

How a Pediatric Radiology Department Leveraged Enterprise Search to Improve Report Quality and Simplify Teaching File Creation

CHALLENGES: Radiologists did not have a mechanism to search for historical reports and clinical information on the many teleradiology studies they read, nor did they have a mechanism to easily identify cases to support research and teaching. These challenges are amplified because they are an academic, children's hospital that reads many specialized cases.

SOLUTION: **The Illuminate Suite of Solutions**

BENEFITS:

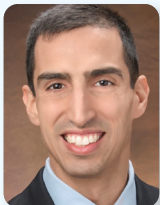
- Develop a more complete picture of challenging clinical cases and gather background information that can help the radiologists determine the correct clinical diagnosis.
- Identify normal clinical examples which are challenging in pediatric studies, particularly for clinicians who don't routinely work on pediatric cases.
- Facilitate creation of department-wide teaching files by enabling radiologists to efficiently identify interesting cases that included imaging results and associated surgery and pathology notes.
- Simplify peer review through rapid access to surgical and pathology notes that can be correlated to the radiology report.
- Support operational volume planning and a subsequent reorganization to a subspecialty-based practice.

Unique Specialty Hospital Needs

Because the Children's Hospital of Philadelphia (CHOP) is a large academic teaching hospital that is focused on pediatric care, their radiologists must routinely read unique and challenging clinical cases. Not all the 250 – 300,000 studies their radiologists read annually are performed at a CHOP facility, as they provide primary reads for many studies that are acquired at other organizations. While they have access to all historical patient information for studies acquired at CHOP, such historical information is not as readily available for outside studies.

In some cases, CHOP radiologists have access to the originating site's electronic medical record (EMR), which may provide access to the broader clinical picture. In other cases, the radiologists do not have any access to the originating organizations EMR, which limits their access to valuable historical clinical information on that patient. These scenarios limit radiologists' access to historical clinical information and reports that include potentially valuable information about the patient's clinical history that can benefit the radiologist's diagnostic process.

“Illuminate products are easy to use and save us time in so many areas of our practice, now that we can quickly search the entire radiology database.”



– **Dr. Michael Francavilla**
Assistant Professor of Radiology
Director of Radiology Informatics
Children's Hospital of Philadelphia

Normal pediatric anatomy changes over time and knowing the range of normal imaging appearances can be difficult. In the past, radiologists had turned to web searches to find examples of normal anatomy at various ages, but these searches are suboptimal and littered with pathology.

In addition to their clinical obligations, all CHOP radiologists have academic research and teaching responsibilities. Consequently, there is a persistent need to identify clinical cases that support these activities. This may take the form of identifying cohorts of patients for a research project or interesting pathologies visualized by specific modalities in unique care areas for a conference or tumor board. Historically, finding and gathering these studies have been a very time-consuming process.

Value of Rapid, Unified Access

To address these challenges the CHOP radiology department adopted the Illuminate suite of applications that integrate natural language processing (NLP) and is integrated with their PACS and enterprise imaging viewer. Illuminate enables the radiology staff to quickly search for any available clinical reports, images, and other notes that exist on an outside patient, so they are available while the study is being dictated. In addition, they can quickly search across all CHOP and outside systems to identify cohorts of patient studies and reports to support their research, teaching, and other clinical needs. In many cases this increased visibility to historical patient information has streamlined the radiologist's diagnostic process for outside teleradiology patients by eliminating the need to contact the referring physician and clarifying the clinical picture.

Illuminate was also used to gather information that facilitated their reorganization to a subspecialty-based practice. Illuminate enabled the department to precisely identify the number and types of studies performed each day across all sites, which were not all captured in the RIS. This information enabled them to identify the number of radiologists needed to support the individual modality and subspecialty exam volumes each day of the week. This was only possible because Illuminate provided visibility to all the studies that had been read over a given time frame.

Because CHOP is an academic research organization that is affiliated with the hospital of the University of Pennsylvania, the CHOP radiology department also supports the in-house development of medical imaging AI algorithms. Illuminate has made it much easier and faster for staff to identify specific normal and abnormal studies that can be used for algorithm training.

Illuminate's flexibility and ease of use has fostered many different uses that all benefit from the rapid access to the clinical information typically stored in disparate clinical IT systems across the healthcare enterprise.

