Enterprise Cardiovascular System to Support Multimodality Imaging and Clinical Effectiveness

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Over the past several years, an enterprise cardiovascular PACs system across the Cleveland Clinic Health System has been established and enhanced to support cardiac catheterization, echocardiography, and vascular angiography and ultrasound and is evolving to support nuclear cardiology, cardiac CT and MR. The system consists of multiple departmental servers on the main campus where the procedural volume is largest and a set of distributed servers across the health system's 10 regional hospitals. The system must support the diversity and evolution of the multivendor modalities across the health system in terms of image and data storage and provide access to clinical information at all points of patient contact including procedural and operating rooms, reading rooms, exam rooms, and physician offices. Enterprise functionality in patient searching and access to prior exams is a key architectural feature of the cardiovascular PACs environment. An enterprise ADT interface allows patient data to be linked together despite multiple medical records used at the different hospital facilities through a master patient index. This capability provides enterprise searching across databases and allows for effective data comparisons. Structured reporting functionality and database warehousing of clinical data is another key system component that goes far beyond traditional image storage and review capabilities associated with PACS architecture. Patient context sharing allows integration of further applications providing access to third party applications for tasks including advanced 3D ultrasound processing, ECG waveform review, and nuclear SPECT processing. Several limited bandwidth capabilities are provided including image encoding to allow remote access with a web-based application as well as a real-time variable compression engine with local caching enabling full client functionality with remote viewing. As multimodality imaging and structured data become increasingly more important for in the delivery of high quality integrated cardiovascular patient care, continued focus on clinical effectiveness of system integration is key.