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FROM WHAT-TO-DO TO WHAT-TO-KNOW: KNOWLEDGE-BASED LAB INTERPRETATION FOR CLINICIANS AT THE POINT OF CARE

The lab values, such as liver function test (LFT) and electrolyte levels, could be tough to interpret for clinicians. They are multiple tools integrated into EHR which offer a better understanding of the clinical variables. However, the majority of these clinical decision support system (CDS) only provides the result of a simple calculation (e.g., calculation of the kidney function indicator from creatinine level), or instructions without comprehensive knowledge (e.g., alert messages for potential overdoses). I suggest a system which provides more of knowledge-based, comprehensive interpretation of liver function test (LFT), which 'teaches' clinicians at the point-of-care. We have a relatively well-defined set of rules. For instance, AST (one of LFT panel variables) is typically lower than ALT. However, an AST to ALT ratio of 2:1 or higher is suggestive of the alcoholic liver disease. Our FHIR app should be able to capture these common anomalies patterns in LFT and deliver the interpretation in natural language. (e.g., "The current literature suggest that the ratio of > 2:1 is associated with...") The tool would improve the efficiency and user satisfaction of the system by providing the reasoning behind the decisions for lab interpretation.

Required Skills:

Human Centered Design, Project Management, Communications

Preferred Team Communications:

WEBEX, Skype or Conference call. Email.

Data Sources:

Georgia Tech synthetic data will be sufficient for the project. The mentor would make an online presentation on basics of the clinical aspects of LFT findings. The clinical text will be provided by the mentor.

Other Items:

Project has timezone flexibility. Mentors and students will determine a good time for virtual meeting

PROJECT OBJECTIVES

Development of LFT (Liver function test) interpretation tool.

SUCCESSFUL PROJECT

- Construct the list of typical anomaly patterns of LFT and corresponding interpretations.
- Build UI/UX
- Development of FHIR app which communicates with a mock FHIR server.

Intellectual Property: The mentor will own fifty percent of IP developed as a result of this project, and the students will split the other fifty.