2. Gottlieb, et al. *JAMA* 2021;325:632–44.
3. Garibaldi, et al. *JAMA NetwOpen* 2021;4:e213071.
4. Beigel, et al. *N Engl J Med* 2020;383:1813–26.
5. Kalil, et al. *N Engl J Med* 2020.
6. Temesgen, et al. *medRxiv* 2021.

S52 CONVENTIONAL OXYGEN THERAPY VERSUS CPAP AS A CEILING OF CARE IN WARD-BASED PATIENTS WITH COVID-19: A MULTI-CENTRE COHORT EVALUATION

¹P Bradley, ²J Wilson, ³R Taylor, ⁴NWCORR Study group, ²P Whittemore, ⁵E Nuttall, ⁶A Ashish, ¹A Bentley, ⁷T Bongers, ⁸T Gatheral, ¹TW Felton, ¹N Chaudhuri, ¹L Pearmain. ¹North West Lung centre, Wythenshawe Hospital, Manchester University NHS Foundation Trust, Manchester, UK; ²North Manchester General Hospital, Manchester University NHS Foundation Trust, Manchester, UK; ³Research and Development, Blackpool Teaching Hospitals NHS Foundation Trust, Blackpool, UK; ⁴NWCORR North West Collaborative Organisation for Respiratory Research study group, North West, UK; ⁵Respiratory Department, Royal Preston Hospital, Lancashire Teaching Hospitals NHS Foundation Trust, Preston, UK; ⁶Respiratory Department, Royal Albert Edward Infirmary, Warrington, Wigan and Leigh Teaching Hospitals NHS Foundation Trust, Wigan, UK; ⁷Respiratory Department, Blackpool Teaching Hospitals NHS Foundation Trust, Blackpool, UK; ⁸Respiratory department, University Hospitals of Morecambe Bay NHS Foundation Trust, Lancaster, UK

10.1136/thorax-2021-BTSabstracts.58

Background Continuous positive airway pressure (CPAP) therapy is commonly used for respiratory failure due to severe COVID-19 pneumonitis, including in patients deemed unlikely to benefit from invasive mechanical ventilation (nIMV). Little evidence exists demonstrating superiority over conventional oxygen therapy, as acknowledged by current pragmatic guidelines, whilst ward-level delivery of CPAP presents practical challenges. Precedent studies have been limited by small numbers, subjective physician treatment-selection, and lack of a control group. We sought to compare clinical outcomes of oxygen therapy versus CPAP therapy in patients with COVID-19 who were nIMV.

Methods The North West Collaborative Organisation for Respiratory Research (NWCORR), a trainee-led network, performed a retrospective multi-centre cohort evaluation. Patient inclusion criteria were: a clinical diagnosis of COVID-19, a treatment escalation plan of ward-level care, treatment at a

hospital only providing one respiratory support strategy and clinical frailty score ≤ 6 . Patients were cohorted according to respiratory support strategy, either being CPAP in accordance with national guidelines or oxygen therapy requiring $\text{FiO}_2 \geq 0.4$ for over 12 hours; who would therefore have been eligible for CPAP if treated at a CPAP cohort hospital. Logistic regression modelling, using generalised estimating equations to account for within-hospital clustering, was performed to compare 30-day mortality between treatment groups, accounting for important confounders.

Results Seven hospitals provided data for 479 patients during the UK COVID-19 pandemic in 2020. Overall 30-day mortality was 75.6% in the oxygen group (186/246 patients) and 77.7% in the CPAP group (181/233 patients) (figure 1). A lack of evidence for a treatment effect persisted in the adjusted model (adjusted 30-day mortality odds ratio comparing CPAP to oxygen of 0.84, 95% CI 0.57–1.23, $p=0.37$). 49.8% of patients receiving CPAP-therapy (118/237) chose to discontinue it.

Discussion This is, as far as we are aware, the first study comparing conventional oxygen therapy with CPAP in cohorts unaffected by physician selection. No survival difference was found between using oxygen alone or CPAP to treat patients with severe COVID-19 who were nIMV. A high patient-initiated discontinuation rate for CPAP suggests a significant treatment burden. Further reflection is warranted on the continued widespread use of CPAP in this patient group.

Please refer to page A189 for declarations of interest related to this abstract.

S53 IMPACT OF EMPIRICAL ANTIBIOTIC USE IN PATIENTS WITH COVID-19 ON MORBIDITY AND MORTALITY DURING THE FIRST AND SECOND UK SARS-COV-2 WAVES

S Waring, G Gamtkitsulashvili, S Kumar, Y Narayan, A D'Souza, S Jiwani, O Taylor, G Collins, K Patrick, A Sethuraman, S Naik, S Kuckreja, R Ragatha, M Anwar, U Ekeowa, P Russell. The Princess Alexandra Hospital, Harlow, Essex, UK

10.1136/thorax-2021-BTSabstracts.59

Background Poor antimicrobial stewardship is frequently observed in COVID-19 patients and relates to greater mortality when empirical antibiotics are administered without compelling evidence of bacterial co-infection.¹ Here, we assess the impact of antibiotic administration in COVID-19 patients on inpatient morbidity and mortality during the first and second UK SARS-CoV-2 waves.

Methods Two representative four-month timeframes of RT-PCR positive COVID-19 admissions to a Greater London District General Hospital were retrospectively analysed, with 481 patients between 15th February 2020 and 15th June 2020 representing the first wave, and 1342 between 1st November 2020 and 28th February 2021 for the second wave. Morbidity was measured by mean length-of-stay. Independent correlation was assessed with multilinear regression analysis adjusting for demographics and comorbidities.

Results 87.9% of first and 86.0% of second wave inpatients received at least one antibiotic, despite only 21.4% and 16.8% showing bacterial culture positivity of a non-contaminant pathogen, respectively. A mean 2.41 and 2.05 antibiotic types were administered per patient during first and second COVID-19 waves. Antibiotic administration was independently

Abstract S52 Figure 1 Kaplan-Meier curve comparing overall survival in the two treatment groups (conventional oxygen therapy vs continuous positive airway pressure therapy). The null hypothesis of no survival difference is evaluated with a log-rank test ($p = 0.92$)