Manchester University NHS Foundation Trust

@siobhanewilde

The impact of increased critical care follow up physiotherapy on length of stay and functional recovery of critical care survivors

Siobhan Wilde, David Prigg, Justine Theaker
Manchester Royal Infirmary

Introduction

When patients are transferred from critical care (CC) onto a ward, rehabilitation is often reduced due to increased pressures for therapists to facilitate patient flow through acute services. Patients are typically less unwell and have more opportunity to be physically active on the ward (Hopkins et al. 2012), however they often spend large periods of time in lying or seated positions despite being able to stand whilst on CC (Baldwin et al. 2020). Currently there is no clear guidance and limited-service standards on the optimisation of rehabilitation for patients following step down from critical care.

Objectives

This quality improvement (QI) project compared patients' functional recovery (using the ICU mobility scale (IMS)), ward length of stay post CC admission and patient discharge pathway, before and after the expansion of a CC follow up (CC FU) service.

Method

Previously the CC FU physiotherapists reviewed patients who had spent more than 10 days on critical care, primarily those who had received Level 3 care. Functional recovery was calculated using the IMS. In June 2021, an additional Band 6 physiotherapist with CC experience was appointed to the CC FU service, increasing the physiotherapy workforce from two part time physiotherapists (45 hours) to one part time and one full time physiotherapist (60 hours) per week. Patients yet to reach their mobility baseline when discharged from CC were reviewed for the CC FU service, in collaboration with the ward therapy team following transfer.

Data was retrospectively collected between January 2020 and June 2020 for a baseline group, and prospectively from June 2021 to May 2022 following expansion of the CC FU role.

ICU mobility scale (Hodgson et al. 2014)

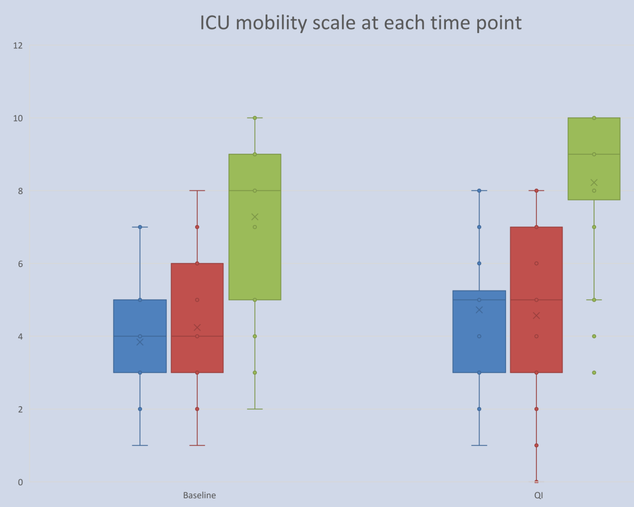
	Classification	Definition
0	Nothing (lying in bed)	Passively rolled or passively exercises by staff, but not actively moving
1	Siting in bed, exercises in bed	Any activity in bed, including rolling, bridging, active exercises, cycle ergonometry and active assisted exercises
2	Passively moved to chair (no standing)	Hoist, passive lift or slide transfer to the chair with no standing or sitting on the edge of the bed
3	Sitting over edge of bed	May be assisted by staff, but involves actively sitting over the edge of the bed with some trunk control
4	Standing	Weight bearing through the feet in the standing position, with or without assistance.
5	Transferring bed to chair	Able to step or shuffle through standing to a chair. This involves actively transferring weight from one leg to another to move to the chair.
6	Marching on spot (at bedspace)	Able to walk in place by lifting alternate feet (at least 4 times, twice on each foot), with or without assistance
7	Walking with assistance of 2 or more people	Walks at least 15 feet with assistance of 2 or more people
8	Walking with assistance of 1 person	Walks at least 15 feet with assistance of 1 person
9	Walking independently with a gait aid	Walks at least 15 feet with assistance of gait aid. If wheelchair bound, wheels chair at least 15 feet independently
10	Walking independently without a gait aid	Walks at least 15 feet without any assistance

Results

Severity of illness was calculated for the baseline and QI groups using the APACHE II measure, which demonstrated comparable mortality rates (baseline Median 15, IQR 8 (13, 21), QI Median 16, IQR 6 (14, 20)) not anticipated to affect outcomes. Male to female ratios were similar (baseline 67% : 33%, QI 64% : 36%).

Functional Recovery

An improvement was demonstrated in both groups between CC discharge and hospital discharge. Both groups demonstrated a 4-point improvement in IMS.



Note: Five patients in the baseline group and three patients in the QI group died therefore no full IMS data available for analysis.

Length of stay

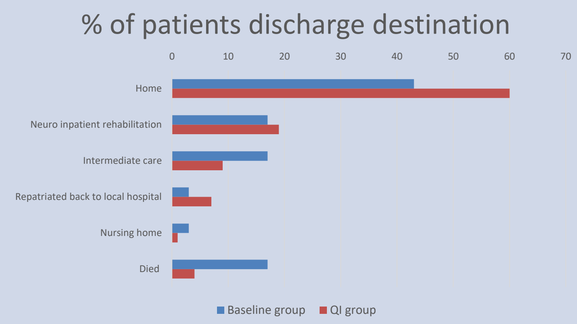
Within the QI group median CC length of stay was nine days longer than the baseline group yet their median ward length of stay was two days shorter. One patient in the baseline group and three patients in the QI group had a CC length of stay greater than 100 days.

Length of stay on CC and ward

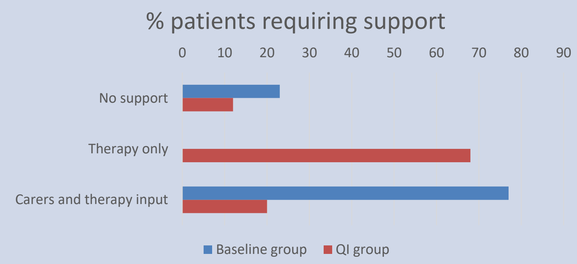
	Baseline group (n=30)	QI group (n=69)
Critical care LOS	Median 24 IQR 24 (15, 39) Mean 30 (SD 23) Range 3, 112	Median 33 IQR 34 (18, 52) Mean 39 (SD 29) Range 3, 167
Ward LOS	Median 28 IQR 49 (14, 63) Mean 40 (SD 36) Range 3, 165	Median 26 IQR 37 (12, 49) Mean 32 (SD 25) Range 1, 132
Over-all LOS	Median 52	Median 59

Discharge pathway

Within the QI group 60% of patients were discharged home compared with the baseline group in which 43% were discharged home.



Of the 60% of patients discharged home from the QI group 68% only required therapy input on discharge. No one was discharged home from the baseline group with therapy input only, requiring both carers and therapy input on discharge home.



Discussion

Within this limited QI project, patients demonstrated an improvement in IMS from CC discharge to ward discharge. A greater percentage of patients were discharged home and required therapy only input on discharge, when compared with the baseline group who required therapy input along with carers. This has the potential to help reduce the burden on social care along with reducing length of stay on the ward as patients are not waiting for a package of care. APACHE II scores for patients who stayed on CC for more than 100 days in both baseline and QI groups had a score of 17 or less.

Within the baseline group some patients were discharged home prior to the package of care starting due to the COVID-19 pandemic, with family assisting to bridge the care. This is likely to have had an impact on ward length of stay. A greater percentage of patients died in the baseline group when compared with the QI group despite having similar APACHE II score, although this is likely to have been associated with the COVID-19 pandemic.

Limitations

- Single site data collection limits the ability to generalise results to the wider CC population.
- The use of retrospective data collection for the baseline group (including during the COVID-19 pandemic) is a limitation along with the unequal group numbers. There was no obvious difference in groups baseline APACHE II scores, ratio of male to female and specialties.
- Data was not collected on the number of patients ventilated, number of ventilation days and whether a tracheostomy was required which would provide more information on why length of stay was longer in the QI group.
- No data was recorded on the speed of improvement which may have been useful to monitor patients plateau in recovery in the immediate post CC period.

Conclusion

In the QI project, CC physiotherapists delivered ongoing physiotherapy to CC step downs alongside ward-based therapy. 17% more patients were discharged home with 68% more patients discharged home with therapy input only. This is likely due to them having improved functional independence meaning they did not require carer support on discharge. This QI project has the potential to tackle long hospital stays, improve secondary care efficiencies, use of health and social care resources following discharge, and increase the number of patients discharged home in line with NHS long term plan.

References

Baldwin CE, Rowlands, AV, Fraysse, F. & Johnson KN. (2020) The sedentary behaviour and physical activity patterns of survivors of a critical illness over the acute hospitalisation: an observational study. Australian Critical Care. 33: pp 272-280.