Weighing All Patients in Kilograms

Position Statement

EMERGENCY NURSES ASSOCIATION

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Emergency Nurses Association
930 E. Woodfield Road
Schaumburg, IL 60173
847-460-4000
enau@ena.org
www.ena.org

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Authors and Reviewers

Authored by

Elizabeth Stone, PhD, MSN, RN, CPEN, FAEN

Reviewed by

2025 ENA Position Statement Committee Members
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Kristine Smith, MN, RN

2025 ENA Board of Directors Liaison
Lauren Plaine, MPS, RN, CEN

2025 ENA Staff Liaison
Domenique Johnson, MSN, RN

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Description

Dose-related medication errors remain a pervasive and preventable threat to patient safety as identified by organizations including The Joint Commission ([TJC], 2008) and the Institute for Safe Medication Practices ([ISMP], 2024). Globally, medication-related harm affects 1 in 30 patients, with over 25% of that harm considered severe or life-threatening (World Health Organization [WHO], 2023). Despite decades of global standardization, the United States is one of only two industrialized nations that has not fully converted to the metric system used for international product labeling (Central Intelligence Agency [CIA], n.d.).

As the portal of entry for many patients who require healthcare services, the emergency department (ED) is one of the top three areas for medical errors with serious consequences (Bailey et al., 2016). ED characteristics, including a high stress environment, frequent interruptions, and numerous transitions in care, contribute to a high risk of medication errors occurring in the ED setting. The varied processes for obtaining, documenting, and communicating patient weights in the ED create discrete opportunities for incorrect data entry, leading to medication errors that can perpetuate throughout a patient's hospital encounter. Recording an accurate patient weight in kilograms has implications for a variety of clinical tasks both in and beyond the ED, including accurate prescribing of medication and fluid, fluid volume assessment, and nutritional and obesity screenings (Flentje et al., 2018).

Documentation of an accurate patient weight is essential to safe medication dosing. Patients of all ages are at risk for potentially fatal medication errors when there is incorrect weight documentation in the ED. Certain populations, such as older adults; children; and patients with oncologic, renal, or liver disorders, are at a particularly high risk for adverse drug events and are especially vulnerable to the effects of any errors that result from incorrect weights being documented or otherwise communicated (Flentje et al., 2018; National Coordinating Council for Medication Error Reporting and Prevention [NCCMERP], 2018).

The WHO's Medication Without Harm initiative (n.d.) identifies metric standardization, including the exclusive use of kilograms for weight measurement, as a foundational global safety goal for all patients. The Joint Commission established this priority in its Sentinel Event Alert #39, which recommended that pediatric patients be weighed in kilograms upon admission and that only metric weights be used on prescriptions, health records, and in staff communication (TJC, 2008).

Key Barriers and Systemic Challenges

There are numerous consumer, commercial and system level barriers to metric weights adoption in the U.S. Weighing in pounds is a cultural default rooted in tradition, daily use, and healthcare communication norms. Newborn weights are universally announced in pounds and ounces. Parents continue to track their child's growth in these units, comparing current to birth weight and using pound/ounces for feeding calculations. Weight tracking in pounds is also important to many adult patients when monitoring fluid retention or daily weight trends in chronic conditions such as heart failure. However, simply communicating a patient's weight in pounds can lead to incorrect weight documentation when kilograms are required. Visible conversion charts near scales in healthcare settings are recommended by major patient safety organizations such as ISMP (2024) and NCCMERP (2018) because they facilitate patient and family understanding, tracking at home, and patient safety at home. Empowering the patient or family to find this information on a conversion chart themselves reduces the need for the nurse or other healthcare professional to verbally report the weight in non-metric units.

One of the primary obstacles to kilogram-only adoption in the U.S. is the lack of a national regulatory mandate, making implementation voluntary and inconsistent. A 2018 ISMP survey found fewer than 60% of hospitals use kilogram-only documentation for adults. Another key barrier to metric adoption is cost. A recent report by the American Hospital Association (2025) highlights that hospitals are stretched thin—grappling with rising acuity, workforce shortages, and supply chain pressure—while operating on razor-thin financial margins. These conditions severely limit their capacity to invest in safety infrastructure, new technologies, or clinical improvements, especially in the absence of technical support or financial incentives. Smaller or under-resourced facilities may face prohibitive costs associated with converting equipment, updating EHR systems, and training staff.

Weight-based medication errors are also often difficult to detect, and therefore report, due to limitations in error tracking systems and the varied nature of medication workflows. Current U.S. medical error reporting systems often fail to capture weight documentation as the root cause of medication errors. Instead, errors are reported under general categories such as "wrong dose," masking the role of incorrect weight data (Bailey et al., 2016). Few studies available in the current literature include analyses that drill down to wrong-weight documentation as the root cause of specific medical errors. The Pennsylvania Patient Safety Authority (Bailey et al, 2016; Hoffman & Levine, 2018) was one of the first U.S. organizations to explore the root causes of a state's wrong-dose medical errors. They published two studies between 2009 and 2016 that demonstrated that confusion between pounds and kilograms caused approximately 25% of their wrong-dose medical errors (Bailey et al., 2016; Commonwealth of Pennsylvania Patient Safety Authority, 2009). The Pennsylvania Patient Safety Authority was also one of the first safety organizations to acknowledge that simply having the option to weigh a patient in either pounds or kilograms contributes to wrong weight entries (Commonwealth of Pennsylvania Patient Safety Authority, 2009).

Weight assessment and documentation practices vary widely. Units of measure are frequently omitted, auto-converted, or estimated. Historical or verbally-reported weights may be copied forward without verification. While some EHRs alert for weights outside of certain percentile ranges compared to age, when the weight value appears numerically plausible—even if in pounds—many systems do not trigger alerts, leading to significant dosing errors without detection (ISMP, 2018). Furthermore, when the date of birth is unknown (e.g., code patient/trauma patient under a temporary name) this feature is not accurate.

ENA Position

It is the position of the Emergency Nurses Association (ENA) that

1. In all healthcare settings, including prehospital care and telehealth, patient weights are measured and recorded in kilograms only.

2. All weighing equipment is configured to display kilograms only (e.g., stretchers with integrated built-in scales, floor scales, chair scales, portable standing scales, infant scales, infant warmers). When possible, the option to weigh in pounds is disabled.

3. Conversion charts for kilograms to pounds are available near ED scales for patient or caregiver reference.

4. Electronic health record (EHR) systems do the following:

    - Trigger alerts for missing or implausible values based on growth chart, age or prior documented weight.
    - Integrate digital scales via wireless technology to minimize the need for manual entry.

5. Validated length-based tools (e.g., tools for estimating weights in pediatric patients such as length-based resuscitation tape, pediatric age-weight percentage (PAWPER) tapes are used to estimate when direct weighing is not feasible.

6. Clinical communication (verbal, written, electronic) includes weights in kilograms only.

7. Prescriptions and order sets prompt for weight in kilograms.

8. Handoff reports include the patient's weight in kilograms.

9. Policies require measurement of actual weight except when clinically unsafe or not feasible.

10. Error reporting systems include fields to do the following:

    - Record weight in kilograms.
    - Identify the role of incorrect weight in dose-based errors.

11. Emergency nurses lead efforts in quality improvement and education related to weight-based safety, including tracking and reporting of errors resulting from the documentation of an incorrect weight.

Background

Underreporting of medication errors is common when no immediate harm occurs, and stress or cognitive overload during emergencies can exacerbate risks (Cicero et al., 2021). Pediatric patients, particularly those in emergency and critical care settings, are at heightened risk. D'Errico et al. (2022) found that PICUs experience seven times more weight-related medication errors than other units. Cicero et al. (2021) report pediatric EMS dosing errors in up to 37% of encounters, often due to manual conversions, cognitive overload, and inconsistent weight estimation. The report supports pre-calculated kilogram-based dosing tools and complete elimination of pounds across frontline care.

While older adults, children, and patients with oncologic, hepatic, or renal conditions face the greatest risks, all populations are vulnerable. Weight-based errors disproportionately affect those with low health literacy, language barriers, or complex care needs. Bassi et al. (2025) revealed disparities in error reporting by age, ethnicity, and gender. In a study of two Australian tertiary pediatric care centers, Badgery-Parker et al. (2024) identified adolescents as having the highest rates of medication errors in their pediatric populations—challenging assumptions that these risks are limited to the younger pediatric patients.

The absence of national mandates and standardized infrastructure has perpetuated variation in practice. A national safety certification initiative or incentive program—modeled on the National Pediatric Readiness Project ([NPRP], n.d,)—could address gaps in adoption. The NPRP is led by the Emergency Medical Services for Children (EMSC) program in partnership with the American Academy of Pediatrics (AAP), American College of Emergency Physicians (ACEP), and ENA. The NPRP includes kilogram-only weighing in its benchmark assessment without imposing mandates. It provides evidence that national quality frameworks can advance safety standards through education and evaluation (Gausche-Hill et al., 2015; NPRP, n.d.).

Conclusion

Kilogram-only weight documentation is an evidence-based, equity-enhancing safety standard. Its adoption is critical to reducing preventable medication errors across all settings. Emergency nurses lead this transition through advocacy, implementation, and continuous quality improvement, including

conducting root cause analyses of dosing-based medication errors if this data is not already captured by the reporting system. It is essential that institutional leaders prioritize the removal of systemic barriers—cost, policy gaps, and technology limitations—and advocate for national support to accelerate widespread adoption of metric weights in healthcare.

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