PRESCRIPTION OF AMIODARONE THROUGH A COMPUTERIZED TEMPLATE THAT INCLUDES BOTH DECISION SUPPORT AND EXECUTIVE FUNCTIONS IMPROVES THE MONITORING FOR TOXICITIES. Kendra Stewart, Shawn Loftus and Sylvain DeLisle, VA Maryland Health Care System, Baltimore MD

Background: The antiarrhythmic drug amiodarone causes severe side effects that warrant active monitoring. In a given patient, monitoring for amiodarone toxicities involves checking past results of five laboratory/imaging tests and reordering four of these tests every 6 to 12 month, a process that is both complex and time-consuming. We hypothesized that a software tool that automated the retrieval and ordering of these tests in a context-sensitive manner would improve the completeness of surveillance for drug toxicities.

Methods: To test this hypothesis, we took advantage of the features and comprehensiveness of the Veterans Health Administration (VHA) computerized patient record system (CPRS). Using the Veterans Integrated Service Technology Architecture's (VistA) Enhanced Clinical Reminder programming environment, we build an interactive justification template that deploys the logic of VHA's national guidelines for amiodarone monitoring. When appropriate, the template retrieves the patient's liver, thyroid and pulmonary function tests results as well as the chest x-ray (CXR) and ophthalmologic slit lamp exam reports from CPRS. The template then offers links to order sets that automate test (re)ordering. As the provider clicks through the template's logic, he/she also automatically generates a structured-text note in the patient record; this note has a unique title and its content reflects the clinical indications for amiodarone and the monitoring activities. The justification template was interposed where the literature indicated it would be the most effective: at the time of order entry.

We performed a retrospective observational study comparing the 6-month period preceding (10/17/01 to 4/16/02, PRE-intervention) to that following (4/17/02 to 10/17/02, POST-intervention) the introduction of the computerized template. Our primary outcome goal was to detect whether the executive template increased the frequency with which the tests were performed/ordered at VHA and/or documented to have been performed and reviewed elsewhere. Our target population included all unique patients receiving a new/renewed prescription for amiodarone. Using our legacy system, we retrieved the prescription-related data, the notes generated by the template, the temporally relevant liver/thyroid/pulmonary function test results/orders, chest x-ray and slit lamp fundoscopic exam reports/requests from CPRS' MUMPS (Massachusetts General Hospital Utility Multi-Programming System) hierarchical database. These data were then cleaned of extraneous characters and downloaded into separate tables in a relational database (MS Access, Microsoft Corp.). We queried the relational tables to detect if each unique patient with an amiodarone prescription had test results/orders within the time frame suggested by the consensus guidelines. For those patients that had no lab results/orders, or who did not have a template-generated CPRS note, the provider's note corresponding to the amiodarone prescription was exa mined to determine whether it contained a statement that the monitoring tests were performed elsewhere and/or that the test results were compatible with the safe use of amiodarone.

Results: There were 341 PRE-intervention and 316 POST-intervention amiodarone prescriptions to unique patients. Of the POST-intervention group, 172 had the computerized template completed (template-positive) and 144 did not (template-negative). Compared to the PRE-intervention group, the POST-intervention/template-positive group disclosed statistically significant increases in all of the tests targeted by the template (test name, % performed/ordered PRE-intervention vs. % performed/ordered POST-intervention/template-positive): liver function 63.6% vs. 88.9%; thyroid function, 55.7% vs. 84.9%; pulmonary functions, 20.5% vs. 29.1%; CXR, 34.6% vs 75.3%; ophthalmology exam, 34. 6% vs 68.6%). In contrast, the POST-intervention/template-negative group showed unimproved primary outcomes: liver function 63.6% vs. 65.9%; thyroid function, 55.7% vs. 57.4%; pulmonary functions, 20.5% vs. 20.1%; CXR, 34.6% vs 39.5%; ophthalmology exam, 34. 6% vs 37.5%).

Conclusion: When interposed at the time of order entry, a software tool that delivers decision support and that automates the retrieval and the request of clinically relevant data can markedly improve the monitoring of medications with a complex toxicity profile.