Standards-Based Data Element Definitions to Support Registry Abstraction
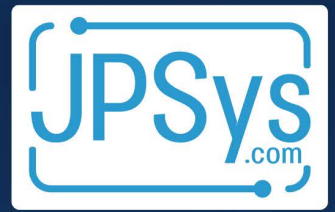
The Vermont Oxford Network (VON) of 1,200 neonatal facilities worldwide wanted to reduce the burden on their members' data abstractors and improve confidence in data quality by standardizing their data element definitions. Using internationally standardized data elements enables consistent application of definitions, thereby improving the quality of data coming in. This also makes it possible to automate parts of the data abstraction process from various members' EHRs, reducing the manual effort necessary to abstract and enter case data.

They selected J P Systems for our familiarity with both structural and semantic clinical data standards and our high quality, rapid Terminology mapping capabilities. We have experts in all major international clinical terminologies.

J P Systems outlined a program for realizing VON's business objectives, starting with analysis of the context and assessment of the value propositions for VON and its member NICUs. We settled on a three-pronged approach: outreach to members to ensure alignment in both clinical and technical assumptions about the effort and realistic understanding of the appetite for change, a technical assessment of the likely architectural options for sharing and leveraging standards-based element definitions, and a comprehensive analysis of the existing elements and their likely standards-based representations.

We worked closely with VON's neonatologists to confirm our understanding of VON's 129 data elements as we identified the appropriate tactics for representing them in current data standards for interoperability. When completed, the maps used over 20,000 concept codes from SNOMED CT, LOINC, ICD-10, UCUM, RxNorm, and HL7. Our methodology also documents closely related but inappropriate codes to support a seamless update process.

Clinical Data Standardization

We coordinated validation of the clinical models by the member community and developed our technical roadmap options to plan a move to an HL7 FHIR. Questionnaire app for data collection. This FHIR app will pull data from each member facility's EHR, providing completed elements where possible and relevant data for manual completion where necessary. Any EHR that supports the ONC specifications for the 21st Century Cures Act can support this app.

We are now embarking upon an effort to define a global neonatal data set which will enable hospitals to better collect, exchange, mine, produce metrics and analytics, inform future patient care plans and perform research on the data. Future planned efforts will leverage Artificial Intellgience (AI) for predicting patient outcomes.

IMPROVING NEONATAL CARE Vermont Oxford Network is a nonprofit voluntary collaboration of health care professionals at NICUs working together as an interdisciplinary community to improve neonatal care. VON serves as a neutral, independent party in analyzing and providing benchmarking data for individual centers and groups that can be used to identify local opportunities for improvement of neonatal care.