

Leading and Trailing Zeros

A significant number of dosage errors occur because of mistakes in reading decimal point entries in the mathematics involved in administering medications. “The Institute for Safe Medication Practices (ISMP) has received numerous reports of errors involving drugs with strengths that differ by a factor of 10” (Gaunt) being provided to patients.

Such errors result in what are known as “10-fold dosage errors,” and often can be prevented by the use of leading zeros and the elimination of trailing zeros.

Once you understand what leading and trailing zeros are, the rules around them are easy to employ. Below are their definitions from The Medical Dictionary.

Leading Zero – a zero that precedes a decimal point, e.g., as in “levothyroxine 0.05 mg p.o. daily.” Leading zeroes should always be employed when writing prescriptions for doses of drugs that are fractions of a unit.

Trailing Zero – a zero that follows a decimal point, e.g., “lisinopril 5.0 grams orally twice a day.” Trailing zeros appear on the Joint Commission on the Accreditation of Hospitals (JCAHO) “Do not use” list.

In other words:

Use Leading Zeros - A decimal point always should be preceded by a whole number and never should be left “naked.” Decimal expressions of numbers less than 1 always should be preceded by a zero (0) to enhance the visibility of the decimal. For example, 0.5 mg and never .5 mg

Don’t Use Trailing Zeros -a whole number never should be followed by a decimal point and a zero. Zeros should never be used to the right of the decimal unless followed by a whole number. For example, 1 g and never 1.0 g or 0.5 mg and never 0.50 mg

For the most part, misuse of these practices is established by habit, perhaps formed in a high school mathematics class. Correcting this misuse simply requires creation of a new habit and remembering that patient safety requires diligence when entering these numbers.

References

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