J Nurs Care Qual
Vol. 33, No. 1, pp. 61–66

Improving Compliance in Obtaining Daily Weights in a Large Academic Children's Hospital

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Jacqueline E. Crawford, MS, RN, ACCNS-P, PCPNP-BC; Colleen Garvin Coyne, MHA; Katherine Calder, MSN, RN

Noncompliance in obtaining daily weights leads to delays in establishing treatment and discharge plans in pediatric populations. An inpatient gastrointestinal and endocrine nursing unit aimed to increase compliance of obtaining daily weights from baseline of 38% to 80%. The time daily weights were obtained was changed from 8 AM to an interval of time 4 PM to 6 PM. The compliance rate increased to 96% and has been sustained at an average of 94% over 24 months. This report describes a low-risk intervention that took minimal effort to implement but yielded high results to exceed the goal. **Key words:** *compliance*, *daily weights*, *PDSA (Plan*, *Do*, *Study*, *Act)*, *pediatrics*

IN pediatric patients, daily weights are used to assess nutrition and fluid/electrolyte status, and safely dose medications.[1,2] Obtaining daily weights for both pediatric gastrointestinal (GI) and endocrine patients who are admitted to the hospital is critical to a proper course of treatment. Missed daily weights can lead to increased risk of error in prescribing medications and can delay ability to make decisions about treatment interventions and feeding regimens that can ultimately lead to a delay in discharge.[3,4]

On the GI/endocrine unit at The Children's Hospital of Philadelphia, there was an opportunity for nurses to improve compliance in obtaining daily weights to ensure proper medication dosing and prevent delays in treatment interventions and discharge. A quality improvement project was conducted to improve compliance. The specific aim of the project was to increase compliance of obtaining daily weights on the inpatient GI/endocrine unit from a baseline of 38% in October 2013 to 80% by June 2014. The unit has an average daily census of 31 patients. The unit is staffed by 10 to 14 registered nurses and 2 to 3 nursing assistants on each shift. Patients range in age from 0 to 21 years. Both registered nurses and nursing assistants perform daily weights.

The nursing leadership team conducted focused interviews with nursing staff on daily weights. The nurses reported in the interviews that they deemed daily weights "not as important" as other tasks that have more significant sequela to a patient's health if

Author Affiliations: *Department of Nursing, Respiratory, & Neurodiagnostics (Mss Crawford and Calder) and Office of Safety and Medical Operations (Ms Coyne), Children's Hospital of Philadelphia, Philadelphia, Pennsylvania.*

Supplemental digital content is available for this article. Direct URL citation appears in the printed text and is provided in the HTML and PDF versions of this article on the journal's Web site (www.jncqjournal.com).

The authors declare no conflict of interest.

Correspondence: *Jacqueline E. Crawford, MS, RN, ACCNS-P, PCPNP-BC, Department of Nursing, Respiratory, & Neurodiagnostics, Children's Hospital of Philadelphia, 34th & Civic Center Blvd, Main Bldg Room 5W45, Philadelphia, PA 19104 (crawfordja@email.chop.edu).*

Accepted for publication: May 1, 2017

Published ahead of print: June 23, 2017

DOI: 10.1097/NCQ.0000000000000268

they are not performed on time, such as administering medications and tube feedings. Nurses on the unit often did not obtain daily weights that were ordered because of lack of time and simultaneous multiple competing tasks.

The practice of nurses omitting tasks because of lack of time, known as implicit rationing of nursing care, is defined as "the withholding of or failure to carry out necessary nursing measures for patients due to inadequate time, staffing level, and skill mix."[5] The study of implicit rationing of nursing care is in its infancy; however, studies conducted thus far show similar findings in that nurses ration tasks that do not have an immediate effect on patient outcomes.[5-9] There were no reports on how nurses decide what care to ration for each patient or how frequently nurses ration the task of daily weights. Furthermore, few interventions or strategies to improve implicit rationing of nursing care are described in the literature.

Historically daily weights on the inpatient unit were done at 8 AM prior to multidisciplinary rounds. The multidisciplinary rounding structure for the unit consists of nurses, physicians, a dietician, a clinical nurse specialist, a social worker, a case manager, and the patient/family. The weight data is needed during rounds to make clinical decisions about the patient's treatment plan for the day. Simultaneously, while rounds are occurring, nurses are completing assessments, tube feeding and medication administration, daily weights, and other treatment interventions. Based on preliminary findings from the nurse focus groups, it was hypothesized that by changing the time that daily weights were obtained, from day shift to evening shift, compliance of obtaining daily weights would increase. The Institute for Healthcare Improvement Model for Improvement, consisting of Plan, Do, Study, Act (PDSA) cycles, was used to test the intervention.[10] This report describes a low-risk intervention that took minimal effort to implement but yielded high results to exceed the goal.

METHODS

The Institute for Healthcare Improvement method for quality improvement was used to define the scope of work, diagnose the opportunity for improvement, and conduct rapid-cycle tests of change using PDSA cycles to measure and quantify the results of those tests. In a PDSA cycle, a change is implemented on a small scale to test the change. The small-scale change minimizes risks and expenditures of time and money, makes changes in a way that is less disruptive to patients and staff, reduces resistance to change by starting on a small scale, and learns from the ideas that work and do not work. The team compares the results of each cycle to baseline data to measure whether the change is an improvement. Therefore, by starting with small changes to test ideas quickly and easily, and by using simple measurements to monitor the effects of changes over a short period of time, rapid-cycle testing can lead to larger improvements.

During the diagnose phase, the team developed a specific, measurable, actionable, realistic, and timely (SMART) aim statement and a detailed driver diagram as noted in the Supplemental Digital Content Figure, available at: http://links.lww.com/JNCQ/A345.[11] A driver diagram is an applicable tool for many contexts, from improving process reliability to redesigning a service to creating new products to generating enhanced user experience. The tool visually represents a shared theory of how situations might be better, building on knowledge gleaned from research, observation, and experience.[12] Based on the driver diagram, the team prioritized potential process changes by evaluating the impact and effort of each process change.

While each PDSA cycle was underway, the team conducted daily audits to measure compliance on all patients who were ordered for a daily weight. After each cycle within the test of change, qualitative and quantitative measurement methods were used to gauge the effectiveness of the test. Qualitative methods included interviewing staff during each cycle

to gain an understanding of underlying reasons, opinions, and motivations for performing or not performing daily weights. Quantitative methods, such as analysis of daily weight compliance, were used to generate measurable data to formulate facts. This project was quality improvement and did not require review by the institutional review board.

Test-of-change

There were 4 PDSA cycles in the test of change that occurred over a 7-month period of time. During the first cycle, the team collaborated with the inpatient medical director of the GI and endocrine unit to obtain medical approval to change the time of weights. After approval and investment in the initiative, education about the change took place in many modalities that included e-mail, shift huddle discussions, staff meetings, multidisciplinary rounds, and unit-based resident orientation to educate nursing staff and other providers about the change. After completion of education, the time of daily weights was changed from 8 AM to 6 PM. Daily weight audits were conducted to monitor the change, and nurses leading the initiative queried noncompliant nursing staff about the barriers to obtaining weights.

In the second cycle of the test of change, additional reminder methods were put into place. These included pages sent to the nursing staff on their devices 2 times per day at 7:45 AM and 4:00 PM to remind them of change in time in obtaining weights. To gain a better understanding and ensure efficient analysis of daily weight compliance, the team worked with the Information Services Department to build an automated daily weight report in the electronic medical record. During this cycle, the team discovered that weekend daily weight compliance was lower than weekday compliance. A weekend nurse was identified to champion the change of time, educate, and get buy-in from the weekend nursing staff.

In the third cycle, after implementation of the time change, the team received feedback that it was often easier to cluster care and obtain the daily weight with vital signs that were done at 4 PM on the GI/endocrine unit rather than at 6 PM. During this cycle, the time of daily weights was changed to an interval of time 4 PM to 6 PM. The team continued to review the daily audit results at shift huddles to show staff the improvement in compliance and to encourage future success.

The fourth cycle focused on continued compliance. Nurses who missed more than 2 opportunities to obtain daily weights during the 4 PM to 6 PM time frame were reported to the staff members' supervisor for counseling. This helped promote compliance and ensure that daily weight capture became part of the workflow as a priority for the patients.

RESULTS

The Figure, Daily Weight Compliance, displays the rate of compliance in obtaining weights from baseline in October 2013 through all 4 cycles from November 2013 to June 2014 and sustainment from July 2014 to present, March 2017. During the first cycle, the unit reached the target of 80% compliance. The compliance rate trended upward to 92% after the third cycle, which was when the interval of time to obtain weights was increased to 2 hours, 4 PM to 6 PM. During the fourth and final cycle, the compliance rate trended up to 96%. Sustainment began in July 2014, and compliance has been maintained through March 2017.

After only 4 cycles, there was a 150% relative increase from the baseline compliance rate. No further tests of change were introduced. Monitoring compliance was decreased from weekly to monthly intervals. After 1 year of sustaining the compliance rate, monitoring was decreased to quarterly intervals in June 2015. Over time, as the change in time weights were obtained became more entrenched in nursing staff's daily routines, and nurses experienced positive results from the change, the compliance rate has been sustained at an average of 94% from July 2014 through March 2017.

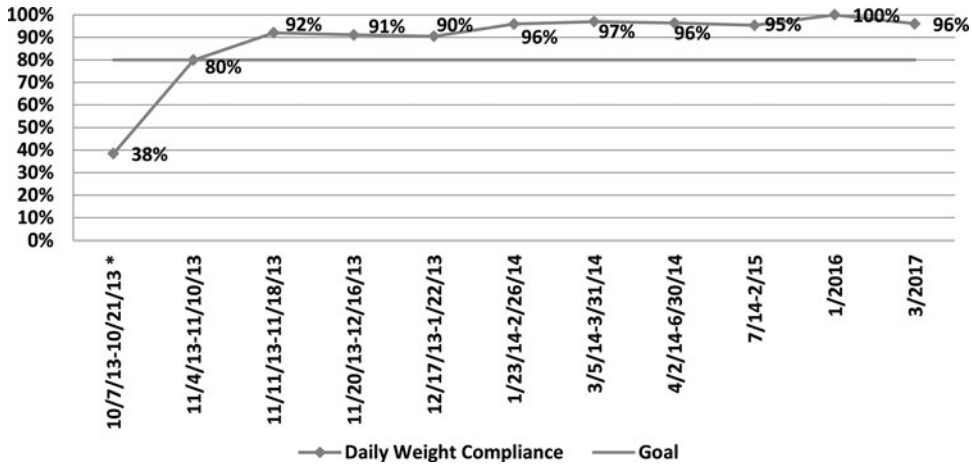

Figure. Daily Weight Compliance GI and Endocrinology Unit.

DISCUSSION

The nurses on the GI/endocrine unit reported initially that obtaining a daily weight was "not as important" to complete when compared with other time-sensitive tasks that are detrimental to patients' health such as administering medications or tube feedings. This rationing of care as described by the nurses is known in the literature as implicit rationing. Implicit rationing of care is not missed care or failure to perform care but rather a deliberate decision the nurse makes about which care to perform. Multiple studies conducted on implicit rationing of nursing care demonstrate that nurses choose to perform care that has a direct effect on their patients' health and outcomes.[5-9] The nurses decided not to perform the daily weights because there was not enough time during the 8-AM hour to provide all of the treatment interventions that were also due at the same time.

Changing the time of daily weights from 8 AM to 4 PM to 6 PM was chosen because there are fewer competing tasks during this time frame, thus making the task of obtaining daily weights sustainable and replicable. In the first cycle, the decision was made to have weights completed at 6 PM as this gave a firm, consistent, and unwavering time to complete this task. This time was broadened to the 4 PM to 6 PM range in the third cycle because through discussions with the nurses, it was found that they are often in the patient rooms at 4 PM to complete vital signs and give afternoon medications. As a result, the longer time frame helped streamline care to patients.

Throughout the PDSA cycles, nursing staff and other providers reported increased satisfaction in changing the time. Nurses were less busy from 4 PM to 6 PM, therefore giving them more time to obtain the weight. They also commented that this change made the 8-AM hour less chaotic, so they could focus on performing tasks that were time-sensitive and had more of an immediate effect on their patients' health.

Other providers shared that by obtaining weights in the evening, the weights were readily available the next morning before multidisciplinary rounds started. This enabled providers to formulate a concrete plan of care during rounds on the basis of real-time data with the patient and the family and the entire multidisciplinary team present. In addition, for some populations, the weight data allowed providers to make decisions about discharge early in the morning, therefore, decreasing the patient's length of stay and improving patient flow.

It was noted that compliance of obtaining daily weights decreased slightly during

holiday seasons. This was addressed through proactive, focused interventions in the days leading up to the holiday. Staff were unable to identify reasons for decreased compliance even after interventions were put in place. Therefore, this will continue to be a key focus in project sustainment moving forward and may be worth considering in other settings as a driver of noncompliance.

Future efforts will include disseminating practice changes to other clinical areas within the organization. Replicating this time change model could be applied to other interventions and treatment modalities for patients. Nursing leaders on the inpatient GI/endocrine unit are currently evaluating other compliance issues to determine whether a time change would be beneficial. Further quality improvement projects and research studies should be conducted to support these findings and determine the cost-benefit of timely weights.

LESSONS LEARNED

A review of lessons learned should be noted during this project. For any improvement project to run smoothly and effectively, it is important to discuss the purpose of the project, the need for the project, and how it will benefit all staff members and patients. Several weeks after implementation of the time change, there was resistance from some staff members to complete daily weights that resulted in the notification of their supervisor for failure to comply with physician orders. The resistance to perform the daily weights may be attributed to lack of knowledge about the improvement project and not understanding the value of obtaining weights. Although the leadership team educated staff about the improvement project and time change, there were no formal education classes on how daily weight gain impacts the patient's caloric goals for their feeding plan and medication dosing in the GI/endocrine population.

The test of change completed in the project did not incur any financial cost. When using the Institute for Healthcare Improvement Model for Improvement to diagnose and solve a problem, it was important to first consider solutions such as changing workflow that does not incur financial burden to the organization. Initially, when nurse leaders diagnosed the problem, they hypothesized lack of equipment as a potential reason for nurses not obtaining daily weights. They proposed a potential solution to purchase more scales for the unit. However, it is found that within 4 weeks of implementing the time change, there was significant improvement in compliance, and no additional equipment was needed.

Limitations

Several limitations were found during the project. First, changing the time of daily weights required a culture change, long engrained into the nurses' and providers' daily routines. It took nurses and providers approximately 2 weeks with multiple reminders to fully incorporate the weight time change. Second, continuous education was required for this project to make providers aware of the time weights are performed on the GI/endocrine unit as resident physicians and fellows rotate monthly, and attending physicians rotate every 2 weeks. In addition, in academic settings, new physicians are hired every year in July and need to be oriented to the time of daily weights on the unit.

During times of decreased staffing, nursing staff from other units were assigned to work on the GI/endocrine unit. They were not aware of the daily weight time and needed proper orientation. Finally, some patient populations still require morning weights, and this needs to be communicated carefully in the electronic medical record and in person to the nurse by the provider.

CONCLUSION

Recording an accurate body weight is a fundamental part of any nutrition-screening tool as well as other interventions that may arise as part of the patient's treatment. As such, accurate and timely weight recordings have an

important effect on patient health and safety. A performance intervention of changing the time of day weights were obtained from 8 AM to 4 PM to 6 PM made a significant impact in improving nursing compliance and did not incur any additional costs. The team learned that high budget items are not always the "fix" to every problem.

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The authors and planners have disclosed no potential conflicts of interest, financial or otherwise.