

Creating Web Services for Decision Support

In the coming weeks, NYU and HHC's Bellevue Hospital will be testing the first stages of a new, more flexible approach to clinical decision support that promises to greatly expand HHC clinicians' access to patient-specific preventive health information.

The Web Services for Preventive Health (WSPH) project will deploy the power of an NYU Medical Center based decision support web service to instantly analyze patient data captured within the HHC electronic health record (EHR). Once fully implemented, WSPH will run real-time decision-support algorithms to see whether additional interventions may be needed. This pilot project, sponsored by a grant from the National Institute of Health - National Library of Medicine implemented by John Chelico, Marc Triola, Louis Capponi, and Alfred Garofalo, will focus on four clinical areas: screenings for colon cancer, chlamydia, smoking; and pneumonia vaccination. When a patient is registered at Bellevue Hospital Adult Medicine Clinic, the web-based WSPH application will analyze de-identified demographic information, patient history, and past procedures to instantly generate a set of recommendations informing the clinicians of recommended interventions.

Web services are the future of decision support in Medicine. Today, decision-support rules and logic are imbedded within the EMR. This requires that the decision-support be built and maintained separately in each EMR. With the introduction of web services, standardized algorithms can be offered by third parties, such as professional medical organizations or universities. Users of the EMR can subscribe to the decision support service which is updated as best practices evolve. All without having to reprogram the EMR. Since the service is platform neutral, any EMR with web-service capability should be able to connect. While this pilot focuses on very basic decision supports, in the future such web services will be used to process much more complex information. For example, patient specific genetic and epi-genetic profiles might be combined with, for example, environmental exposures to provide analyses of disease risk or therapeutic choice for a specific patient.

The project's main technical challenge has been developing interfaces that can securely bring large amounts of HHC a particular patient's data into the decision support engine while providing virtually instant turnaround time. The team will be building a HL7 message based interface between Quadramed EHR and an HHC based Interface engine called Ensemble. The Ensemble Interface Engine will remove any personal health information from the message, convert it to a XML based message and send it to the WSPH Server located at NYU Langone Medical Center. The WSPH server will then reply back to Ensemble with an XML message of patient tailored recommendations. These recommendations will then be married to the personal health information of the patient and transferred back to the Quadramed EHR System at Bellevue Hospital. The recommendations will be stored in the chart review of a patients record and can be viewed by all healthcare providers involved with the patient. Building of this infrastructure for the WSPH project is underway and the team hopes to have a functional exchange of data by May 2010.

For questions about this project please contact the Grant's Principle Investigator Dr. John D. Chelico at john.chelico@nyumc.org, Asst CMIO, Bellevue Hospital Center and Faculty of the NYU Center for Health Informatics and Bioinformatics.