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Feasibility and clinical impact of out-of-ICU noninvasive respiratory support in patients with COVID-19-related pneumonia

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In patients with SARS-CoV-2 infection and acute respiratory failure, this study demonstrates that the utilisation of noninvasive respiratory support delivered outside the ICU was feasible and effective, but associated with a risk of staff contamination <https://bit.ly/33mrJTU>

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ABSTRACT

Introduction: The severe acute respiratory syndrome-coronavirus 2 outbreak spread rapidly in Italy and the lack of intensive care unit (ICU) beds soon became evident, forcing the application of noninvasive respiratory support (NRS) outside the ICU, raising concerns over staff contamination. We aimed to analyse the safety of the hospital staff and the feasibility and outcomes of NRS applied to patients outside

the ICU.

Methods: In this observational study, data from 670 consecutive patients with confirmed coronavirus disease 2019 referred to pulmonology units in nine hospitals between March 1 and May 10, 2020 were analysed. Data collected included medication, mode and usage of NRS (*i.e.* high-flow nasal cannula (HFNC), continuous positive airway pressure (CPAP), noninvasive ventilation (NIV)), length of stay in hospital, endotracheal intubation (ETI) and deaths.

Results: 42 (11.1%) healthcare workers tested positive for infection, but only three of them required hospitalisation. Data are reported for all patients (69.3% male), whose mean \pm SD age was 68 \pm 13 years. The arterial oxygen tension/inspiratory oxygen fraction ratio at baseline was 152 \pm 79, and the majority (49.3%) of patients were treated with CPAP. The overall unadjusted 30-day mortality rate was 26.9%, with 16%, 30% and 30% for HFNC, CPAP and NIV, respectively, while the total ETI rate was 27%, with 29%, 25% and 28%, respectively; the relative probability of death was not related to the NRS used after adjustment for confounders. ETI and length of stay were not different among the groups. Mortality rate increased with age and comorbidity class progression.

Conclusions: The application of NRS outside the ICU is feasible and associated with favourable outcomes. Nonetheless, it was associated with a risk of staff contamination.