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## **IN-BED CYCLING WITH CRITICALLY ILL PATIENTS: PRACTICAL LESSONS FROM A RANDOMISED TRIAL**

Nickels M, Aitken L, Barnett A, Walsham J and McPhail S.

**Introduction:** In-bed cycling for critically ill patients is a rehabilitative exercise that may help improve patients' functional status at hospital discharge. In-bed cycling is not currently implemented early during a patients' critical illness. **Objectives:** To identify if early in-bed cycling could be safely implemented following a patients' admission to ICU and to identify the barriers and facilitators to implementation of in-bed cycling within ICU. **Methods:** A randomised controlled trial comparing usual care physiotherapy with additional in-bed cycling within a tertiary mixed medical, surgical, trauma ICU was conducted. Number of sessions of in-bed cycling planned, conducted, distance and duration cycled, haemodynamic parameters and occurrence of pre-defined adverse events were recorded. A diary of intervention implementation processes and outcomes was kept to identify barriers and facilitators to implementation of in-bed cycling. **Results:** Thirty-seven participants completed 276 of 304 (90.8%) planned in-bed cycling interventions. Participants completed a median (IQR) of 6 (4,8) in-bed cycling sessions. Participants commenced in-bed cycling a median (IQR) of 2.3 (1.8,3.1) days following ICU admission. Participants cycled a mean (SD) 27.7 (5.2) minutes per session and mean (SD) 3.23km (1.63km) per session and maintained haemodynamic stability. Two minor adverse events (0.7% of sessions) occurred that required clinician intervention (increased respiratory rate and oxygen desaturation). These events required adjustment to ventilator settings without any long-term consequences. The main barriers to the implementation of in-bed cycling sessions were patient fatigue (n=9), delirium (n=5) and haemodynamic instability (n=4). Timing of initiation of the intervention following morning chest x-ray round with independent implementation by a physiotherapist were identified as the main facilitators to the in-bed cycling intervention. **Conclusions:** In-bed cycling commencing within 2 to 3 days of a patients' ICU admission was both safe and feasible. Adverse events were rare and the main barrier to implementation of in-bed cycling sessions was patient fatigue.