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Efforts to reduce medical errors associated with weight data in patients undergoing hemodialysis in the artificial kidney unit

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Objectives : This study aimed to assess the potential reduction of errors associated with patients' inter-dialysis weight gain by using a hemodialysis data management system that includes an electronic scale, a data processing system, and bedside tablet devices.
Methods : Between July 1, 2023 and December 31, 2023. Out of the 55 patients who underwent maintenance hemodialysis therapy at our hospital for a duration of 6 months, the study included 53 individuals, eliminating 2 patients who declined to have their data transmitted. Analyzed were the paper-based hemodialysis sheets to measure the frequency of errors linked to weight. Since October 1, 2023, every patient has been given a distinct QR code. This code is used to identify the patient while measuring their weight, and the weight is automatically determined. The data was transmitted to the data processing system. Each bed in the artificial kidney room was equipped with a tablet device that displayed the weight gain and target amount for dialysis. These values were automatically calculated using the patient's measured weight. The nurse was instructed to use this resource when initiating hemodialysis. The nurse concurrently documented these measurements on paper-based hemodialysis records.
Results : A Proportional Z-test was conducted using the statsmodel Python library. The weight-related mistake rate during the third quarter, which spans from July to September, was 0.019 or 1.9% (40 errors out of 2036 measurements). In the fourth quarter, the error rate increased to 0.0237 or 2.37% (48 errors out of 2024 measurements). When using a hemodialysis data processing system that incorporates automatic weight transfer and calculation of inter-dialysis weight gain, there was no decrease in the occurrence of weight-related mistakes in the artificial kidney chamber (p-value = 0.37, Z-statistics = -0.8902).
Conclusions : The implementation of the hemodialysis data management system did not result in a reduction in weight-related errors in the artificial kidney unit.