹¹Dept of Health Research Methods, Evidence, and Impact, McMaster University, Hamilton, ON, Canada. ¹²Division of Pulmonary, Allergy, and Critical Care Medicine, Dept of Medicine, Columbia University College of Physicians and Surgeons, New York, NY, USA. ¹³Center for Acute Respiratory Failure, New York-Presbyterian Hospital, New York, NY, USA. ¹⁴Krembil Research Institute, Toronto Western Hospital, University Health Network, Toronto, ON, Canada. ¹⁵Dept of Surgery, University of California Los Angeles, Los Angeles, CA, USA. ¹⁶Institute of Cardiometabolism and Nutrition, Sorbonne Université, INSERM UMRS 1166, Paris, France. ¹⁷Service de Médecine Intensive-Réanimation, Institut de Cardiologie, AP-HP, Hôpital Pitié-Salpêtrière, Paris, France. ¹⁸Dept of Medicine, Division of Critical Care, McMaster University, Hamilton, ON, Canada.

Corresponding author: Alexandre Tran (alettran@toh.ca)



Shareable abstract (@ERSpublications)

This systematic review identifies one important modifiable factor, the amount of crystalloid resuscitation within the first 24 h of injury, and several non-modifiable factors associated with development of post-traumatic ARDS <https://bit.ly/3klhshF>

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Abstract

Background Our purpose was to summarise the prognostic associations between various clinical risk factors and development of acute respiratory distress syndrome (ARDS) following traumatic injury.

Methods We conducted this review in accordance with the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) and CHARMS (Critical Appraisal and Data Extraction for Systematic Reviews of Prediction Modeling Studies) guidelines. We searched six databases from inception through December 2020. We included English language studies describing the clinical risk factors associated with development of post-traumatic ARDS, as defined by either the American–European Consensus Conference or Berlin definition. We pooled adjusted odds ratios for prognostic factors using the random effects method. We assessed risk of bias using the QUIPS (Quality in Prognosis Studies) tool and certainty of findings using GRADE (Grading of Recommendations Assessment, Development and Evaluation) methodology.

Results We included 39 studies involving 5350927 patients. We identified the amount of crystalloid resuscitation as a potentially modifiable prognostic factor associated with development of post-traumatic ARDS (adjusted OR 1.19, 95% CI 1.15–1.24 for each additional litre of crystalloid administered within the first 6 h after injury; high certainty). Non-modifiable prognostic factors with a moderate or high certainty of

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association with post-traumatic ARDS included increasing age, non-Hispanic White race, blunt mechanism of injury, presence of head injury, pulmonary contusion or rib fracture and increasing chest injury severity.

Conclusions We identified one important modifiable factor, the amount of crystalloid resuscitation within the first 24 h of injury, and several non-modifiable factors associated with development of post-traumatic ARDS. This information should support the judicious use of crystalloid resuscitation in trauma patients and may inform development of risk stratification tools.