Reviewer's report

Title: Casebook: A virtual patient iPad application for teaching decision-making through the use of electronic health records

Version: 2
Date: 27 May 2014
Reviewer: Walton Sumner

Reviewer's report:

Noteworthy changes since the first draft

The manuscript now clearly states, on page 4, that the authoring environment is a text editor.

The motivation bullet, "Electronic health records have unique properties: there are several inherent properties of health records that make them useful teaching materials," was removed.

The emphasis on avoiding multimedia production costs seems stronger, and is a reasonable advantage if privacy issues are managed well.

The very specific focus on decision making at specific points seems more obvious now, and warrants comment. Some virtual patient programs allow the student to gather history and physical data at their own discretion. Casebook does not seem to have this sort of discretionary query capacity, and focuses on marching through png images of medical records with occasional questions at decision (or possibly interpretation) nodes. Not that one is needed for the task that the authors want to address, but a Casebook case is not a full-feature virtual patient. A case is unable to test students' data gathering skill. A case has no capacity to respond to unusual choices. It seems to me that this constraint has two important consequences. First, it limits the expense of developing Casebook cases. Second, it could limit students' ability to learn from the cases. Odd details and things I did wrong make real cases memorable.

---# Discretionary Revisions

This explanation on page 4 does not concede a wide variety of known errors in medical record data, and does not make a clear distinction between VP "based on real patient cases" and "patient cases based on medical records:" "We believe that Virtual Patients, even those based on real patient cases, can potentially contain misleading simulated data, especially in lab reports. Because patient cases based on medical records do not use any simulated data, this is not an issue."

Dr. Fors challenged the assertion that common or prototypical conditions are unlikely simulation topics. The authors refute the challenge on page 8 ("The likelihood of cases being developed that deal with patients exhibiting common or
prototypical conditions is, we believe, low." without references. It strikes me as a needless point of contention if the authors assertion that repetition of similar cases improves pattern matching. Even if every school develops a pharyngitis simulation, or even one each for viral, streptococcal, and mononucleosis, no school would have enough simulations to help students master pattern matching related to pharyngitis.

The word "essential" in this sentence begs for a reference: "Collecting pools of cases is also essential in improving student perceptions of preparedness."

In responding to reviewers' comments, the authors in some cases have overemphasized points somewhat awkwardly. Consider the sentence, "This does not mean, however, that cases cannot be shared by institutions or teachers, merely that the application is used only to read cases that are on the iPad device." The points of the paragraph could be stated positively and succinctly: "Although the Casebook application is open source and available online, it is secure and does not share case content online. Of course, teachers and institutions can share cases developed for the platform."

A mangled version of Cicero's discourse on hedonism still strikes me as unhelpful filler text in figures 2 and 3. Lorem ipsum lets the reader focus on fonts and layouts, but in this report the reader is likely to be genuinely interested in information flow. Using filler text confirms the complexity, privacy, editing, and other concerns raised by the reviewers, and thereby detracts from the credibility of the proposed process of creating meaningful and inherently correct content, which was supposed to take 1 day.

Are the responses in Figure 4 complete and locally routine? "Thrombo"? "Ly %"? "AP 37°C"?

As before, the case for Casebook is made convincingly. A paper making the case and then briefly describing the current state of efforts to address the case would be a nice report. As it is, there are many potential points of contention, even in the title. Does a Casebook case that does not interact qualify as a virtual patient, or is it an electronic case presentation? What aspects of decision making are supposed to be taught by Casebook - not interview skills, right? The EHR record provides multimedia content and historical context, but is not really tapped by any software?

--# Minor Essential Revisions, Major Compulsory Revisions

I will leave it to the authors and editors to determine whether the above items are discretionary, minor, or major.

**Level of interest:** An article of limited interest

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.
Declaration of competing interests:

I work with a team at the American Board of Family Medicine that develops very expensive and robust virtual patient simulations. We are all salaried, and have no equity or royalty interest in ABFM simulations.