

Mapping Laboratory Test Codes to LOINC for a Regional Health Information Organization (RHIO)

BACKGROUND

The Midsouth eHealth Alliance (MSeHA) is an operational RHIO composed of 9 healthcare organizations servicing the Memphis, Tennessee area. Each day, over 90,000 laboratory messages are sent to the MSeHA from 8 different hospital laboratory systems.

Using LOINC codes has improved the utility of the MSeHA by enabling aggregated views of laboratory tests across multiple systems, but the participating lab systems have not been motivated to create LOINC mappings. In order to provide needed functionality, the MSeHA has committed to mapping a portion of the most needed tests.

METHODS

To use LOINC effectively while avoiding mapping all of the test codes, a clinical work group identified 53 clinically significant laboratory tests for the Emergency Department. The test codes from each lab system corresponding to these tests were then mapped to LOINC.

A laboratory result message volume analysis was then performed using archived laboratory messages collected during February, 2007. This produced a vocabulary of test codes for each lab system and the volume of each test code calculated as the number of messages received with that code, including update messages.

RESULTS

During the sample period, 2,656,945 laboratory messages with 4,790 distinct test codes were received by the MSeHA. The test codes corresponding to the 53 LOINC mapped tests comprised 7.6% of the total number of unique test codes and

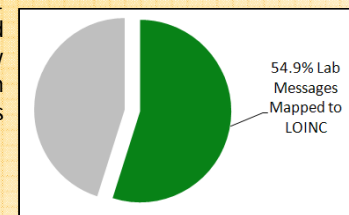
Arterial Blood Gas	Aspartate Aminotransferase	Urine Glucose
Base Excess	Albumin	Urine Hemoglobin
HCO3	Alkaline Phosphatase	Urine Ketones
Percent O2 Saturation	Anion Gap	Urine Nitrite
Partial Pressure of Carbon Dioxide	Blood Urea Nitrogen	Urine PH
PH	Carbon Dioxide	Urine Protein
Partial Pressure of Oxygen	Calcium	Urine Specific Gravity
	Chloride	Urine Urobilinogen
	Creatinine	Urine White Blood Cells
	Glucose	
Complete Blood Count	Potassium	Misc.
Hematocrit	Sodium	Hemoglobin A1C
Hemoglobin	Total Bilirubin	Triiodothyronine
Mean Corpuscular Hemoglobin	Total Protein	Thyroxine
Mean Corpuscular Hemoglobin Concentration		Thyroid-Stimulating Hormone
Mean Corpuscular Volume		
Mean Platelet Volume	Lipid Profile	
Platelet Count	High-Density Lipoprotein Cholesterol	
Red Blood Cell Count	Low-Density Lipoprotein Cholesterol	
Red Cell Distribution Width	Total Cholesterol	
White Blood Cell Count	Triglycerides	
Prothrombin Time and International Normalized Ratio	Urinalysis	
International Normalized Ratio	Urine Appearance	
Prothrombin Time	Urine Billirubin	
Comprehensive Metabolic Panel	Urine Color	
Alanine Aminotransferase		

Clinically Significant Test Identified by the Clinical Work Group

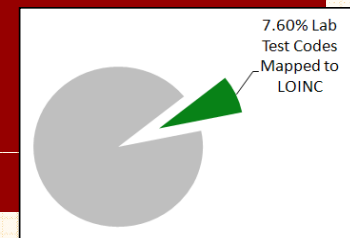
54.9% of the total message volume over the sample period. The 53 highest volume test codes from each lab system were compared to the 53 most significant tests identified by the clinical workgroup. 58% of the high volume tests were previously identified as clinically significant.

CONCLUSION

Clinically important laboratory tests account for a small percentage of total test codes and a large percentage of laboratory message volume. Mapping the most clinically significant test codes to LOINC maps a large amount of the message volume offering a cost effective way to increase functionality within a regional data exchange. Additionally, a clinical workgroup can use a message volume analysis to aid identification of clinically significant tests.



LOINC Mapping Results by Volume and by Test Code



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OBJECTIVE:

To identify a subset of laboratory test codes comprised of the most clinically significant test codes within a Regional Health Information Organization for LOINC mapping.