What's New in the Patient Safety World

June 2018

Incorrect Weights in the EMR

We've done several columns highlighting the dangers of inaccurate patient weights in the electronic medical record (EMR). The biggest danger is that incorrect weights may lead to over- or under-dosing for medications whose dose is calculated based upon patient weights. And since many such calculations are based upon the weight entered into a single field in the EMR, a single error may be propagated many times.

We came across an interesting study that looked at incorrect weights in the EMR (Chen 2018). While the focus of the study was identifying errors that skewed data trends over time, the findings of the study have potential patient safety implications and potential solutions.

The authors wrote a program using Perl (Strawberry Perl, 5.24.1.1) to calculate the percentage of weight change for all the possible time intervals between measures (not just consecutive ones) for each patient.

After applying the algorithms and conducting a manual review, they found 2638 spurious values from 317,115 weight data points. This suggests that, at minimum, ~0.8% of all the weight values in this EMR were spurious. By examining each patient record, they found that 1976 of the 10,000 patients (19.8%) had ≥1 spurious value recorded in the observation period.

Types of error:

Single digit error	148 for 178	42.4%
Decimal misplacement	15.63 for 156.3	0.8%
Missing digit error	11 for 191	5.4%
Transposition	137 for 173	4.2%
kg value entered in lbs.	70 for 154	7.1%
lb value multiplied by 2.2	338.8 for 154	5.6%
No clear reason	237 for 185	34.5%

Weights found to be spurious by all 3 of their algorithms and by manual review comprised ~1% of all the weight recordings. At least one spurious weight occurred in 1 in 5 patient charts over a 10-y period.

When analyzing such weights in the EMR over time, straightforward algorithms can identify and remove them. Such algorithms, however, might not be useful in acutely

hospitalized patients unless a whole host of prior weights were available for analysis. Nevertheless, the types of error identified by Chen et al. are informative because they demonstrate the potential for similar erroneous weights to be recorded in the EMR at a time when they could lead to potentially serious over- or under-dosing of medications.

Some of our other columns on errors related to patient weights:

March 23, 2010	"ISMP Guidelines for Standard Order Sets"
September 2010	"NPSA Alert on LMWH Dosing"
August 2, 2011	"Hazards of ePrescribing"
January 2013	"More IT Unintended Conseequences"
December 8, 2015	"Danger of Inaccurate Weights in Stroke Care"
May 2016	"ECRI Institute's Top 10 Patient Safety Concerns for 2016"
September 2017	"Weight-Based Dosing in Children"
January 2018	"Can We Improve Barcoding?"

References:

Chen S, Banks WA, Sheffrin M, et al. Identifying and categorizing spurious weight data in electronic medical records. The American Journal of Clinical Nutrition 2018; 107(3): 420-426
https://academic.oup.com/ajcn/article/107/3/420/4939337?rss=1