

# The Web-Based Interactive Family History Questionnaire

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**Background.** Family history information is one valuable tool used to assess for genetic risk for hereditary syndromes and to aid in clinical diagnoses. However, it is often difficult to acquire an extensive family history. It can be quite large, and written data about the family history can extend over numerous pages. As a result, data entry of these family history data can be quite time-consuming, forcing the health care provider to forego valuable time caring for patients.

In the present system, family history information is obtained from potential patients through their completion of a family history questionnaire. The patients receive a family history questionnaire by two different mechanisms: by mail or by downloading the questionnaire from a website and printing the questionnaire. Both systems require the patients to complete the family history questionnaires (currently 27 pages) and mail them to a registered nurse, who then manually keys these data into a cancer genetics tracking database application, and thus prints pedigrees<sup>1</sup>.

There are several problems with the current system. First, there is the expense and time involved with mailing the questionnaires or printing them from the current web-site by the patient. Second, handwriting is sometimes illegible, causing the nurse to spend time calling family members with questions. Third, there is the problem of the nurse spending valuable time entering these data into the cancer genetics database, instead of caring for patients.

**System.** This communication demonstrates and briefly describes an information technology solution to these problems, the Web-Based Interactive Family History Questionnaire (WIFHQ). A prototype system created from the current paper version used at The University of Texas M. D. Anderson Cancer Center, it provides an alternative way for patients with Web access to the Internet to provide family history information.

Using an object-oriented methodology<sup>2</sup>, we created a Java Database Connectivity (JDBC) applet, using Borland's JBuilder3 Professional and Java 2, that

accesses an SQL-compliant relational database with no CGI and provides interactive Web-based data entry, processing, storage and retrieval capabilities, all within one simple intuitive user interface. Human factors engineering techniques employed in designing the interface make it easy for the patient to enter all of the necessary information on each family member through one screen using a tab metaphor, while allowing them to review entered data in a table format through another tab.

**Conclusions.** The intuitive Web front-end provides a simple interface for patients to enter their family history information directly into an SQL-compliant relational database via JDBC. This bypasses the steps of mailing the questionnaire to a clinician and having the 27-page paper-based questionnaire be manually transcribed into a database, since the front-end is directly linked to the relational database.

Having patients enter family history information via the WIFHQ helps reduce the probability of transcription errors where accuracy is critical, saves precious time that is better spent on patient care from the health practitioner's perspective, while also making it easier for the patient to submit the same information requested by the paper version.

Given that security and patient privacy issues are appropriately addressed, implementations of information technology in the clinical setting like the WIFHQ will make the delivery of healthcare more efficient, while improving patient care.

## References

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2. McCarty, B., Gilbert, S. (1998). The Mitchell-Waite Signature Series: Object-Oriented Design in Java. Corte-Madera: The Waite Group, Inc.