



McCue, C., Cowan, R., Quasim, T. , Puxty, K. and McPeake, J. (2021)
Long term outcomes of critically ill COVID-19 pneumonia patients: early
learning. *Intensive Care Medicine*, 47(2), pp. 240-241. (doi:
[10.1007/s00134-020-06313-x](https://doi.org/10.1007/s00134-020-06313-x))

The material cannot be used for any other purpose without further
permission of the publisher and is for private use only.

There may be differences between this version and the published version.
You are advised to consult the publisher's version if you wish to cite from
it.

<http://eprints.gla.ac.uk/225763/>

Deposited on 28 October 2020

Enlighten – Research publications by members of the University of
Glasgow

<http://eprints.gla.ac.uk>

Title Page

Title – Long term outcomes of critically ill COVID-19 pneumonia patients: early learning.

McCue C, Cowan R Quasim T, Puxty K, McPeake J

(Word Count: 500)

Claire McCue

Intensive Care Unit, Glasgow Royal Infirmary, Glasgow

Richard Cowan

Intensive Care Unit, Glasgow Royal Infirmary, Glasgow

Tara Quasim

University of Glasgow, School of Medicine, Dentistry and Nursing
Intensive Care Unit Glasgow Royal Infirmary, UK

Kathryn Puxty

University of Glasgow, School of Medicine, Dentistry and Nursing
Intensive Care Unit Glasgow Royal Infirmary, UK

Joanne McPeake*

University of Glasgow, School of Medicine, Dentistry and Nursing
Intensive Care Unit Glasgow Royal Infirmary, UK

*Corresponding Author

Keywords: COVID-19; ARDS; Health related quality of life and employment

Funding: JM is funded by a THIS.Institute, University of Cambridge Research Fellowship (PD-2019-02-16).

Dear Editor

Patients treated for COVID-19 pneumonia in the Intensive Care Unit (ICU) often experience long periods of ventilation, neuromuscular blockade and sedation (1). Previous research has demonstrated that patients with similar clinical journeys often have poor long-term health related quality of life (HRQoL) (2). At present there are limited data describing the long-term outcomes of critically ill COVID-19 survivors. To address this, we report on early data obtained at our ICU follow-up programme in a single centre.

Patients are routinely invited to our multi-disciplinary ICU follow-up clinic **between 12-16 weeks post discharge** (3). Information on the format of the clinic is available in **S1. Data was collected following attendance at a virtual clinic.** HRQoL was measured using the EQ-5D-5L; this tool comprises two sections: a five-question descriptive component which explores health domains and a visual analogue scale about HRQoL. Each question has five possible answers. These answers produce a five-digit sequence which is used to determine a Health Utility Score (HUS). A HUS of 1 equates to the best health state possible, 0 with death and a negative HUS equates to a state worse than death (4). We also examined return to employment. Ethical approval was granted by The North West (Liverpool Central) Research Ethics Committee, REC Number: 17/NM/0199. All patients provided consent.

From March 14th, 2020 until April 28th, 2020, 51 patients required invasive mechanical ventilation for COVID-19 pneumonia in our ICU. All cases were confirmed with reverse RT-PCR assay for SARS COV-2, except for one patient who died prior to a sputum sample being obtained. Complete records of 43 patients were available for review. Of the 43 patients examined, 33 (77%) were male and the median age was 57 (IQR:52.5-65.5). 27 (63%) patients had 1 or more comorbidity. ICU mortality was 33%, median ICU length of stay 17.9 days (IQR:7.4-26.5) and the median duration of ventilation was also 17.9 (IQR:6.5-24). Most (93%) patients developed severe ARDS during their admission (P: F or S:F ratio

<13.3kPa) and 37 (86%) received neuromuscular blockade with a median of 6 (IQR: 2.5-11) days paralysis. Sixty percent of patients were prone at least once (**Table 1**).

Of the 30 survivors, 24 (80%) attended follow up. Outcome data was available from 21 patients; one patient declined inclusion; one was readmitted to hospital following their consultation and could not participate in the research and one agreed to participate but could not be contacted following clinic. The median HUS was 0.752 (IQR:0.627-0.837). Fifteen patients were employed pre-ICU. When reviewed at follow-up, 7 (47%) had returned to work and 1 (7%) had taken voluntary retirement. One (7%) patient was planning to return to work in the week following clinic attendance. New disability including breathlessness were reported as impacting on employability; a small number of patients described they were unable to return to work due to COVID-19 employment restrictions. Fourteen (67%) patients complained of new pain; 29% of pain was classified as severe or extreme.

This cohort had a significant burden of acute illness requiring prolonged mechanical ventilation and high rates of neuromuscular blockade. Despite this, we report meaningful early recovery including increased return to employment in a single centre, from a small sample (5). However, caution should be taken with the interpretation of these outcomes, as employment status can fluctuate following critical illness (5). Furthermore, HRQoL was similar to a previous ARDS cohort (Median HUS, 0.77) and better than a previous cohort of survivors from our own centre (Median HUS, 0.29) (3, 6-7). Two thirds of patients experienced ongoing, new pain following discharge, a finding which requires further investigation.

References

1. Ferrando, C., Suarez-Sipmann, F., Mellado-Artigas, R. *et al.* (2020) Clinical features, ventilatory management, and outcome of ARDS caused by COVID-19 are similar to other causes of ARDS. Intensive Care Medicine [published early online].
2. Herridge, MS. Moss, M. Hough, CL. Et al (2016) Recovery and outcomes after acute respiratory distress syndrome (ARDS) in patients and their family caregivers. Intensive Care Medicine; 42:725-738.
3. McPeake, JM. Shaw, M. Iwashyna, TJ. et al (2017) Intensive Care Syndrome: Promoting Independence and Return to Employment (InS:PIRE). Early evaluation of a complex intervention. PLoS One;12(11): e0188028.
4. Sullivan, T. Hansen, P. Omblor, F. et al (2020) A new tool for creating personal and social EQ-5D-5L value sets, including value 'dead'. Social Science and Medicine; 246:112707.
5. McPeake, JM. Mikkelsen, ME. Quasim, T. Et al (2019) Return to Employment following critical illness and its association with psychosocial outcomes: a systematic review and meta-analysis. Annals of the American Thoracic Society;16(10):1304-1311.
6. Brown, SM. Wilson, E. Presson, AP et al (2017) Predictors of 6-month health utility outcomes in survivors of acute respiratory distress syndrome. THORAX; 72:311-317.

Demographic	n=43
Age, Year, Median (IQR)	57 (52.5-65.5)
Gender, Male (%)	33 (77%)
Comorbidity:	
Diabetes	9 (21%)
Respiratory	8 (19%)
Cardiovascular (including hypertension)	13 (30%)
Other (Cancer, Liver Disease, CKD)	12 (28%)
Length of ICU Stay, Days, Median (IQR)	17.9 (7.4-26.5)
Mechanical Ventilation Duration, Days, Median (IQR)	17.9 (6.5-24)
Diagnosis of severe ARDS (%)	40 (93%)
Neuromuscular blockage administration (%)	37 (86%)
Prone Position (%)	26 (60%)

Table One: ICU Cohort Demographics