Reviewer’s report

Title: An Electronic Web-based Diabetes Management Program: From Design To Implementation: Joint Asia Diabetes Evaluation (JADE) Program

Version: 1 Date: 9 November 2009

Reviewer: James Ralston

Reviewer's report:

General Comments:
You describe a bold and potentially valuable project of an international Web-based registry and decision support program for patients with type 2 diabetes. I commend you on your efforts to develop a program that could be applied in five different Asian countries. There is value in a detailed description of the design and prototype of the program you have developed. Your manuscript needs more of that detail and it should be arranged in an appropriate structure for a description of an application of information technology.

Major Compulsory Revisions
1. The structure is in the format of a traditional research study with methods and results and conclusion. Yours is not a scientific study, but rather a description of the design and development of a Web-based application to support diabetes care. Freeing yourself to use a structure more appropriate for describing an application of information technology would allow a richer description of your work.

2. Title
Your title includes implementation. I did not see evidence of implementation of the application in the manuscript with the exception of mentioning that you had consented subjects. If you have experience with implementation, then please specify. Otherwise, please remove ‘implementation’ from the title.

3. Abstract
Claims such as ‘first’ Web based program of its kind and ‘state of the art’ information technology are not grounded with reference to existing literature or referenced to other existing applications of health information technologies in the manuscript. Please remove these modifiers unless you can be more specific. These modifiers also occur elsewhere in the manuscript and should also be changed or supported by evidence.

4. Background
While the program has unique aspects, it is not the first to provide protocol driven recommendations for diabetes care based on electronic patient data. Some vendor and home grown clinical information systems use patient data to provide automated decision support at the point of care to aid individual patients to
achieving targets for glycemic, blood pressure and lipid control. Highlight your programs unique aspects including its international focus and ability to have de-identified central data with linking to identifiers at the practice level.

5. Design objectives

Your design objectives are not clearly stated or supported. You mention that program intends to improve clinical care processes, and self management support and provide data for use for research as well as further modification of the JADE risk algorithm. Each of these needs more detail.

5a. For improving clinical care, you describe guiding clinical care management based on four categories of risk for complications including death and CVD outcomes. How this risk stratification process will guide clinical care is not clear. A table in the 2009 Diabetic Medicine paper describes some different care processes for 4 level of risk stratification. Since this paper’s focus is on design of the system, more detail is needed on how the proposed JADE risk stratification system would change care for the different risk groups.

5b. I was also not convinced of the additional value of this risk engine for guiding clinical care compared to other approaches using the well-recognized target values for control of risk factors related to DM complications. My understanding is that JADE risk engine separates patients into 4 categories for different follow-up based on prediction of 5 year mortality and CVD events. Although this risk stratification has some valuable applications for research, I have concerns with using this approach to guide clinical care. Recommending intensity of follow-up based on 5 years risk for CVD or death does not recognize the significant improvement in health outcomes beyond 5 years that can be achieved by early intervention on clinical targets for patients with diabetes. Focusing more intense follow-up in the group with established complications of diabetes and higher risk of mortality at 5 years may actually be less effective than focusing intense follow-up on those who are out target range for lipid, blood pressure and glycemic control but have fewer complications. Combining modifiable and nonmodifiable risks for death and CVD events in a model intended to guide clinical care seems problematic based on current evidence and guidelines for lipid, blood pressure and glycemic control. Please provide a more detailed description and rationale for use of the risk stratification in changing clinical follow-up and other processes of care.

5c. Self management support:

I did not see adequate specification for the targets of self management support in the program and applications supporting these targets. You have an interesting suggestion that a risk stratification engine may help a patient look prospectively at possible health outcomes related to levels of control for blood pressure, lipid and glycemic. That information may help inform and motivate a patient or provider to meet those targets. If you are proposing to inform or motivate providers and patients in this manner, please clarify with reference to an appropriate behavioral change framework and evidence.
5d. As part of describing your design objectives, please define user groups of the JADE system including whether these are large or small practices with or without existing clinical information systems. Please also describe your efforts to assess the needs of those users groups in developing the JADE program.

6. System Description
Although figure 1 provides some overview of how the system works, more detail is needed on system architecture.

6a. Your claim of ‘state of the art’ technology is confusing, especially without further detail. The use of JAVA with Apache Web server, mySQL database and Cocoon framework appears appropriate for the overall goals of the program. I recommend removing the ‘state of the art’ modifier and let your description of how you use these technologies show the strength of your approach.

6b. Please describe in more details how the system is intended to work in the flow of clinical care and self management support. You give some indication that data can be entered during or after a clinic visit. This suggests some risk to successful implementation due to double data entry by clinicians. Please discuss.

6c. Please describe how the system will or will not incorporate current or evolving healthcare data standards.

6d. Governance, technical support and data security
Please provide more detail including ownership, licensing, liability, and funding issues associated with JADE.

6e. Your proposal of using a centralized and anonymous database with identifiers retained at the local level is novel. I could not figure out exactly how this would happen in a Web based only system since the linking file remains at the practice level. Wouldn’t this file need to interface with the central JADE system? Or must a provider do this manually with a piece of paper linking it visually to the ADF code on the website? Please clarify.

6f. I am not clear on the clinical implications of having a monitoring team check the validity of the clinical information in the JADE system. This sounds appropriate for the purposes of research on a population level, but raises concerns if a monitor is changing data that may impact clinical care decisions—at least without a process of checking back with the provider or patients who entered the data. Please clarify.

7. In the Human Subjects description, it sounds as if patients have been enrolled. If this is the case, please clarify and provide further details on how patients were recruited and consented and being followed. If not please modify appropriately.

8. Please state how this work was funded and what if any relationship the authors have to the funder.

Minor Essential Revisions:
1. Please also clarify the data elements to be collected in JADE. Several of these data elements are described in the manuscript but a table would help clarify. This would also help clarify the level of anonymity present since certain patterns of administrate, clinical and demographic data can reveal identity, such as very old age.

2. Please describe which countries are involved and what languages are supported. The international effort of this program is a particularly compelling part of the system design.

**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 have no competing interests.