

Case study of a long term ICU patient requiring ECMO following COVID-19 related respiratory failure

Allaina Eden

AHP Consultant in Acute Rehabilitation, Royal Papworth Hospital

allaina.eden@nhs.net



Royal Papworth Hospital
NHS Foundation Trust

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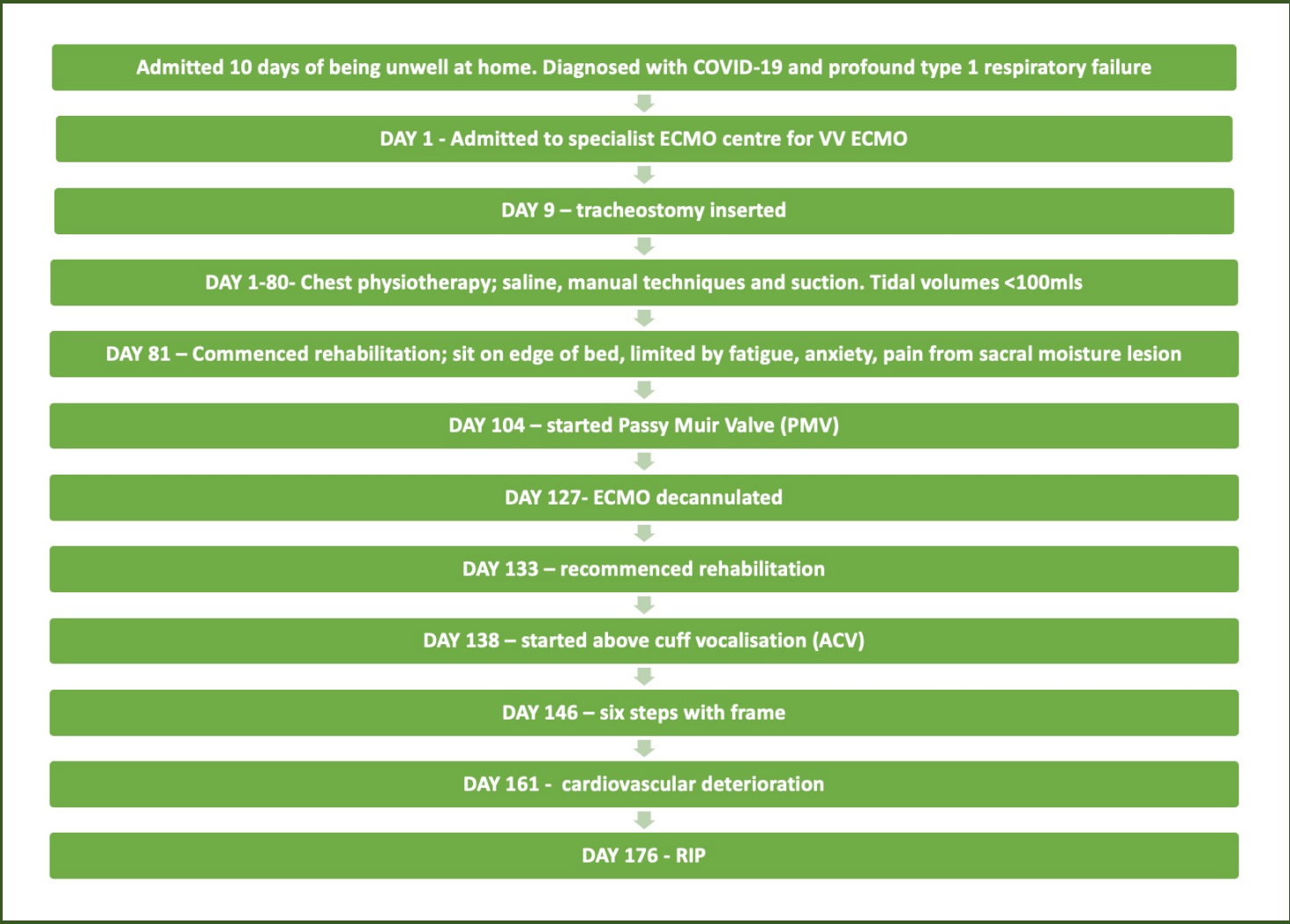
Introduction

Due to the COVID-19 pandemic there has been an unprecedented number of hospital and Intensive Care Unit (ICU) admissions for respiratory failure. This has required a significant and sudden increase in ICU capacity (1,2). Due to severe pulmonary infection and inflammation, patients have presented with acute respiratory distress syndrome (ARDS) with an associated inability to ventilate lungs with poor compliance. This has led to an increased requirement for extra corporeal membrane oxygenation (ECMO) support. This is only available in six commissioned centres across the United Kingdom (3).

Objective

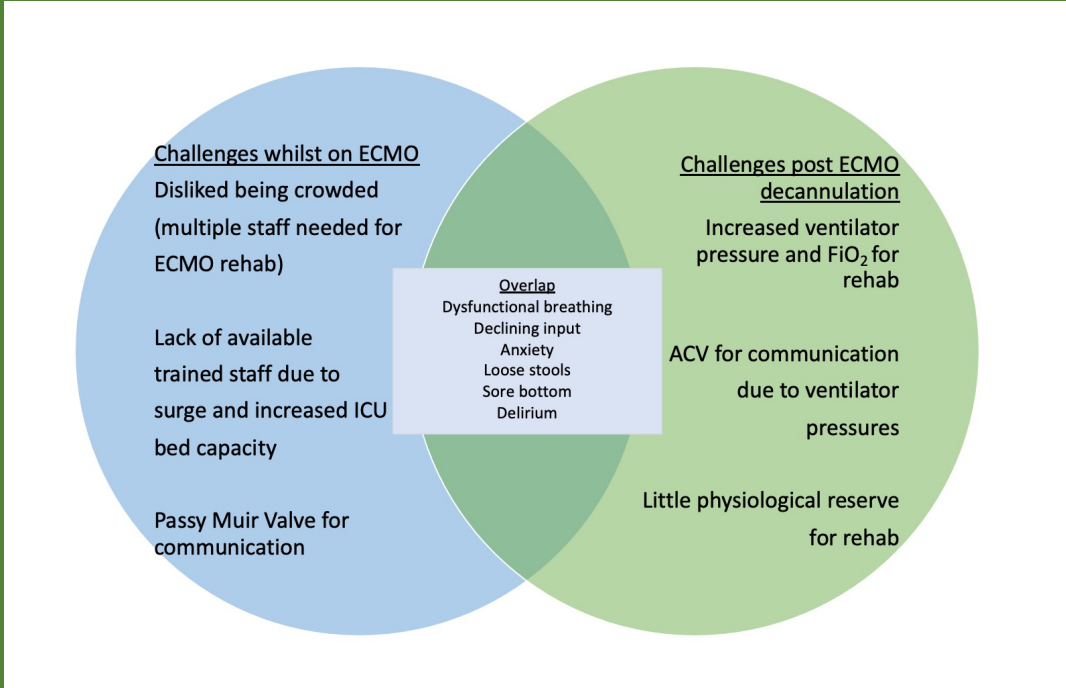
The objective of this abstract is to present a case study of a long-term patient in ICU with a prolonged duration on ECMO. This abstract highlights the complex, multi-dimensional physiological and psychological impact of recovery and rehabilitation in patients following a severe physical illness.

Below is a timeline of significant events during the patient’s hospitalisation and admission at the ECMO centre.

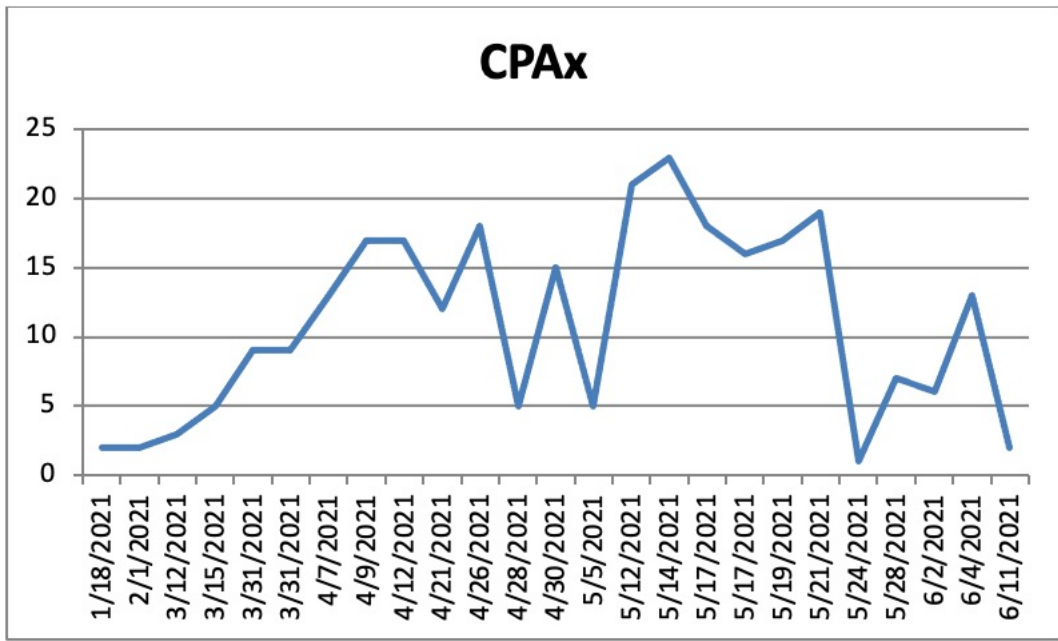


Results

Due to the nature of a long ICU admission, the patient’s condition fluctuated throughout their stay. Rehabilitation was impacted physically by the patient’s limited ventilatory reserve caused by lung damage due to COVID. A severe sacral moisture lesion also limited their ability to sit in a chair for longer than one hour and perform sustained sitting on the edge of the bed activities. Psychologically the patient was limited due to significant anxiety and agitation. There were a number of barriers and challenges to rehabilitation whilst the patient was on ECMO as well as post ECMO decannulation. These challenges are detailed in the figure below



Despite the challenges, the patient was able to participate in physical rehabilitation and was provided psychological support by the psychology team. At their peak ability, the patient was able to perform 12 steps with maximal assistance of three staff. The patient’s Chelsea Critical Care Physical Assessment Tool (CPAx) scores can be seen in the figure below.



There was marked difference in the patient’s ability to meet the physiological demand of rehabilitation with the ECMO support and without. Following ECMO decannulation the patient struggled with fatigue, hypercapnia and increasing dependency on the ventilator. These issues led to a decline in ability and longer periods of tachypnoea and recovery.

Conclusion

Supporting patients after a critical illness requires physical and psychological rehabilitation from the whole MDT. This example of a patient’s recovery both during and post ECMO support due to COVID-19 shows the complex relationships affecting the patient’s ability to improve and progress.

Acknowledgements

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References

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(2) NHS England. *COVID-19 Hospital Activity*. Available from: <https://www.england.nhs.uk/statistics/statistical-work-areas/covid-19-hospital-activity/> [Accessed 7th August 2021].

(3) NHS England *Management of surge and escalation in critical care services: standard operating procedure for adult respiratory extra corporeal membrane oxygenation*. Available from: <https://www.england.nhs.uk/wp-content/uploads/2017/11/Management-of-surge-and-escalation-for-adult-respiratory-extra-corporeal-membrane-oxygenation-revised.pdf> [Accessed 7th August 2021].