Reviewer's report

Title: Prospective, randomized evaluation of a personal digital assistant-based research tool in the emergency department

Version: 1 Date: 22 May 2007

Reviewer: Ronald C. C Merrell

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Review: “Prospective…” by Rivera et al.

1. The authors have defined a significant research question concerning the use of PDA in the hectic if not chaotic environment of the emergency department where continuity of care is tenuous and conservation of accurate data is essential to quality care. Results from other studies are somewhat in conflict.

2. The authors carefully confined their study to patients with a suspected diagnosis of pulmonary embolus in a department with some 78,000 visits annually for all reasons. The study design entailed use of PDA vs. paper records. IRB approval was obtained. The technology is well described. 31 patients were enrolled for the paper arm of the randomization and 37 patients for the PDA arm in a statistical model that required 21 patients to detect time difference of 60 seconds.

3. The study data seem sound and well controlled. The authors report a sharp reduction in time required for the enrollment using PDA compared to paper. They also report a sharp reduction in the error rate. The majority of error is in recording vital signs. The time to enroll a paper patient is 6’0” until you add the time to transcribe the form into a database adding an additional 3’18”. The PDA data entry required 6’13”. This difference was significant at p<0.001. There were 1.6 errors per form in the paper mode and 0.2 with the PDA with a difference significance of p<0.001. It is very significant that 2/31 paper records could not be located and those study patients were eliminated while no PDA records were lost. The authors acknowledge that the time to train physicians in the use of the PDA are not included.

4. The standards of data reporting are well reflected in the MS.

5. There is some concern relative to conclusions from the data. Please see these listed below as requests for revision and clarification.

6. The title reflects the study well. However, I do not have an abstract in the materials sent.

7. The writing is excellent and quality of the figures quite acceptable.

I suggest the following clarifications and revisions as major

1. If the study were not in play would it be necessary to transcribe the paper record? In other words does the difference in time reflect only the necessity of the study or some critical aspect of patient care?

2. The PDA was uploaded into the information system. The term “hot-sync” and “hot-synch” are both used. Select one for consistency.

3. The physicians were “interviewed” before the patients and asked 7 questions while the patients were queried for 62 data points. I am not sure what that means. Is this interview outside the clinical encounter? What were the questions asked? It seems all data reported are gleaned from the records and data from the “interviews” is absent. I am sure I am just missing something but a clarification is needed.

4. Do you believe the results might be affected by training the physicians immediately prior to the study in the proper use of the paper form as you did for the proper use of the PDA?

I find no discretionary or minor revisions indicated.