

## Introduction

The Coronavirus disease 2019 (COVID-19) outbreak has generated an unprecedented surge of deteriorating and critically ill patients with severe and sustained pressures on intensive care units and staff. Hospitals receiving COVID-19 patients increased ward and intensive care unit (ICU) capacities, and cohorted the hospital to contain the spread of infection<sup>1</sup>. Organizational strategies included major redeployment of staff from other areas into critical care, as well as dilution of staff to patient ratios.

In our hospital, a major tertiary center in London, the Critical Care Outreach Team (CCOT) remained operational. The team worked alongside the ICU team by providing clinical expertise and support to non-ICU physicians and nurses, as well as providing non-invasive ventilatory assistance on the hospital wards. This study evaluates the demand and efficacy of the critical care outreach during the COVID-19 pandemic.

## Methods

We prospectively evaluated all consecutive patients referred to critical care outreach enrolled during a twelve-month period. We reported the cumulative number of activities and interventions, and baseline characteristics, acuity level and patients' clinical outcome. The rate of ICU admissions, activity plan, patients' acuity and mortality are compared to historical data pre-pandemic.

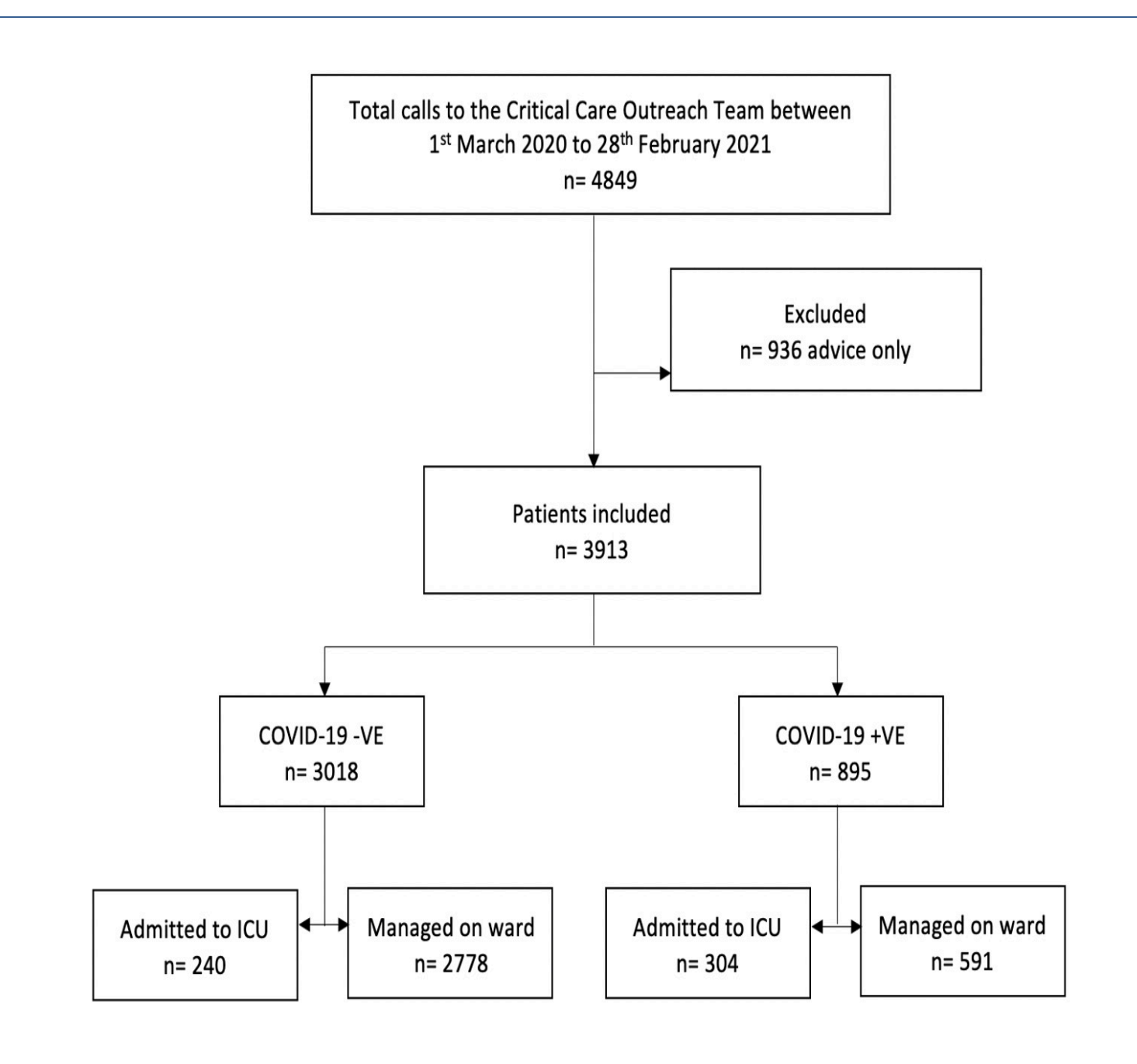


Figure 1. Study Flow Diagram

## Results

Amongst 4849 patients referred, 3913 had a clinical review and of those 895 were COVID-19 positive, refers to Figure 1. NEWS-2 score was similar amongst both groups (See Figure 2). All the intervention delivered by the Critical Care Outreach Team are summarized in Figure 3. Non-invasive ventilation was mostly delivered to COVID-19 patients (COVID-19 +VE: 853/895, 95% vs COVID-19 -VE: 119/3018, 4%) alongside awake prone positioning (COVID-19 +VE: 232/895, 26% vs COVID-19 -VE: 0/3018, 0%). Compared to pre-pandemic, the cumulative number of patients assessed increased (observed: 3913 vs historical: 3615; P= 0.204), patients meeting Level 2 acuity were higher (observed: 51% vs historical: 21%; P= 0.003), but ICU admission rate did not increase significantly (observed: 12% vs historical: 9%; P= 0.065), and greater mortality rate (observed: 14% vs historical: 8%; P= 0.046) was observed.

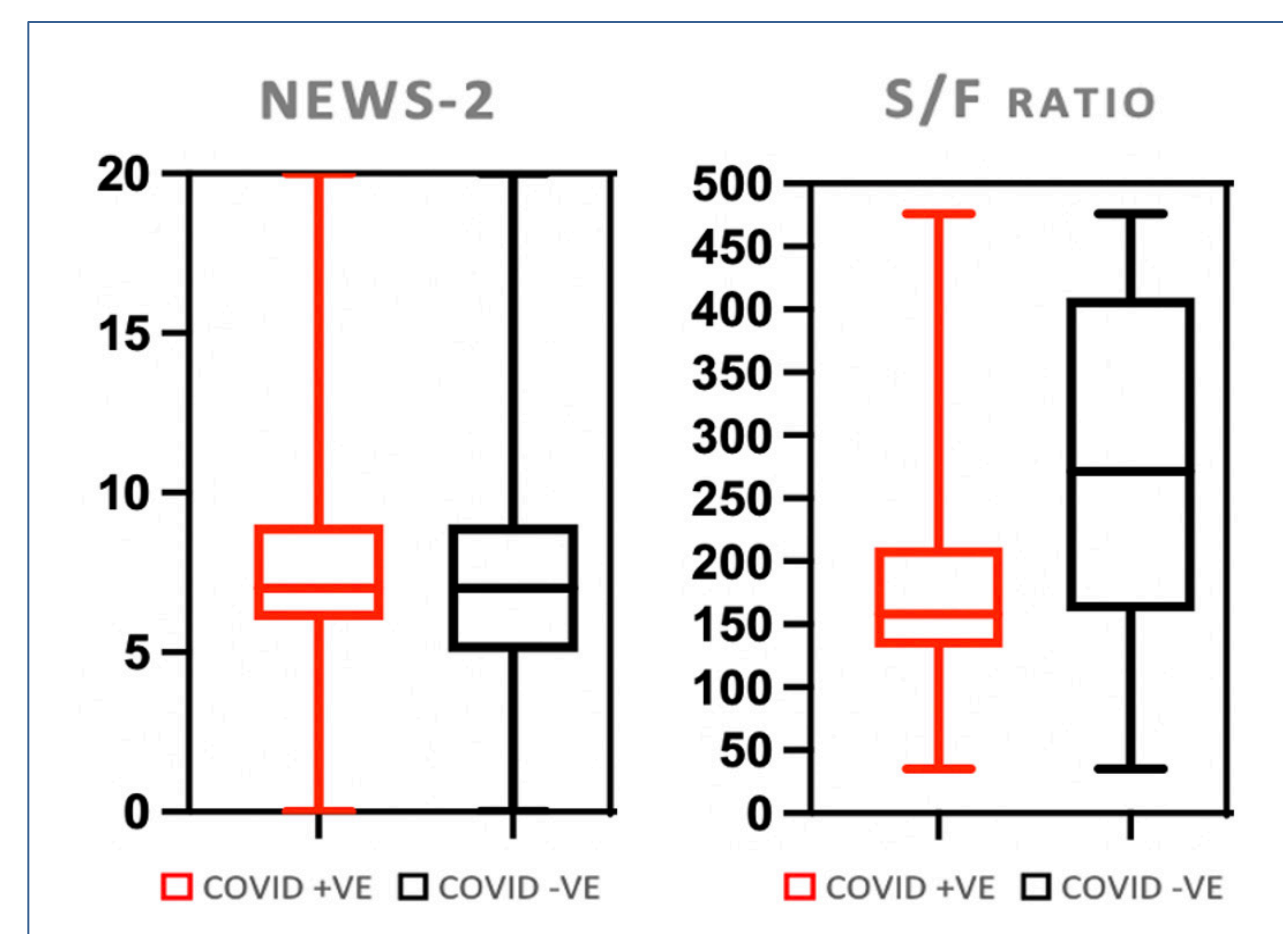


Figure 2. Difference in NEWS-2 Score and SpO<sub>2</sub>/FiO<sub>2</sub> ratio amongst patients

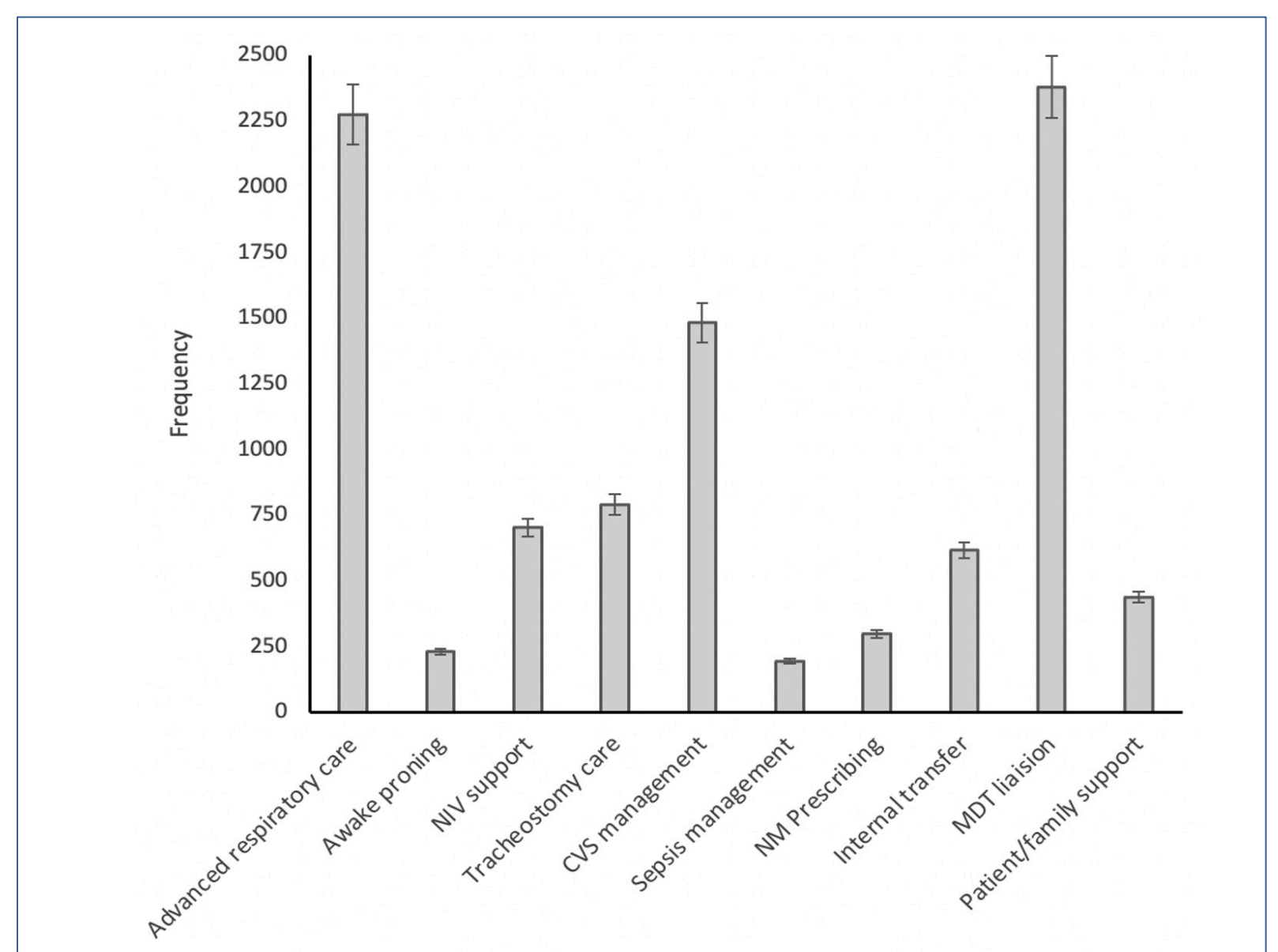


Figure 3. Intervention frequency distribution

## Conclusion

Critical care outreach ensure patients receive the appropriate level of critical care by delivering non-invasive ventilation on the ward, optimizing and triaging acutely unwell patients. CCOT can bridge the gap between the intensive care unit and general wards and supports the concept of "critical care without walls" acting as a valuable resource in optimizing and potentially averting critical care admissions. The study suggests key factors to consider while planning resource management and staff relocation in building a system that can safely care for acutely ill patients in future waves or new epidemics.

## References

1 National Institute for Health and Care Excellence (NICE). COVID-19 rapid guideline critical care in adults. NICE. 2021. [cited 2021 Mar 12]. Available at: <https://www.nice.org.uk/guidance/ng159/resources/covid19-rapid-guideline-critical-care-in-adults-pdf-66141848681413>