**INFO B-581-HEALTH INFORMATION STANDARDS AND TERMINOLOGY**

**ASSIGNMENT - PS4**

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**GROUP NUMBER : 6**

**GROUP NAME: The Fibrillin Genies**

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**USE CASE:**

“A 34-year-old male patient with a history of rib cage defect (Pectus excavatum), long fingers, flat feet, and “double-jointedness” seeks a diagnosis. The clinician orders genetic testing on multiple Fibrillin-1 (FBN1) gene variants (mutations). A genetic testing laboratory receives the order and performs detailed testing, which shows that the “FBN1 c.7039\_7040del (p.Met2347fs)” variant is positive, with all other tested FBN1 variants negative. The result is sent back to the clinician, who makes a diagnosis.”

**I) RATIONALE BEHIND SELECTING SECTIONS**

**THE SECTIONS SELECTED BY US:**

**-Patient Details**

**-Encounters**

**-Results**

**-Procedures**

**-Problem List**

**PATIENT DETAILS**

**Rationale :**

The chosen sections in the XSLT stylesheet for System A (OpenMRS) and System B (OpenELIS) cater to the distinct data needs and functionalities of each system. OpenMRS, being an electronic medical record (EMR) system, heavily relies on comprehensive patient information like names, gender, date of birth, and addresses to accurately create and maintain patient records. Precise patient identification through first and last names is crucial for distinguishing individuals and ensuring data integrity. Storing patient addresses enables tracking demographic data, locating patients within healthcare facilities, and facilitating administrative tasks (Product-OpenMRS.org, n.d.)

On the other hand, OpenELIS, a laboratory information management system (LIMS), primarily handles laboratory data but still requires basic patient details to correctly associate test results with the respective individuals. Accurate patient names are essential to prevent errors and ensure proper linkage of laboratory data to patient records. While patient addresses may not be as critical for OpenELIS as for OpenMRS, they can aid in patient identification, communication of test results, and follow-up procedures (OpenELIS Global, n.d.)

By carefully selecting these specific sections, the data transformation process guarantees that the necessary patient information is included and formatted appropriately for seamless integration with OpenMRS and OpenELIS. This approach promotes data consistency and interoperability between the two systems, enabling smooth information exchange between healthcare providers and laboratories. This section is sent from our system A which is OpenMRS which accepts JSON to system B which is Open ELIS which accepts XML. Hence it is provided in both formats.

**ENCOUNTERS**

**Rationale:**

The tailored XSLT Encounter stylesheet for the receiving system efficiently documents a patient's journey through genetic testing for potential genetic conditions. It comprehensively captures relevant details, including demographic information, medical background, reason for the visit, and diagnostic tests ordered by the clinician, such as genetic testing. The stylesheet accommodates detailed information about the tests performed, including specific genetic variants analyzed and their corresponding results, like the positive identification of the "FBN1 c.7039\_7040del (p.Met2347fs)" variant. It also empowers clinicians to document their diagnosis based on test outcomes and clinical observations, fostering a comprehensive understanding of the patient's condition. Furthermore, sections are included to record healthcare providers involved in the encounter, promoting accountability and facilitating effective communication among the healthcare providers. Utilizing OpenMRS as System A and OpenELIS as System B aligns with their respective domains and capabilities. OpenMRS effectively manages patient medical records and encounter details, while OpenELIS handles laboratory test orders, genetic variant analysis, and result reporting. This division of responsibilities facilitates seamless information flow, enabling effective collaboration among healthcare professionals and ensuring comprehensive patient care. This is uploaded in the system A, OpenMRS and accepts JSON.

**RESULTS**

**Rationale:**

Using OpenMRS as System A and OpenELIS as System B for the provided XSLT Results stylesheet is appropriate due to their respective functionalities and specialties. OpenMRS serves as an Electronic Medical Record (EMR) system, focusing on managing patient medical records and clinical data. As the XSLT Results stylesheet transforms HL7 Clinical Document data containing genetic test results, OpenMRS is ideal for storing and managing these records within the patient's medical history. On the other hand, OpenELIS functions as a Laboratory Information Management System (LIMS), specializing in handling laboratory test orders, results, and workflows. With OpenELIS, genetic tests can be ordered, results received, and processed efficiently, including the transformation of results into a structured format using the XSLT stylesheet. This setup ensures a seamless exchange of information between OpenMRS and OpenELIS, leveraging their strengths to accurately document genetic testing results within the patient's medical record while efficiently managing laboratory processes. This section is sent from our system B which is OpenELIS which accepts XML to system B which is OpenMRS and accepts JSON. Hence it is provided in both formats JSON and XML.

**PROCEDURES**

**Rationale:**

Utilizing OpenMRS as System A and OpenELIS as System B is suitable for managing the genetic testing process described in the given scenario. OpenMRS, an open-source electronic medical record (EMR) system, efficiently manages and stores patient electronic health records (EHR), including clinical data pertinent to genetic testing orders. Through integration facilitated by the XSLT Procedure stylesheet, OpenMRS can seamlessly communicate test order details to OpenELIS in a structured format, enabling efficient data exchange and supporting end-to-end clinical workflows for genetic testing. This combination of OpenMRS and OpenELIS optimizes patient care by ensuring accurate data management, facilitating clinical decision-making, and streamlining genetic testing processes within healthcare organizations. This section is sent from our system A which is OpenMRS which accepts JSON to system B which is OpenELIS which accepts XML . Hence it is provided in both formats.

**PROBLEM LIST:**

**Rationale:**

Incorporating problem list in as one of our sections with specific conditions like Rib-cage Defect, Long-fingers, Flat feet, and Double jointedness into our problem list contributes to the precision of clinical documentation and also enriches the importance of clinical care. By detailing each issue clearly, we are facilitating both the systems to communicate effectively ensuring interoperability at the maximum level. This detailed approach will help tailor treatments more accurately and ensures that care is coordinated seamlessly across various sectors. Ultimately, by including our problem list with these specific conditions, we are creating a more connected and informed healthcare environment that is better equipped to improve patient outcomes.This is recorded by the healthcare professional and input into the system in OpenMRS which accepts JSON and hence the output is provided in JSON format.

**-Defining the System A and System B for the given Use Case:**

In the given use case, two open-source systems play crucial roles in managing patient data and facilitating the diagnosis process. The first system, referred to as System A, is an electronic medical record (EMR) solution designed to capture and store patient health information, including medical history, diagnoses, and treatments. This system is utilized by healthcare providers to document patient encounters, order tests, and review test results.

The second system, referred to as System B, is a laboratory information management system (LIMS) that streamlines laboratory workflows, including sample processing, testing, and result reporting. This system is employed by diagnostic laboratories to receive test orders, perform requested analyses, and communicate the results back to the healthcare providers.

In the specific use case presented, a clinician utilizes System A to document a patient's medical history, which includes symptoms such as rib cage defects, elongated fingers, flat feet, and joint hypermobility. Based on these observations, the clinician orders genetic testing for variants in the FBN1 gene, which is associated with a connective tissue disorder.

The test order is then transmitted to System B, utilized by the genetic testing laboratory. System B facilitates the sample processing, genetic analysis, and reporting of the test results. In this case, the laboratory identifies a specific FBN1 gene variant (c.7039\_7040del) in the patient's sample, while ruling out the presence of other tested variants.

The positive genetic test result is communicated back to the clinician through System A, enabling the healthcare provider to make an accurate diagnosis based on the clinical presentation and genetic findings. The integration of these two systems ensures efficient data management, seamless communication between clinical and laboratory domains, and supports informed decision-making in the diagnosis and treatment of the patient's condition.

References

*Product-Openmrs*. (n.d.). Openmrs.org. https://openmrs.org/product/

*OpenELIS Global*. (n.d.). OpenELIS Global. https://openelis-global.org/

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