Your dose is: 235 mg/day

ACCURATE WEIGHT DOCUMENTATION: HOW TO ADHERE TO BEST PRACTICES

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Disclosures: The author declares that they have no relevant or material financial interests.
Abstract

Background: The Institute for Safe Medication Practices (ISMP) has recommended that health systems map weight documentation fields to decrease weight-based dosing errors.

Problem: Despite a process improvement project that was implemented to meet ISMP’s goals, weight documentation discrepancies continue to occur.

Methods: The weight documentation process was reviewed and safety gaps were identified. Pharmacists were notified when patients had greater than 15% weight documentation discrepancy. Notifications were tracked before, during, and after process improvements within the electronic health record (EHR).

Interventions: Streamlining of weight documentation fields within nursing assessments, locking of bed scales, setting an expiration date for the weight documentation field, including a minimum and maximum on height and weight fields, replacing nurse staff documentation, and staff education were part of the process improvement plan.

Results: Average monthly weight documentation errors decreased from 115 to 60 per month over the process improvement period.

Conclusion: Human factor errors can result in weight documentation discrepancies despite implementing ISMP’s targeted safety goals around weight documentation. A real-time pharmacy notification of weight documentation discrepancies should be required for hospital pharmacists to prevent weight-based dosing errors.

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recommendations. Several documentation forms with multiple weight fields were a source of confusion for both nurses and certified nursing assistants (CNAs), who sometimes felt unsure about which weight field to document. There were also multiple orders for weight documentation within our nursing admission order set.

The informatics team tackled the large task of streamlining our nursing admission assessment forms (Figure 2), which included three weight documentation fields: measured weight, clinical weight, and estimated weight. The measured weight field was used when the patient was physically weighed. Upon admission, this value was copied over to the clinical weight field when a weight-based drug was ordered. These three fields were displayed on various documentation forms throughout the EHR. The clinical weight field was available on over 27 different inpatient assessment forms. If a provider ordered a daily weight for a congestive heart failure patient whose weight can fluctuate due to fluid gain or loss, these three fields displayed for the nurse and CNA. Removing the two additional weight orders streamlined documentation.

Upon reviewing ISMP’s recommendations, the medication safety team identified that the bed scales needed to be locked and contacted the engineering department. Engineering had to develop their own process to track and lock the bed scales and implement a check to lock the new bed scales. Since this took time and resources to implement this fix, locking of the bed scales was included in their documentation. The goals of this modification were to display the clinical weight field on the patient admission forms and estimated weight field for the emergency department.

During a patient’s admission process, a nursing admission order set was ordered, which included three orders for weights, each linked to three different forms—resulting in nine weight documentation fields. Every weight order that fired an increased the chance for documentation errors. This created unnecessary work for the nurse and CNA. Removing the weight order that fired an increased the chance for documentation errors. This created unnecessary work for the nurse and CNA. Removing the weight order that fired an increased the chance for documentation errors. This created unnecessary work for the nurse and CNA. Removing the weight order that fired this process gap was identified regarding who would zero out the bed scales prior to a new admission or patient transfer. The bed scale should be tared before a patient is weighed and no equipment should be on the bed when weighing a patient. Education was provided to the nurses and CNAs on the correct process to ensure beds are tared prior to admissions.

The process of streamlining the documentation forms, locking bed scales, adding safety alerts, and educating staff on weight documentation was an almost two-year project. Other disciplines, including dietary and ambulatory services, were involved because they also had weight fields embedded within their documentation forms. As such, changes to these fields would have affected their workflow. Weight field changes would also impact other fields such as body mass index, Cockcroft-Gault creatinine clearance, and body surface area. It took significant time to discuss workflows with these different key stakeholders, secure approval to change the forms, and test workflow once the changes were introduced.

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Results

Implementation of our interventions with the documentation process and safety enhancements to our EHR decreased the number of weight documentation errors, as seen in Figure 1. Data collection took place before and after our process improvement period. During this time, the pharmacists were notified to evaluate patients with weight discrepancies per month. Streamlining the process and safety enhancements mentioned above. Weight discrepancy cleanup, the pharmacy notified to evaluate patients with weight documentation errors, as seen in Figure 3. This time, the pharmacists were taking place before and after our process improvement period.

Discussion

Despite implementing the above fixes, weight documentation errors can occur due to human factors. For example, a staff member might document a patient’s weight on the wrong patient’s chart due to a lack of a bedside computer or portable scanning devices. A user could also weight the patient in the room, proceed into the hallway where a computer is available, and document the patient’s weight on the wrong chart. Other human factor errors include transposing numbers incorrectly during electronic documentation (e.g., typing 57 kg instead of 75 kg), documenting a patient’s weight on the patient’s word (e.g., stated weight) and not physically weighing the patient, and typing the patient’s height in the weight field (and vice versa). Because human remains susceptible to a skill-based error. When a medication is ordered with a weight-based dose (e.g., 10mg/kg), a dosing calculator window displays for the provider where they can view the weight-based dose, patient’s weight, and final dose calculation. After reviewing, then click the mouse to close the screen. The enhancement to the EHR performs the calculation in the background without another window opening for the provider. This saves the provider an extra mouse click and reduces the risk in the process of placing an order; however, the provider does not see the weight that is pulled into the calculation window (10mg/kg x 75kg = 750mg). This removes a potential source for an intervention in cases where there is an erroneous weight.

Despite efforts to implement these best practices, hospitals continue to struggle with weight documentation errors due to human factors. There are three categories of human errors: knowledge-based, rule-based, and skill-based. Knowledge-based errors occur when a person does not have enough experience or knowledge to handle a task. An error can occur when they try to “guess” what the answer would be based on their current knowledge base. Rule-based errors occur when rules are misapplied or not followed. One example seen was a pharmacist one day asked another and writing their results on a piece of paper which was then later entered into the computer. This would be considered using a shortcut to perform a task rather than following the standard process. Skill-based errors occur when a routine task is performed without much thought. An example of this would be not taring the bed or weighing the patient with equipment.

Poor design of systems, equipment, and tools can contribute to human factor errors. At our institution, an enhancement to our EHR could have contributed to a skill-based error. When a medication is ordered with a weight-based dose (e.g., 10mg/kg), a dosing calculator window displays for the provider where they can view the weight-based dose, patient’s weight, and final dose calculation. After reviewing, then click the mouse to close the screen. The enhancement to the EHR performs the calculation in the background without another window opening for the provider. This saves the provider an extra mouse click and reduces the risk in the process of placing an order; however, the provider does not see the weight that is pulled into the calculation window (10mg/kg x 75kg = 750mg). This removes a potential source for an intervention in cases where there is an erroneous weight.

Human factor errors such as transcribing errors, having the incorrect chart open in the EHR, and not zeroing out the bed scale are potential causes of weight documentation discrepancies. The weight documentation discrepancies did trend down after our improvements, but they were not eliminated.

Conclusion

In conclusion, health systems should have processes in place to decrease weight documentation errors. During this process improvement, it was key to educate multiple disciplines on the repercussions of incorrect weight documentation. It is important to put sustainable processes in place, rather than just applying a temporary fix to this issue. Despite the implementation of recommended practices, however, human factors errors can still occur. As new employees are hired, new beds are purchased for the hospital, or new electronic forms are built, it is important to have a process in place to prevent operational errors from occurring (e.g., orientation, training, and locking of new beds) and system design checks in place to prevent the use of unnecessary data entries in the EHR. The goal is to minimize human factors errors even though they are sometimes unavoidable. A process should be implemented to properly train pharmacists with real-time weight documentation discrepancies in order to correct any current medication dosing errors and prevent future errors as a safety check.

REFERENCES


About the Author

Sonali Muzumdar (smuzumdar@mercy-chicago.org) has been the clinical informatics pharmacist at Mercy Hospital & Medical Center in Chicago for more than 12 years, where she is a member of the Medication Safety Committee and has worked on improving the hospital’s weight documentation process.

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