SUSQI PROJECT REPORT

Rehabilitation Assistants in supporting the recovery of Critical Care step-down patients

Start date of Project: November 2024
Date of Report: 16th July 2025

Team Members:

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Background:

Patients receive intensive therapy input whilst on the Critical Care Complex (CCC). When stepped down from CCC, the intensity of this therapy decreases due to an increased patient to therapist ratio on the general wards in a patient group with increased mobility requirements (Gustafson et al., 2021).

Patients who have had an admission to CCC experience a range of physical, psychological and cognitive impairments, and are at risk of Post Intensive Care Syndrome (PICS) (FICM, 2021) where these impairments persist beyond hospital discharge. Recovery from critical illness can be impaired by increased length of stay in hospital, resulting in further complications (Morgan, 2020). Reducing the hospital stay of CCC step-down patients could reduce the risk of further complications; therefore, reducing the financial, environmental and psychological burden of a prolonged hospital stay. With the aim of reaching net zero by 2040 in the NHS Carbon Footprint and 2045 in the NHS Carbon Footprint Plus, projects focusing on reducing patient length of stay can support both the direct and indirect emissions produced by through acute hospital admission.

The Faculty of Intensive Care Medicine (FICM) have provided Guidelines for the Provision of Intensive Care Services (2022) and on Life After Critical Illness (2021). Within these guidelines, it is recommended that rehabilitation starts in the Critical Care Unit but should continue through to ward discharge and primary care with a multidisciplinary approach. The National Institute of Health and Care Excellence (NICE, 2009) have also provided guidelines for Rehabilitation After Critical Illness. These have been reviewed and remain relevant in 2018 and 2020. NICE guidelines reinforce the requirement of a structured rehabilitation programme when moving from the Critical Care Unit to the general ward.

The guidance above suggests a structured rehabilitation programme should be used for patients who have had an admission to CCC for 4 days or longer or are at an increased risk of morbidity. Therefore,

the patient group targeted in this project are those who have spent >72 hours in the CCC. It is worth noting this project started in 2023, prior to this competition. The initial objectives for this project had no link to environmental impacts and sustainability in healthcare; however, this has provided the opportunity to embed sustainability into the project outcomes and raise awareness of this.

The original process in our hospital was for patients to be reviewed by the Recognise and Respond Team (RRT) on Day 1 following step-down from CCC as per National Outreach Forum (2020) standards. The process between being identified as able to step down from CCC to discharge from hospital can be seen in Appendix 1. This review by RRT focuses on the physical, psychological and cognitive elements of a CCC admission and allows for signposting to further support if required; however, patients are not reviewed on a regular basis by the RRT. There were two established full-time equivalent rehabilitation assistants who supported the rehabilitation of patients on CCC, but they did not follow patients onto the ward once they had been stepped down. Therefore, there was then no further follow-up specifically related to their CCC admission from Day 1 post CCC discharge until discharge from hospital. This meant this vulnerable patient group relied on the ward therapy team to continue their rehabilitation, who are less resourced to support the complex needs of these patients.

Specific Aims:

To introduce structured rehabilitation support for patients who have spent >72 hours in the Critical Care Complex, to be delivered during the period after step-down from CCC until hospital discharge.

Methods:

In response to the issues outlined above, a 6-month trial was established in August 2023, where rehabilitation assistants continued to review patients who had spent >72 hours on CCC or had a complex admission after their step-down to the ward. There was a vacant Healthcare Assistant role within the CCC budget, which was used to fund the 6-month trial in which a further rehabilitation assistant was hired.

The important part of the project was that the rehabilitation assistants know the patients and understand their experience in CCC. Therefore, it was decided the 3 rehabilitation assistants would rotate, spending 2 weeks on CCC then 1 week on the wards to maintain continuity for the patients. The rehabilitation assistant would review the patient alongside the Recognise and Respond Team (RRT) for their first visit, then continue to review the patient for as long as they deemed necessary to support in their rehabilitation. The RRT remains a point of contact for escalation if the rehabilitation assistants have any concerns when reviewing the patient following the first visit.

Minimal data was collected prior to the trial, then further data collected during the trial. This included quantitative data round the length of stay of patients, as well as qualitative data through feedback from patients and staff. This was presented at CCC Governance following the trial. Despite the fact the quantitative data was not conclusive, the feedback received from patients and staff on the ward was overwhelmingly positive and substantive funding was granted for the post.

Whilst waiting for the substantive position to be in place, further qualitative and quantitative data was collected prior to the re-introduction of the substantive third rehabilitation assistant and has continued since their introduction in November 2024.

Following the first trial, it was acknowledged that the quantitative data that was collected was not robust enough, as there are many variables with these patients when assessing length of stay. This helped us decide what information would be useful to collect when the substantive position was put in place.

It was important to include the relevant stakeholders during the process. This included all the staff on the Critical Care Complex and Recognise and Respond Team, ensuring they were kept up to date with any developments. It was ensured those involved were clear on their expectations and feedback was sought throughout to determine if they felt any changes needed to be made to the process. The ward matrons and sisters were also informed of the project so they could disseminate this to their ward teams, as well as the ward physiotherapists, to understand the role and purpose of the rehabilitation assistants in the ward environment.

Measurement:

A literature review was first conducted to understand the case for change. 3 key patient outcome measures were established, length of stay, mobility scoring and discharge on destination.

Length of Stay

Length of stay from between CCC discharge and hospital discharge was established as a key measure to indicate whether the effective, timely and personalised care provided by the Rehabilitation assistants led to improved clinical outcomes. Six months of pre-change data was collected from June 2024 to November 2024 and data collection continued when the rehabilitation assistants were introduced in order to establish if the change was an improvement.

Mobility Scoring

Manchester Mobility Score (MMS) is a score used to assess the mobility level of patients, often within the context of Critical Care. This was collected on all patients reviewed by the rehabilitation assistant on days 1 to 5 following their step down from CCC. This data was collected both before and after the introduction of the substantive rehabilitation assistant; however, more time would be needed to compare the MMS on day 1 to day 5 in both sets of data to assess whether this shows a positive improvement.

Discharge Destination

Destination on discharge was collected, assessing whether there was an increase in discharge to the usual place of residence and therefore reduced demand on community health services. This was also collected from June 2024 to May 2025.

Readmission rates to critical care and number of mental health referrals were reviewed within the patient group; however, no significant changes were found.

The measure of unmet need in days waiting has not yet been captured, but this is data that would be useful to capture in the future. This would indicate whether the introduction of the rehabilitation assistants has a reduction in the length of time a patient remains in hospital with an unmet need.

Environmental sustainability:
The greenhouse gas emissions for a low intensity inpatient bed day - 37.9 kgCO2e - were sourced from the 2015 SDU Care Pathways: Guidance on Appraising Sustainability Inpatient Bed Day Module.

To estimate the emissions associated with the additional rehabilitation assistants' commuting, it was assumed that they would travel to work five days a week, for 225 days per year. This accounts for an average of eight bank holidays and 27 days of annual leave annually. Average commuting distances for NNUH staff—16.6 miles per return journey—were sourced from the Health Outcomes Travel Tool (HOTT) and converted into carbon emissions using CSH's travel calculator.

Economic sustainability:
The financial savings from reduced length of stay were calculated based on the cost per bed day on a general ward. This was an average cost based on a general ward at Norfolk and Norwich University Hospital (NNUH) for a 24 hour stay. This only encompasses ward and nursing costs, exclusive of medical staff costs or diagnostics.

The financial savings will need to take into account the increase in spending required to employ one full time equivalent rehabilitation assistant at Band 3 salary. This was obtained from 2024/2025 NHS Pay Scales as this was implemented before the 2025/2026 pay increase- NHS Pay Scales 2025/26 (confirmed 3.6% pay rise and Band 2/3 pay update) – nhspayscales.co.uk.

Social sustainability:
This has been measured through a mix of quantitative and qualitative data.

A staff survey was completed by the Recognise and Respond Team (RRT) to assess the impact of the additional rehabilitation assistant support with a joint review on their first day following step down from CCC. Feedback and testimonials were also gained from the team of rehabilitation assistants. Qualitative feedback was also gained from patients who have been stepped down from the CCC, including any comments they had on their step-down experience.

The impact this has on the patient's experience has been considered through the quantitative data looking at the number of mental health referrals and the destination on discharge during the period before and after the introduction of the rehabilitation assistants

A literature review was also performed to explore findings from previous research on this topic and how this relates to the changes introduced as part of this quality improvement project.

Results:

Patient outcomes:
A review of the literature surrounding this topic supports the importance of the introduction of the rehabilitation assistants in the ward environment. Gustafson et al. (2021) found patients stepped down from CCC with higher mobility requirements, such as requiring mobilisation equipment, were at a higher risk of missing mobilisation interventions, often due to staffing levels and skill mix. Hopkins et al. (2021) found physical activity levels were reduced in over 50% of step-down patients on their first full day on a general ward. Finally, Vollom et al. (2021) found suboptimal rehabilitation on 69.3% of patients who were deemed to be avoidable deaths following discharge from CCC.

The average length of stay from CCC discharge to hospital discharge reduced by 3 days since the introduction of the rehabilitation assistants, indicating more effective, timely and personalised care.

Destination on discharge shows the percentage of patients discharged to their usual residence increased slightly from 82% prior to the introduction of the rehab assistant, to 83.73% following. This is alongside a very slight decrease of patients discharged to another acute hospital, from 2.23% to 2.18%.

Feedback from one specific patient reported increasing anxiety following their discharge to the ward. In this case, the rehabilitation assistant repeated an Intensive Care Psychological Assessment Tool (IPAT) and escalated this to the clinical psychology team. This can support in reducing the risk of the psychological element of Post Intensive Care Syndrome (PICS).

There has been no significant difference in referrals to mental health/clinical psychology services in the period before and after the introduction of the rehabilitation assistant. However, feedback from patients regarding seeing a familiar face has supported the mental health of patients when recovering from critical illness.

As discussed above, the Manchester Mobility Score was collected; however, the expanse of data has not allowed for analysis of this as a measurement tool within the timeframe. This would be something that would be of interest to compare if further time and resources are available.

Readmission rates to critical care and number of mental health referrals were reviewed however no change was found.

Environmental sustainability:
A reduction in CO2e was associated with a reduction in the average length of stay (LoS).

Table 1: GHG emissions associated with reduced LoS

LoS reduction per patient (days)	3
Average number of patients per year that meet rehab criteria	578
GHG emission reduction per year (kgCO2e)	65,719

Table 2: GHG emissions associated with additional rehab assistant commuting

Average number of days worked per year	225
Staff commuting emissions per day (kgCO2e)	4.98
Staff commuting emissions per year (kgCO2e)	1,121

Based on a LoS reduction of 3 days per patient, the introduction of an additional rehabilitation assistant is estimated to save 64,598 kgCO2e per year, equivalent to driving 190,050 miles in an average sized car.

Economic sustainability:

The cost of general ward bed day at NNUH has been given at £258 per 24 hours, exclusive of medical and investigation costs. With a reduction in length of stay for an average of 578 patients per year, there will be a total reduction of 1,734 bed days.

Table 1: Number of bed days reduced based on average patients seen per year

Number of bed days reduced per year	1734
Average cost per bed day on general ward	£258
Estimated financial savings	£447,372

The addition of 1 full time equivalent Band 3 salary (of 2+ years' experience) is £24,937.
Therefore, total financial savings would be £422,435.

Social sustainability:

Feedback from the Recognise and Respond Team (RRT) around the introduction of the rehabilitation assistant to their review of step-down patients on the ward was all positive (see Appendix 2). This included comments on the ability to start rehabilitation alongside someone who is aware of the patient's journey. Feedback from the rehabilitation assistants also support the joint visits with the RRT and the reassurance they feel from knowing there is someone at the end of the phone they can call if they feel the patient is deteriorating or different from their baseline.

Comments from patients who have been stepped down from CCC were collected in the first five days following discharge to the general ward. Comments include themes, such as speaking to someone and getting outside being really beneficial for mental health, feeling supported in encouraging mobilisation and reassurance from seeing a 'familiar face' who understands what they have been through during their CCC admission.

The impact of patients being discharged from hospital an average of 3 days sooner also supports the wellbeing of patients. Patients being back in their usual place of residence is often viewed as a comfort for both patients and their families, especially when physical rehabilitation is the only factor keeping a patient in an acute hospital bed.

Feedback from the three rehabilitation assistants regarding the above environmental impact was wholly positive. One member of staff gets the park and ride to work, whilst the other two drive; therefore, they were reassured that their daily work has a positive impact on the environment.

Discussion:

The initial findings from the implementation of this project have been very positive, both in terms of the feedback received from patients and staff, as well as the reduction in the average length of stay and the impact this has financially and environmentally. This is suggestive that the introduction of the rehabilitation assistants continuing to support patients whilst on the general ward not only improves patients' psychological recovery but also their physical recovery. A reduction in the length of stay suggests increased mobility whilst on the ward and access to the Recognise and Respond Team if concerns are identified have resulted in a quicker recovery.

However, it must be acknowledged there are many confounding variables when looking at length of stay as an outcome measure. To address this, some further measures were collected within this data. Firstly, the average length of stay on CCC was measured to assess whether the acuity of patients was any different in the two time periods being compared. This remained at 9 days in the period 6 months prior to and post the introduction of the substantive rehabilitation assistant, indicating the acuity of patients was similar and therefore recovery times will be more comparable. Secondly, the average patient length of stay throughout the whole Trust was measured to assess whether this reduction in the specific patient group we analysed was replicated throughout the whole Trust. This showed that the average patient length of stay increased by 0.8 days during the same time period, suggesting the decrease found in the patient group was significant in comparison to the rest of the Trust.

The data regarding the destination of discharge does not show a significant enough change to indicate any improvement from this project.

When looking at the prospective financial savings as a result of reduced length of stay, it must also be acknowledged that unless staff can be released and beds closed, reducing length of stay does not necessarily provide the Trust a true financial saving. The figures used in the calculations for a NNUH general ward day cover the ward and nursing costs only, and therefore are not inclusive of any medical costs of investigations/diagnostics that might be required during that hospital stay. This makes the financial savings very difficult to estimate but this can still be useful in discussing theoretical impact. This could also be relevant when discussing the environmental impact of reducing length of stay. Again, it could be argued that the full carbon saving calculated above would only be achieved if beds are closed as a result of reduced length of stay. However, there would still be a reduction in the indirect emissions that come with and acute inpatient admission, such as medication, waste, catering etc.

One of the challenges throughout this process was collecting data in such a vulnerable patient group. We know that patients who have experienced critical illness are at a high risk of PTSD and are often not ready to talk about their experience in CCC, which makes it difficult to gain feedback on their step-down experience. Moreover, gaining feedback from this patient group is often not appropriate, such as in patients experiencing delirium or those stepped down from CCC to receive end of life care.

Another ongoing challenge remains the specificity of the role of the rehabilitation assistants. They are funded through the CCC budget but managed by the physiotherapy team. This leads to the risk of their role being mistakenly integrated with that of a physiotherapy assistant. Whilst the rehabilitation assistants support mobility of patients within the ward environment, their role extends into supporting the psychological and cognitive rehabilitation of patients who have experienced critical illness. In relation to this, the team only comprising 3 members leads to the risk of difficulty covering sickness/leave which is present in any small team. This is partly mitigated by the Recognise and Respond Team, who continue to review all patients stepped down from CCC daily; however, this does not provide a similar level of continuity of care.

Following the success of this in the first 6 months of establishment, there have been discussions as to whether a similar model can be rolled out into other specific patient groups. This would require consideration as to which other specific patient groups within the hospital this would be of benefit to

and what skills the 'rehabilitation assistant' equivalents would require to meet the needs of these groups to reduce overall length of stay and therefore provide further financial, social and environmental improvements.

Conclusions:

Overall, the implementation of this project has had a positive impact, with promising data surrounding the impact on length of stay in this patient group and the positive social influence this has had on patients and staff as well as the financial and environmental influence on the Trust.

This project has taught us about the importance of collecting robust quantitative and qualitative data when implementing change, to ensure the impact can be measured. This is inclusive of balancing measures alongside outcome measures, as within healthcare there are often many variables which can alter the outcome, and it can be difficult to prove an intervention has been the true cause of a change.

We were fortunate enough to gain the funding for the substantive full time equivalent rehabilitation assistant, who started in November 2024, which has secured the continued support of this role within the CCC budget. The presence of the rehabilitation assistants on the general wards has led to discussions regarding overall understanding throughout the Trust of the vulnerability of patients recovering from critical illness. CCC and the RRT have discussed how education can be provided to those who care for CCC step-down patients in the ward environment to raise awareness of the importance of their continued rehabilitation. This is inclusive of reducing medical monitoring of this patient's group as soon as possible and focusing on rehabilitation, which would have positive environmental implications in the reduction of resources required.

As mentioned above, discussions have also been had regarding how this can potentially be replicated within other specific patient groups throughout the Trust, especially those who are expected to require a longer recovery period in hospital. We have arranged to meet with the Falls Prevention Lead, to look at how this model could be adapted and used to prevent deconditioning whilst an inpatient on the wards. We have also been invited to the Innovation, Efficiency and Sustainability Group to present these findings.

Finally, we would like to spend more time analysing the data collected by the rehabilitation assistants. For example, a comparison of the Manchester Mobility Score on Day 1 to Day 5 would be really beneficial to assess their impact on mobility levels following step-down to the ward, especially in those patients who have higher mobility needs. This would potentially allow for analysis of patient mobility on discharge from hospital and whether a decrease in mobility aids or care packages are required as a result of intensive rehabilitation following CCC discharge, again promoting sustainability with resources required for these patients. We could also analyse how frequently patients with higher mobility or psychological needs are being mobilised with the presence of someone who knows the patient's background and has already built a rapport with them. This would feed into increasing awareness throughout the Trust in the vulnerability of this patient group and the importance of holistic support in their recovery.

References

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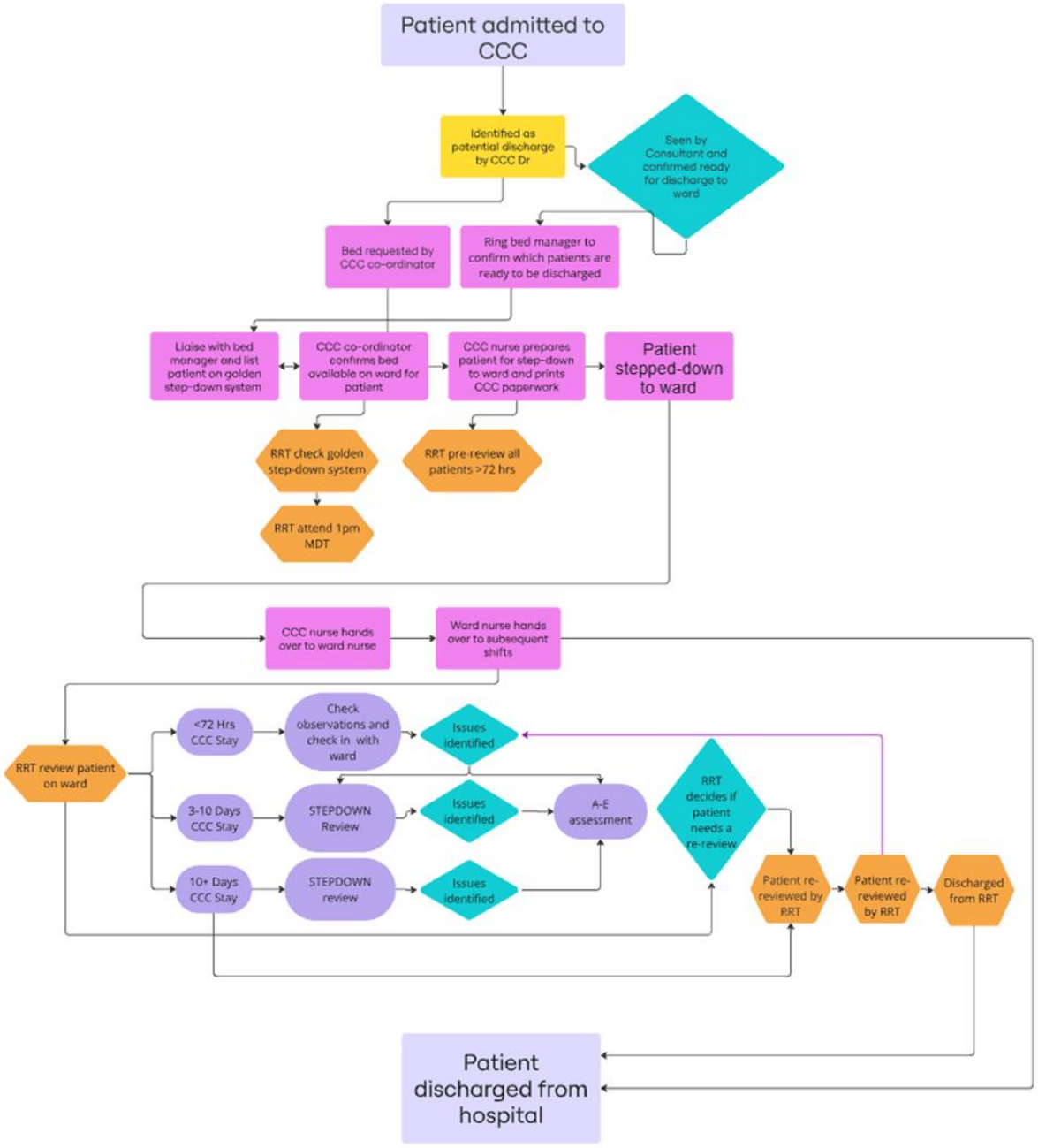
Appendices

Appendix 1 - Process Map for patients stepping down from CCC



Appendix 2 - Feedback from RRT on rehabilitation assistants

1. The rehab assistants support is improving the care of patients stepped down from Critical Care to general wards?

Strongly Agree	6
Agree	0
Neutral	0
Disagree	0
Strongly disagree	0

2. I feel the joint reviews between the Rehab Assistant and RRT are beneficial to the patient

Strongly Agree	5
Agree	1
Neutral	0
Disagree	0
Strongly disagree	0

3. I feel the joint reviews (seeing patients >4 day CCC stay together) between the Rehab Assistant and RRT are an effective use of time

Strongly Agree	5
Agree	1
Neutral	0
Disagree	0
Strongly disagree	0

Critical success factors			
People	**Process**	**Resources**	**Context**
☐ Patient involvement and/or appropriate information for patients - to raise awareness and understanding of intervention ☐ Staff engagement ☐ MDT / Cross-department communication ☐ Skills and capability of staff X Team/service agreement that there is a problem and changes are suitable to trial (Knowledge and understanding of the issue) ☐ Support from senior organisational or system leaders	X clear guidance / evidence / policy to support the intervention. ☐ Incentivisation of the strategy – e.g., QOF in general practice ☐ systematic and coordinated approach ☐ clear, measurable targets X long-term strategy for sustaining and embedding change developed in planning phase ☐ integrating the intervention into the natural workflow, team functions, technology systems, and incentive structures of the team/service/organisation	☐ Dedicated time ☐ QI training / information resources and organisation process / support ☐ Infrastructure capable of providing teams with information, data and equipment needed ☐ Research / evidence of change successfully implemented elsewhere X Financial investment	☐ aims aligned with wider service, organisational or system goals. X Links to patient benefits / clinical outcomes ☐ Links to staff benefits ☐ 'Permission' given through the organisational context, capacity and positive change culture.