

Case report: Pioneering Early Mobilisation in a Cardiac Intensive Care (CICU) unit: a Sustainable Healthcare Initiative

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Background:

Patients in intensive care units become de-conditioned, with muscle wasting whilst sedated (critical care myopathy) resulting in increased length of stay (LOS), poor performance status post-ICU stay and prolonged rehabilitation.

There is evidence that 'early mobilisation' from 48 hours after admission to intensive care is well tolerated, helps reduce muscle wasting, is a powerful psychological motivator and shortens intensive care and hospital stay.

Prior to this project, patients on the Cardiac Intensive Care Unit (CICU) at Southampton Hospital would not receive routine physiotherapy; they would only be referred for physiotherapy if they had respiratory complications or difficulty with rehabilitation. Although early mobilisation is not a new concept to the intensive care at Southampton Hospital, the therapy team pioneered this service in the CICU setting.

Approach:

The CICU team recruited a therapy technician, to work alongside a qualified physiotherapist, to help set up the project and insure that the therapy sessions were delivered. In preparation for running the project the therapy technician helped in:

- educating all CICU staff, including the use of the Motomed equipment required for exercising patients under sedation.
- developing the inclusion/exclusion criteria.
- setting up an electronic database for the project.
- developing questionnaires for patients and staff.

24-96 hours after open heart surgery ¹the therapy assistant systematically initiated mobilising patients who fitted the protocol criteria. These patients received 30 minutes of rehabilitation, twice a day, continuing until discharge from CICU. The staff selected the highest level of activity in

¹The CICU Unit chose to select any patients intubated and ventilated from 24 to 96 hours in order to increase the number of patients who could benefit from the intervention.

which the patient could participate. For example: if the patient was intubated and ventilated the Motomed device was used for passive exercise; if the patient was awake then the options would include sitting on the edge of the bed, standing, marching on the spot, transferring from bed to chair and mobilising.

Data was gathered before and after the introduction of the EMP on the number of days that patients received artificial ventilation, length of stay in intensive care, in cardiac high care (CHC) beds, on the ward and total hospital length of stay.

Results & Discussion:

238 patients were recruited to the early mobilisation programme (EMP) over 24 months. 20-01-19-7 to 30-01-19

Clinical Outcomes:

The results showed that early mobilisation reduced ventilation days by a mean of 4 days and reduced cardiac intensive care stay by a mean of 6 days in patients after cardiac surgery. This effect was sustained at 12 months and 24 months of the programme. This suggests that the intervention may prevent deconditioning and critical care acquired weakness.

	Number of Patients	Average Ventilation Days per patient	ICU Length of Stay (Days Per Patient)	Cardiac High Care & Ward Length of Stay (Days Per Patient)	Total Hospital Length of Stay (Days Per Patient)
Previous Audit Without Input	41	5.55	10.70	10.40	21.15
Current Trial 2017 20-01-17 to 17-01-18	121	1.82	4.79	8.9	13.36
EMP Benefit 2017	N/A	(-) 3.73	(-) 5.91	(-) 1.5	(-) 7.79
Current Trial 2018 31-01-18 to 30-01-19	117	2.31	4.81	7.77	12.62
EMP Benefit 2018	N/A	(-) 3.34	(-) 5.89	(-) 2.63	(-) 8.53
Current Trial Mean of 2 Years	119	(-) 3.54	(-) 5.9	(-) 2.06	(-) 8.16

Financial:

Savings were calculated using the average number of bed days saved. Costs for employing a therapy technician at £24,303 per annum were taken into account. There were no capital costs in acquiring the Motomed; this was borrowed from general ITU. Total savings amounted to £1,266,327 (assuming 2017 costs of bed days, which have now increased). Further cost savings

could have been calculated to take into account equipment saved through, for example, patients being ventilated for a shorter time, patients being able to toilet and so catheters not being required.

Environmental:

The carbon footprint of the number of days saved was an impressive 48.5 tonnes CO₂e. This is equivalent to the annual carbon footprint of almost 5 UK citizens and 18 return trips London-Sydney in economy class.

Social:

The more rapid recovery will allow patients to have more autonomy during their hospital stay, which may improve the patients' sense of self-efficacy, a factor that is important for health and wellbeing. A more rapid recovery and shorter hospital stay may place less of a burden on relatives; since the quality of relationships is a key component of health and wellbeing this may lead to improved outcomes for the patients.

Dis-benefits:

The EMP was limited to CICU. The service raised expectations and a few patients felt disappointed and anxious with the reduced service when they were transferred to other settings. To help to communicate what therapy services would be offered throughout the patient journey, the therapy assistant had a discussion with all patients to explain the service and this conversation was reinforced with a patient information leaflet.

Barriers to introducing the service, action taken & outcome:

Staff concerns:

Nursing staff had concerns that exercise could have had an adverse effect on patients who were ventilated. To address these concerns the Therapy Technician, Greg Juraczyk, and Louisa Nielsen, Lead Therapist, ran staff education sessions and had many informal conversations explaining early mobilisation to build up confidence amongst the nursing team in the programme.

This approach was effective in allaying staff concerns and in introducing and embedding the programme. The following quote from a member of staff demonstrates how attitudes on the unit have changed: *"EMP is very helpful and beneficial for our patients. I've seen a huge improvement in our patients' mobility, especially those who are bed bound for a long period of time. EMP staff are very approachable and professional. They are great asset to our Critical Care Team."*

There was little therapy input on CICU prior to the project:

Key to the success of this project was recruiting someone who was not only technically excellent but also skilled in building trusting relationships. Greg Juraczyk was recruited as a highly motivated and skilled therapy assistant, who was passionate about the project. The skills and attributes that were essential to the success of the project included excellent clinical judgement in selecting patients for the programme, meticulous and methodical data collection, effective time management, an ability to build relationships with and to motivate both patients and staff,

sensitivity to the fears and anxieties of others **and** a sense of humour! Greg is now an esteemed and valued member of the team; his appointment has increased the status and influence of therapy staff on the unit.

Green Ward Competition:

The Green Ward Competition was a great platform to 'showcase' the success of early mobilisation in the Cardiac Intensive Care Unit. The opportunity to present their project built the confidence of the team members in the excellence of their project and their ability to present.

Inspired by their success they went on to apply for the 'Advancing Healthcare Awards', where they were nominated as runners up. Since this award their novel service improvement has been featured in the Bournemouth Daily Echo paper, BBC South Today TV news, on Twitter, Facebook and on the Chartered Society of Physiotherapy and University Hospital Southampton webpages.

Recent developments:

- the CICU nursing staff help deliver patients' rehabilitation during weekends. To support this joint working the following have been introduced: multidisciplinary morning handovers, communication boards, exercise booklets and monthly education.
- A cardiac surgical booklet is now issued to all EMP patients.
- the therapy team evaluate patient/staff feedback and data during monthly meetings. Agreed changes to this service occur at 3 monthly intervals.

Aspirations:

- convert the therapy assistant role from a temporary position to a permanent role.
- expand the EMP from a 5-day to a 7-day service.
- expand the EMP to cover the current cohort and more complex patients.
- continue to improve the EMP guided by patient and staff feedback.

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General Intensive Care (GICU) at University Hospital Southampton. The original concept of EMP was transferred and adapted from GICU at University Hospital Southampton to our sister unit in Cardiac Intensive Care.

The Centre for Sustainable Healthcare for supporting us in starting and running this project as part of the Green Ward Competition at University Hospital Southampton. This has provided EMP with a platform to showcase the excellent practice and outcomes that can be achieved, whilst enhancing patient care.

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