Reviewer's report

Title: Using a computerized provider order entry system to meet the unique prescribing needs of children: description of an advanced dosing model

Version: 3 Date: 13 January 2011

Reviewer: Lemuel Waitman

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The added context provided on page 8 is a nice addition.

Prior Major Compulsory

1) Understand now that this paper is not to be viewed as an evaluation or outcomes trial. The lack of an evaluation lowers the impact/level of interest of the work.

2) Still some respectful disagreement on the magnitude of the novelty which should be resolved by other reviewers and editors. While not directly relevant to the review their response does deserve some clarification (they may not be aware of the details of WizOrder's development and the McKesson/Vanderbilt commercialization).

a) The statement that "Wizorder, as sold to McKesson, had zero advanced therapeutic dosing functionality" is incorrect and diminishes the contributions of Vanderbilt University's team: Drs. Randolph Miller, Antoine Geissbuhler, Douglas Talbert, Fred Hargrove, and many others. Not myself as I became involved right after the sale (started in January 2002). Prior to transfer of code to McKesson, the system contained drug decision support which while not always pediatric focused, should be considered advanced. Just a few included:

- weight/age based dosing for pediatrics using an older drug framework from the Series Pharmacy system that was shared with CPOE.
- Renal dosing of nephrotoxic medications for adults.
- Specific decision support modules ("advisors", what Duke will call iForms or VGRs) for dosing many complex medications using a variety of patient characteristics. Examples include high risk medication infusions for the pediatric intensive care and managing both the dosing of PE/DVT patients on heparin in conjunction with ensuring the proper testing.

3) the authors have added discussion of my initial concern on pages 20 to 22. The references to commercial frameworks, Killelea, and the Kuperman article are good additions.

4) This is addressed in pages 20-22 but for clarification purposes and in fairness to their vendor:

- McKesson Horizon Expert orders does utilize First Databank for medication
decision support for pediatrics. Drug-Drug and Drug Allergy interactions are checked for children using First Databank. McKesson also provides as a configuration option, turning on FDB for drug dosing decision support. It would appear from their manuscript that Duke has turned off this option. There are two levels to this: general pediatric dosing and also a customization layer. This has implications because if the hospital is using the McKesson Horizon Medication Manager software for their pharmacy, the rules used for drug safety are contained in FDB. Sharing this framework and customization layer across CPOE and Pharmacy reduces the maintenance of knowledge for the institution. That said, when I left Vanderbilt in 2010, we still had not harmonized our custom pediatric dosing decision support in CPOE with the pharmacy system’s customization layer in FDB.

Prior Discretionary

1) Location/Care Intensity: authors have added sufficient discussion of this topic on pages 21 and 22. I like their expression of location as really a characteristic of care intensity and agree that is a method of stratification which may be useful clinically.

a) As a point of clarification, Vanderbilt decision support evolved by location more by accident/necessity than by design. After establishing consensus amongst the various pharmacies and clinical specialties, the custom dosing developed for NICU was subsequently reapplied to the PICU (with new dosing regions for older children), then all of pediatric units and emergency department, and finally to pediatric patients present in the adult hospital (most commonly burn unit and neurology). Building consensus across all locations/care intensities which simplified maintenance but may have reduced specificity. It’s really a fine point as to how one would determine the real clinical impact of these capabilities.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I have no competing interests.