

Patient Weight Should Be Included on All Medication Prescriptions

Lisa Lubsch, PharmD; Katelin Kimler, PharmD; Nicole Passerello, PharmD; Mindy Parman, PharmD; Andrea Dunn, PharmD; and Rachel Meyers, PharmD, on behalf of the Advocacy Committee of the Pediatric Pharmacy Association

Medication prescriptions for both children and adults often require the patient's current weight to determine a safe and effective dose. Medication orders in the inpatient setting typically require a patient weight be recorded prior to order verification. However, in the ambulatory setting a very different standard exists; weights are not required on prescriptions and are rarely provided by practitioners. Without this information, the community pharmacist must either ask the caregiver, who may not know an accurate weight, or simply assume that the prescriber used a current and accurate weight and calculated the dose correctly. Standard doses are prescribed for most adult prescriptions, which makes it possible for the pharmacist to identify a dosing error. Without a current patient weight, the pharmacist is not able to provide the same level of patient care to pediatric patients or adults whose prescriptions require weight-based doses. The Pediatric Pharmacy Association recommends that patient weight, recorded in kilograms, be required on all medication prescriptions in both the inpatient and outpatient settings.

KEYWORDS Pediatrics; patient safety; prescriptions

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Background

Patient weight is crucial when prescribing and verifying medication orders for all patients, and especially pediatric patients. Children encompass a wide range of ages and sizes, from the preterm neonate weighing <1 kg to the adult-sized or obese adolescent. It is imperative for prescribers to primarily use weight-based dosing in pediatric patients. Obtaining a correct weight with each encounter is important to decrease medication errors that could lead to underdosing or overdosing a patient. Estimating weight for patients could lead to potential adverse effects or ineffective treatment. A prospective, cohort study evaluated 1120 pediatric patients admitted to 2 academic institutions to assess the rate of medication errors as well as actual and potential adverse drug events. This study revealed that 3.7% of medication errors in children were due to missing or inaccurate weight.¹ A study of factors that contributed to pediatric medication errors in computerized order entry systems found that some systems did not require a patient weight to be entered, thus preventing clinical decision support systems from checking the dose.² The paper recommended that patient weight entry be enforced before medication orders are entered. Information on the errors caused by weight-based dosing mistakes in the outpatient setting are lacking because they are often not reported or may not even be recognized.

Organizations such as the American Academy of Pediatrics and the Pediatric Pharmacy Association recognize the importance of weight in dosing

medications in pediatric patients and recommend in their respective guidelines that patient weight be included on medication orders and outpatient prescriptions.^{3,4} The inclusion of weight on inpatient medication orders is a common requirement, but the same is not true of outpatient prescriptions. Without a patient weight, it is impossible for a pharmacist to assess and verify whether the dose prescribed is appropriate. It is impractical in a busy outpatient setting to reach out to the prescriber to obtain a weight on every prescription. The pharmacist could check the dose using the average weight based on the patient's age; however, this may be inaccurate, especially in underweight or obese children, as well as medically complex patients. Additionally, the pharmacist could ask the parent or caregiver for the patient's weight; however, the caregiver may not know the current weight because a child's weight changes frequently.⁵ Furthermore, caregivers typically provide the child's weight in pounds rather than kilograms, which may lead to confusion and potential error if the weight is not converted to kilograms accurately.⁶ Height may be needed for the calculation of ideal or adjusted body weight and body surface area, and thus should also be included on the prescription. Currently, there exists a double standard between inpatient medication orders and outpatient prescriptions in regard to requiring patient weight as a component of a complete prescription, and this increases the risk of medication errors in our most vulnerable population.

Recommendations

- **Recommendation 1.** All medication prescriptions should include weight, and this should be federally mandated and automatically included.
 - The inclusion of weight on a prescription or medication order is as necessary as the dose for many medications. Although medications for pediatric patients often rely on a weight-based dose, adult medications can often also benefit from consideration of weight because obesity may affect dose requirements. In these circumstances, a pharmacist cannot truly assess the appropriateness of a dose without documentation of a current weight and measurement date.
 - The date of the measurement is also important to include because weight can frequently change, particularly for pediatric patients.
 - Dose rounding within 5% to 10% of the calculated weight-based dose should be implemented as necessary to ensure patients are prescribed measurable volumes.
- **Recommendation 2.** Weight should be recorded in kilograms.
 - Medications that require weight to calculate the dose should universally require the weight to be expressed in kilograms. Kilograms is the international standard unit for weight and is also the standard unit used for weight in health systems.
 - Outpatient and inpatient pharmacy electronic medical record systems should include patient weights in kilograms so that accurate weight-based dosing can be calculated.
 - Not all medications are dosed based on weight; some regimens are determined based on age or body surface area.
 - The height should be included on the prescription in addition to the weight.
 - The height should be listed in centimeters.
- **Recommendation 3.** Electronic medical record systems and electronic prescribing technology should include weight with medication prescriptions, and this should be federally mandated.
 - Software that is used to transmit electronic prescriptions should be built such that weight information in kilograms is required with transmission of the prescription.
 - Software should be built to prompt the provider for an up-to-date weight in kilograms when necessary.
 - Clinical decision support systems that are capable of weight-based dose checking should be used in both the inpatient and outpatient settings.

ensuring patients are receiving appropriate dosages. To enhance patient safety, inclusion of a patient's weight in kilograms on medication prescriptions, including both the inpatient and outpatient setting, should be mandatory. Height in centimeters should also be mandatory for medication regimens determined by body surface area.

Article Information

Affiliations. Southern Illinois University Edwardsville School of Pharmacy, Edwardsville, Illinois (LL), SSM Health Cardinal Glennon Children's Hospital, St. Louis, Missouri (LL), Lehigh Valley Health Network, Allentown, Pennsylvania (KK), Wolters Kluwer, Hudson, Ohio (NP), Atrium Health, Charlotte, North Carolina (MP), AdventHealth for Children, Orlando, Florida (AD), Ernest Mario School of Pharmacy, Rutgers University, Piscataway, New Jersey (RM), Cooperman Barnabas Medical Center, Livingston, New Jersey (RM).

Correspondence. rachel.meyers@pharmacy.rutgers.edu

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References

1. Kaushal R, Bates DW, Landrigan C, et al. Medication errors and adverse drug events in pediatric inpatients. *JAMA*. 2001;285(16):2114–2120.
2. Tolley CL, Forde NE, Coffey KL, et al. *J Am Med Inform Assoc*. 2018;25(5):575–584.
3. Stucky ER; American Academy of Pediatrics Committee on Drugs; American Academy of Pediatrics Committee on Hospital Care. Prevention of medication errors in the pediatric inpatient setting. *Pediatrics*. 2003;112(2):431–436.
4. Levine SR, Cohen MR, Blanchard NR, et al. Guidelines for preventing medication errors in pediatrics. *J Pediatr Pharmacol Ther*. 2001;6:427–443.
5. Medication errors: significance of accurate patient weights. *Pa Patient Saf Advis*. 2009;6(1):10–15. Accessed March 18, 2023. http://patientsafety.pa.gov/ADVISORIES/Pages/200903_10.aspx#:~:text=A%20patient's%20weight%20is%20important,different%20from%20what%20is%20appropriate
6. Benavides S, Huynh D, Morgan J, Briars L. Approach to the pediatric prescription in a community pharmacy. *J Pediatr Pharmacol Ther*. 2011;16(4):298–307.

Conclusions

Patient weight is an essential component of all prescriptions and medication orders. Lack of a current weight on prescriptions prevents pharmacists from