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ABSTRACT

The physical decline of critically ill patients affects their discharge from the intensive care unit (ICU) and their subsequent lives. Therefore, it is essential to actively provide rehabilitation at an early stage through multidisciplinary cooperation and protocols. This paper aims to describe the results of a project to improve the implementation rate of early rehabilitation. We established the ICU Early Rehabilitation Group, consisting of nurses, intensivists and physical therapists, and developed a protocol to perform early rehabilitation. According to this protocol, a nurse-led 'multidisciplinary rehabilitation huddle meeting' was introduced for early rehabilitation. Rehabilitation status, muscle strength and physical function were compared 9 months before and after the introduction of the huddle meeting. In addition, we assessed adverse events during rehabilitation. Since the introduction of huddle meetings, the implementation rate has been 100%. Furthermore, rehabilitation was implemented earlier and at a higher level after introducing huddle meetings. However, no significant difference was detected in muscle strength and physical function of the patients. In addition, no adverse events occurred during rehabilitation. This quality improvement project facilitated an earlier start to rehabilitation and a higher level of rehabilitation practice. Huddle meetings were smoothly introduced and settled in through multiprofessional communication. The lack of adverse events also suggested the programme's effectiveness in safely implementing this type of rehabilitation at an early and high level.

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ Early rehabilitation protocols using multidisciplinary huddles can help improve patient outcomes.

WHAT THIS STUDY ADDS

⇒ A nurse-led multidisciplinary rehabilitation huddle facilitated an earlier start to rehabilitation and a higher level of rehabilitation in an intensive care unit (ICU) where no dedicated ICU physical therapist was assigned.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ It is a practical example on how to facilitate rehabilitation in an ICU where no dedicated ICU physical therapist was assigned.

PROBLEM

Our facility is the intensive care unit (ICU) of a tertiary emergency medical institution in Japan. The ICU was a semiclosed system with 12 emergency and 8 general ICU beds. Appropriate goal setting is vital in the rehabilitation of critically ill patients. Our facility targets an early start of rehabilitation, within 24–48 hours after admission to the ICU. However, because it is a semiclosed ICU, few physicians are dedicated to it, and no physiotherapists are assigned to the ICU. Therefore, nurses often initiate mobility rehabilitation later than desired. Additionally, few opportunities exist for discussion among physicians, nurses and physiotherapists, which become barriers for starting rehabilitation at an early stage. Therefore, we introduced nurse-led multidisciplinary huddle meetings, with the goal of having daily meetings for early rehabilitation.

BACKGROUND

Critically ill patients admitted to the ICU develop intensive care unit-acquired weaknesses (ICU-AW), in addition to a high frequency of long-term post survival physical dysfunction.[1] In a survey of quality of life after discharge of 1143 patients with severe sepsis who lived independently before admission,[2] 41.6% of patients who survived after 6 months of leaving the ICU could not live independently (22.7% were home but required help, 5.1% were in nursing homes or rehabilitation facilities, and 5.3% were in acute care hospitals). For patients in ICU, early rehabilitation is one of the central nonpharmacological interventions studied for recovery from

critical illness. It is reported to be a favourable factor for muscle strength and length of in-hospital stay.[3–5] Therefore, early rehabilitation is crucial for preventing or mitigating ICU-AW and physical decline.

Additionally, a comparative study using a rehabilitation protocol reported an increase in better functional status and more functionally independent in-patients who used the protocol compared with those who did not receive rehabilitation using the protocol. This difference indicates that using rehabilitation protocols can help improve patient outcomes.[6]

Based on these findings, we introduced the multidisciplinary rehabilitation huddle meeting, believing that the use of protocols and multidisciplinary collaboration would improve the rate of early rehabilitation. This paper aims to describe the results of this project to improve the implementation rate of early rehabilitation through the nurse-led multidisciplinary rehabilitation huddle meeting (hereafter referred to as 'huddle').

MEASUREMENT

Setting

This quality improvement (QI) project was conducted at the ICU of a tertiary emergency medical institution in Japan. The ICU was a semiclosed system with 12 emergency and 8 general ICU beds and was staffed by 2 intensivists. The nurse-to-patient ratio was 1:2. No dedicated physical therapist was assigned to the ICU. However, a physical therapist initiated rehabilitation interventions with a rehabilitation prescription from the attending physician. The participants were selected from patients who required mechanical ventilation in the ICU between July 2016 and December 2017. In our facility, all adult patients were given rehabilitation prescriptions. However, for cases such as coronary artery disease and macrovascular disease patients, more structured rehabilitation programmes have been applied. Thus, they were not the target of this QI project. Therefore, this project excludes patients who have coronary artery disease and macrovascular disease.

Measurement timing and tool

All rehabilitation sessions were performed by the nurse and the physical therapist. The ICU early rehabilitation group members (one nurse and one physical therapist) collected the following data from electronic medical records provided by the assigned physical therapist: age, level of independence in activities of daily living before admission, length of ICU stay, duration of mechanical ventilation, depth of sedation, the occurrence of delirium, date of rehabilitation prescription, actual starting date of rehabilitation, the status of rehabilitation, muscle strength, and physical function at the start of rehabilitation (T1), ICU discharge (T2), and discharge from the hospital (T3).

The assigned nurse documented the patient's clinical condition, rehabilitation level, completion of rehabilitation sessions and adverse events during rehabilitation in the electronic medical record.

Sedation depth was assessed by the Richmond Agitation-Sedation Scale (RASS),[7] which was a 10-point scale ranging from −5 (*unarousable*) to +4 (*combative*). The Confusion Assessment Method for the ICU[8] assessed the occurrence of delirium. It is the internationally accepted method for assessing delirium in the ICU. It was performed by assessing 'acute onset or fluctuation of mental status changes', 'inattention', and 'disorganised thinking' in patients with RASS-3 or higher. Limb muscle strength (six muscle groups: abduction of the arm, flexion of the forearm, extension of the wrist, flexion of the hip, extension of the knee, and dorsal flexion of the foot, bilaterally) was assessed by the Medical Research Council (MRC) using the manual muscle test.[9] This is a 60-point scale ranging from 0 (no visible or palpable muscle contraction) to 5 (movement through the complete range of motion against gravity and maximum resistance) at 12 locations of the body. This score is reliable and accurate and can be used for the diagnosis of ICU-AW (defined by an MRC Score<48). Finally, physical function was assessed by the Functional Status Score of the Intensive Care Unit (FSS-ICU)[10] on an 8-point scale from 0 (*full support*) to 7 (*self-support*) for a total of 5 items in 3 preambulatory categories (rolling, supine-to-sit transfer, unsupported sitting) and 2 ambulatory categories (sit-to-stand transfer and ambulation). Scores assessed independence in daily life on a scale from 1 to 8; the higher the score, the higher the level of independence.

Rehabilitation status was evaluated during the following periods: ICU admission—rehabilitation prescription (P1), rehabilitation prescription—start of rehabilitation (P2), start of rehabilitation—implementation of end-sitting position (P3), start of rehabilitation—implementation of standing position (P4). In addition, adverse events that occurred during the rehabilitation were evaluated according to prolonged oxygen desaturation, prolonged unstable circulatory dynamics, unplanned removal of tubes/catheters or other support devices and fall to the knees.

Analysis

Continuous variables were expressed as a median, IQR and qualitative variables were expressed as numbers and percentages. The Mann-Whitney U test was used to compare the two groups for continuous variables. For categorical variables, the Pearson χ^2 test was used. Data analysis was performed using SPSS software (V.23.0; SPSS), and the significance level was set to 5%. The intervention design, implementation, interpretation and reporting were carried out according to the SQUIRE V.2.0 guidelines.[11]

DESIGN

Early rehabilitation protocols using multidisciplinary huddle

The ICU Early Rehabilitation Group was established to conduct a QI project. Group members included three ICU nurses, two intensivists, one cardiologist and two physical therapists. Group members discussed the following five topics: huddle attendees, start time, method of selecting

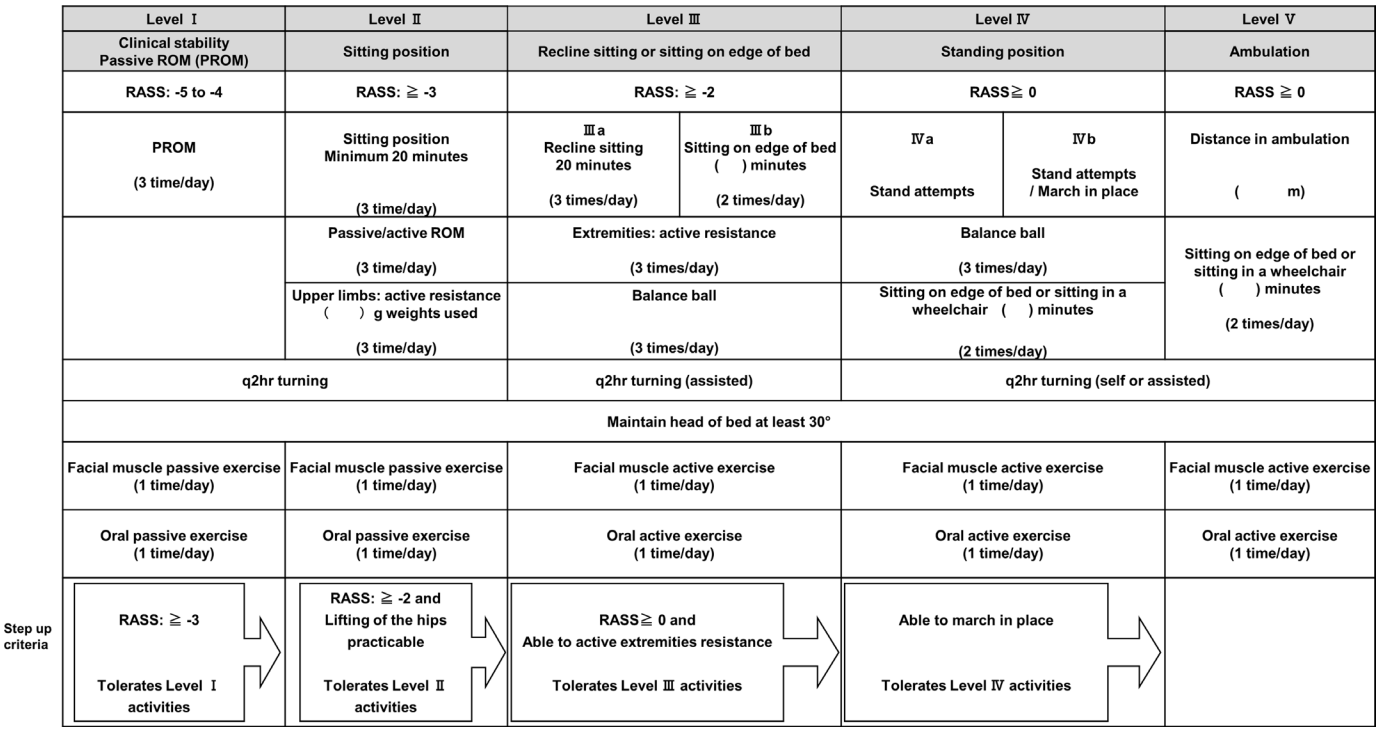

Figure 1 Rehabilitation Protocol. RASS, Richmond Agitation-Sedation Scale.

patients for the huddle, items to be discussed and content of rehabilitation protocols. The protocol using multidisciplinary huddles was developed based on previous studies[12] (figure 1). Patients or the public were not involved in the design, conduct, reporting or dissemination plans of our research.

STRATEGY

Preparation of the rehabilitation QI project

Group members provided a 10-min face-to-face explanation regarding the purpose of introducing the huddle, huddle procedures, role identification and responsibilities of multidisciplinary staff members, and protocol utilisation. Additionally, a week was spent on set-up and providing opportunities for explaining and briefing all ICU nurses. Implementation of the huddle began in April 2017.

Rehabilitation huddle meeting

Huddles began at 08:20 each weekday morning, with physicians (intensivists and attending physicians), nurses (day shift leader nurses and night shift attending nurses) and physical therapists at each patient's bedside.

The huddle was conducted according to the following procedure: (1) the physician reported the patient's disease and treatment process; (2) the nurse reported the patient's general condition, including the status from the latest rehabilitation session; (3) the physician, nurse and physical therapist evaluated the latest rehabilitation session and set new daily goals; (4) the nurses recorded the goals on each bedside protocol chart (figure 1); (5) the nurses were briefed on precautions during rehabilitation (eg, vital signs, pain, delirium and others); and (6) the nurse adjusted the rehabilitation starting time and the number of personnel needed. The nurses documented the huddle context in the patient's electronic medical records for sharing among hospital staff of all disciplines.

RESULTS

Patient characteristics

A total of 148 patients were included in the analysis. Comparisons were made between two groups: the Pre-QI Period group of 74 patients (from July 2016 to March 2017) and the QI Period group of 74 patients (from April to December 2017) (table 1). No differences were found in background attributes of age or independence in daily life before and after the intervention.

Comparison between pre-QI period and QI period

No significant difference was observed in the percentage of early rehabilitation initiation within 48 hours of ICU admission before and after the introduction of the huddle ($p>0.05$).

However, before and after the introduction of the huddle, ventilator days decreased from a median of 8 to 5 days ($p=0.08$), and ICU LOS decreased from a median of 10 to 6 days ($p=0.09$). Delirium occurrence was unchanged (table 1)

The number of days from the start of rehabilitation after prescription (P2) and from the start of rehabilitation to implementation of standing (P4) were significantly earlier (P2; 1 (1 to 1) vs 1 (0 to 1), $p=0.01$) (P4; 5 (1.3 to 10) vs 3 (1 to 6), $p=0.02$).

Table 1 Patients' characteristics and outcomes before and after QI

Variables	Pre-QI period (n=74)	QI period (n=74)	P value
Age, median (IQR), year	76 (67.3–83)	76 (67–82.5)	0.70
Independence in daily life†, median (IQR), point	8 (6–8)	8 (6–8)	0.50
RASS, median (IQR)	1 (-2 to 0)	1 (-2 to 0)	0.12
CAM-ICU			0.39
Positivity, n (%)	24 (32.4)	29 (39.2)	
Negative, n (%)	50 (67.6)	45 (60.8)	
Duration of mechanical ventilation, median (IQR), day	8 (4–11.3)	5 (3–8)	0.08
Length of ICU stay, median (IQR), day	10 (5–14)	6 (4–11.8)	0.09
Hospital discharge outcomes			0.36
Discharge home, n (%)	21 (28.4)	29 (39.2)	
Hospital transfer, n (%)	47 (63.5)	39 (52.7)	
Death discharge, n (%)	6 (8.1)	6 (8.1)	
Outcome Measures	**Pre-QI period (n=74)**	**QI period (n=74)**	**P value**
P1: ICU admission—rehabilitation prescription, median (IQR), day	1 (1–2.8)	2 (1–3)	0.11
P2: Rehabilitation prescription—start of rehabilitation, median (IQR), day	1 (1–1)	1 (0–1)	0.01*
P3: Start of rehabilitation—implementation of end-sitting position, median (IQR), day	1 (0–4)	1 (0–3)	0.39
P4: Start of rehabilitation—implementation of standing position, median (IQR), day	5 (1.3–10)	3 (1–6)	0.02*
Patients performing standing while in the ICU			1.00
Implementation rate, n (%)	40 (54.1)	40 (54.1)	
Not implementation rate, n (%)	34 (45.9)	34 (45.9)	
Muscle strength and physical function	**Pre-QI period (n=74)**	**QI period (n=74)**	**P value**
MRC, median (IQR)			
T1: At the start of rehabilitation intervention	40 (17.8–48)	44 (26.5–48)	0.33
T2: At the ICU discharge	43.5 (32.3–48)	46.5 (30–48)	0.96
T3: At the discharge from hospital	29.5 (10.3–35)	27.5 (10.3–35)	0.95
FSS-ICU, median (IQR)			
T1: At the start of rehabilitation intervention	3 (1–7.8)	3.5 (1–8)	0.77
T2: At the ICU discharge	9.5 (4.3–17.8)	12 (4–16)	0.88
T3: At the discharge from hospital	29.5 (10.3–35)	27.5 (10.3–35)	0.95

Mann-Whitney U test, Pearson χ^2 test.
*p<0.05.
†Score from 1 to 8, the higher the score, the higher the level of independence in daily life. Independent: J-1: 8 points, J-2: 7 point. semi-bedridden: A-1: 6 point, A-2: 5 point. Bedridden: B-1: 4 points, B-2: 3 points, C-1: 2 points, C-2: 1 point.
CAM-ICU, Confusion Assessment Method for the Intensive Care Unit; FSS-ICU, Functional Status Score of the Intensive Care Unit; ICU, intensive care unit; MRC, Medical Research Council; QI, quality improvement; RASS, Richmond Agitation-Sedation Scale.

There were no significant differences in the percentage of patients that performed standing in the ICU, MRC score and FSS-ICU during the rehabilitation intervention period (table 1). Since the introduction of huddles, the huddle implementation rate has been 100% (figure 2).

Adverse events

None of the following adverse events occurred during the rehabilitation performed on the 148 patients in the QI project: prolonged oxygen desaturation, prolonged unstable circulatory dynamics, unplanned removal of tubes/catheters or other support devices or fall to the knees.

LESSONS AND LIMITATIONS

Lessons

In a semiclosed ICU without a full-time physical therapist, a multidisciplinary rehabilitation huddle was introduced as a team approach to improve early rehabilitation implementation rates. Consequently, rehabilitation was actively implemented earlier and at a higher rehabilitation level

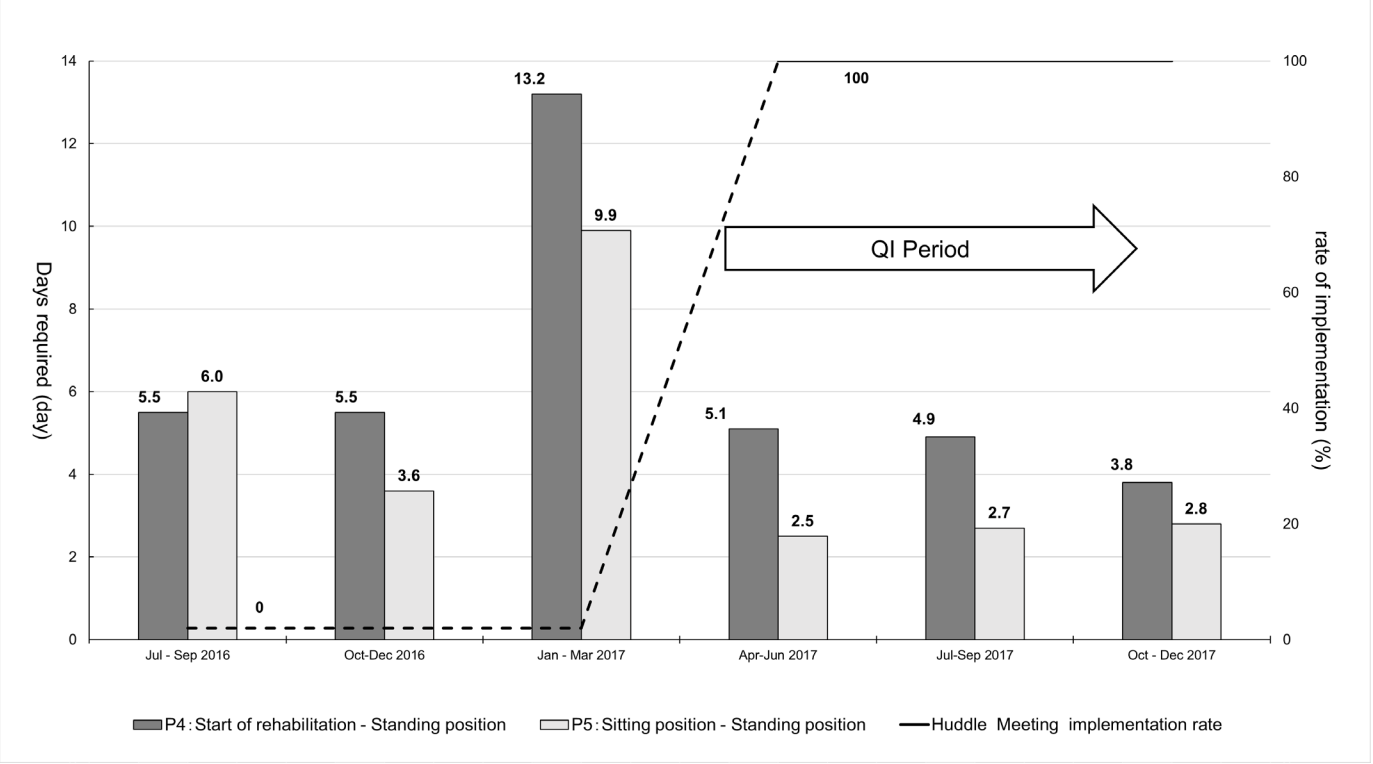

Figure 2 Huddle meeting implementation rate and rehabilitation implementation status. QI, quality improvement. The black bars indicate the number of days it required from the start of rehabilitation to standing (P4), and the gray bars indicate the number of days it required from sitting to standing (P5), and the dotted line indicates huddle meeting implementation rate. The quality improvement project was implemented from April 2017.

after the introduction of huddles. This result was similar to previous studies,[13 14] and it was attributed to the fact that the introduction of huddles increased opportunities and frequency of communication among the various professionals, thereby providing the right level of rehabilitation at the right time for the patients.

Barriers to physical therapists providing rehabilitation included 'a patient receiving bedside dialysis' or a patient 'being transported off the floor for diagnostic testing' and 'sedation of patients'.[15] In addition, factors that inhibited the expansion of rehabilitation levels differed between nurses and physical therapists. Nurses reported haemodynamic instability and respiratory status, while physical therapists reported patient neurologic impairment as significantly higher inhibiting factors.[16] At this time, the introduction of huddles fostered better collaboration among multidisciplinary teams. The introduction of huddles, whereby 'rehabilitation time', 'sedation levels' and 'staffing' were adjusted by the nurses, resolved these barriers and led to an earlier start of rehabilitation. In addition, the fact that we could set up a time, place and method that facilitated discussions among multiple professions led to a 100% huddle implementation rate. Moreover, we believe that by facilitating communication among multiple professions through huddles, we could appropriately assess the patient's general condition and provide rehabilitation at a level appropriate to the condition.

The introduction of huddles resulted in actively implementing earlier rehabilitation at a higher level, among which no adverse events were observed. Although the frequency of adverse events during early weaning and rehabilitation in the ICU is low (1%–4%),[17] oxygen decreases saturation, and blood pressure decreases account for about half of all adverse events.[18] These can significantly impact ICU patients with reduced reserve capacity, thus setting appropriate rehabilitation goals and monitoring before, during and after rehabilitation are essential. Of the many professions, nurses spend the most time in contact with patients and are most aware of changes in haemodynamic and respiratory status during treatment, nursing care and at night. Therefore, we considered that nurses' sharing of the patient's general condition and implementation considerations during the huddle led to the setting of appropriate rehabilitation goals. Furthermore, the fact that the rehabilitation time and personnel requirements could be adjusted during the huddle also indicate that the huddle is valuable to ensure the safe implementation of rehabilitation.

There were no significant differences in MRC score and FSS-ICU before and after the introduction of the huddle. This result suggests that minor changes in the rate of early rehabilitation in the ICU would not improve patients' physical function outcomes. Furthermore, a previous randomised controlled trial (RCT)[3] examining ICU-AW prevention using MRC scores did not find significant

differences in MRC scores due to early and vigorous exercise. Contrarily, a systematic review and meta-analysis[4] of RCTs examining the effects of early release from bed showed that MRC scores improved significantly in the early release group, with inconsistent results. Moreover, there was no significant change in the frequency of rehabilitation provided before and after the introduction of huddles. Therefore, it is necessary to increase the frequency of bedside rehabilitation by nurses through huddles in the future while verifying the long-term effects of early rehabilitation.

Limitations

This QI project has a few limitations. First, there were limited data comparisons of patient physical function outcomes resulting from the introduction of conferencing, and it is unclear whether it improved long-term patient outcomes. However, this project did not set improvement in physical function as the primary outcome; instead, it aimed to describe whether the introduction of huddles improved the rate of early rehabilitation and the feasibility of conducting daily huddles. The sample size needed for adequate power to detect a significant difference was not determined in this QI project as is typically done in research studies. Additionally, RCT studies on the effects of early rehabilitation in the ICU on physical function have yielded inconsistent results. In the future, we will accumulate data, including post discharge, and evaluate long-term outcomes to verify the effects of early rehabilitation.

Second, the ICU Early Rehabilitation Group took the lead in introducing huddles. However, whether the same quality of huddles will continue over the long term remains unclear. Thus, the long-term effects of this QI project are unknown. However, the huddles introduced in this project can be implemented in a very intuitive manner. Specifically, a simple start time, place and method were established, and the implementation rate during the QI project period was easily maintained at 100%. In addition, since the discussions were conducted according to the newly created protocol, huddles may continue to be conducted with similar quality in the future.

CONCLUSION

A nurse-led multidisciplinary rehabilitation huddle was introduced to the ICU, where no dedicated ICU physical therapist was assigned. This QI project facilitated an earlier start to rehabilitation and a higher level of rehabilitation practice. The lack of adverse events also suggested the programme's effectiveness in safely implementing rehabilitation at an early and high level. In the future, it will be necessary to increase the frequency of rehabilitation by using huddles and verifying the long-term effects of early rehabilitation using physical function after discharge as an evaluation index.

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Contributors KN and KH collected data, monitored data collection for the full trial, wrote the statistical analysis plan, and cleaned and analysed the data. HS and GA conceived the presented idea, and KN drafted the paper. HS, GA and KN revised the draft paper. KN is guarantor and accepts responsibility for the conduct of the work and the finished manuscript.

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Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not applicable.

Ethics approval This study involves human participants and was approved by QI project data were retrieved from electronic medical records in a manner that did not allow the identification of individuals. The data were used exclusively for this QI project. The Ethics Committee of the Japanese Red Cross Wakayama Medical Center approved this QI project (No. 989). Informed consent was obtained in the form of opt-out on the hospital website. Those who rejected were excluded. QI project data were retrieved from electronic medical records in a manner that did not allow the identification of individuals. The data were used exclusively for this QI project. The Ethics Committee of the Japanese Red Cross Wakayama Medical Center approved this QI project (No. 989). Informed consent was obtained in the form of opt-out on the hospital website. Those who rejected were excluded.

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Data availability statement Data sharing not applicable as no datasets generated and/or analysed for this study.

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REFERENCES

1 Denehy L, Lanphere J, Needham DM. Ten reasons why ICU patients should be mobilized early. *Intensive Care Med* 2017;43:86–90.
2 Yende S, Austin S, Rhodes A, *et al*. Long-term quality of life among survivors of severe sepsis: analyses of two international trials. *Crit Care Med* 2016;44:1461–7.
3 Schweickert WD, Pohlman MC, Pohlman AS, *et al*. Early physical and occupational therapy in mechanically ventilated, critically ill patients: a randomised controlled trial. *Lancet* 2009;373:1874–82.
4 Okada Y, Unoki T, Matsuishi Y, *et al*. Early versus delayed mobilization for in-hospital mortality and health-related quality of life among critically ill patients: a systematic review and meta-analysis. *J Intensive Care* 2019;7:57.
5 Japanese Society of Intensive Care Medicine. The Japanese clinical practice guidelines for management of sepsis and septic shock 2020 [Japanese only]. *J Jpn Soc Intensive Care Med* 2020;28.
6 Schujmann DS, Teixeira Gomes T, Lunardi AC, *et al*. Impact of a progressive mobility program on the functional status, respiratory, and muscular systems of ICU patients: a randomized and controlled trial. *Crit Care Med* 2020;48:491–7.
7 Sessler CN, Gosnell MS, Grap MJ, *et al*. The Richmond agitation-sedation scale: validity and reliability in adult intensive care unit patients. *Am J Respir Crit Care Med* 2002;166:1338–44.
8 Ely EW, Inouye SK, Bernard GR, *et al*. Delirium in mechanically ventilated patients: validity and reliability of the confusion assessment method for the intensive care unit (CAM-ICU). *JAMA* 2001;286:2703–10.

9 De Jonghe B, Bastuji-Garin S, Durand M-C, *et al*. Respiratory weakness is associated with limb weakness and delayed weaning in critical illness. *Crit Care Med* 2007;35:2007–15.
10 Thrush A, Rozek M, Dekerlegand JL. The clinical utility of the functional status score for the intensive care unit (FSS-ICU) at a long-term acute care hospital: a prospective cohort study. *Phys Ther* 2012;92:1536–45.
11 Ogrinc G, Davies L, Goodman D, *et al*. Squire 2.0 (standards for quality improvement reporting excellence): revised publication guidelines from a detailed consensus process. *Am J Crit Care* 2015;24:466–73.
12 Morris PE, Goad A, Thompson C, *et al*. Early intensive care unit mobility therapy in the treatment of acute respiratory failure. *Crit Care Med* 2008;36:2238–43.
13 Falkenstein BA, Skalkowski CK, Lodise KD, *et al*. The economic and clinical impact of an early mobility program in the trauma intensive care unit: a quality improvement project. *J Trauma Nurs* 2020;27:29–36.
14 Schallom M, Tymkew H, Vyers K, *et al*. Implementation of an interdisciplinary AACN early mobility protocol. *Crit Care Nurse* 2020;40:e7–17.
15 Malone D, Ridgeway K, Nordon-Craft A, *et al*. Physical therapist practice in the intensive care unit: results of a national survey. *Phys Ther* 2015;95:1335–44.
16 Garzon-Serrano J, Ryan C, Waak K, *et al*. Early mobilization in critically ill patients: patients' mobilization level depends on health care provider's profession. *PM R* 2011;3:307–13.
17 Sancisi S, Monesi A, ImbrÃ¬aco G. La mobilizzazione precoce E La prevenzione della intensive care unit acquired weakness (ICU-AW): una revisione narrativa della letteratura. *SCENARIO* 2021;38:29–42.
18 Adler J, Malone D. Early mobilization in the intensive care unit: a systematic review. *Cardiopulm Phys Ther J* 2012;23:5–13.