WHAT MORE INTELLIGENT IMAGING DATA MANAGEMENT MEANS TO RESEARCHERS

FROST & SULLIVAN WHITEPAPER CHAPTER

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Introduction

The use of real world evidence (RWE) has only heightened over the last several years given how valuable it was during the COVID-19 pandemic in accelerating innovations, vaccines, and therapeutic development in record time.[1] Researchers seeking to conduct data studies require an ever-diversifying range of sources, including electronic medical records, claims, connected clinical-grade and consumer devices, labs, social determinants of health, electronic patient-reported outcomes, and medical imaging.

Meeting Needs and Desires of Researchers

Medical imaging is an "essential element of biomedical research", and effective research advancements in healthcare "hinge on a large data ecosystem to collect and organize vast amounts of data from patient studies and basic research".[2] Imaging is also an important part of available RWD for various analysis uses, from drug development to policy making, which is a key growth area in pharma and healthcare in creating RWE.[3]

Challenges that researchers face when imaging data is not managed can center around two core issues: data quality, and security. When it comes to data-oriented research, it simply cannot or should not take place before data quality is assessed and addressed. Poorly managed imaging data results in researcher spending greater focus fixing and preparing datasets versus on actual research work. The process to do that also is a burden, given the image must be opened, relabeled, and then the changes validated.

When it comes to the security and protection of PHI, poor data management practices can result in patient-identifying information being left behind in the image, or loss of the clinically relevant context for the image. In a published literature review in 2022 assessing DICOM deidentification techniques it was found that on average, the success rate of privacy preservation for DICOM deidentification tools is 48%.[4] Furthermore, researchers in medical imaging face many data challenges, and its complexity can "overwhelm academic researchers who have no desire to become IT professionals".[5]

Supporting Researchers via Effective Data Management Practices

When provider institutions have an effective approach to imaging data management in place, it can help both research efforts and outputs, as well as patient care. Data standardization, whether related to image acquisition, storage, data coding, etc. enables images to be more "clinically usable and shareable across research and clinical care centers, aside from the ability to create "curated and trustworthy imaging databases".[6]

Data management approaches addressing researcher needs must not only anonymize data from images in order to protect PHI, but ensure that clinically relevant information is retained, including the appropriate level of detail in order to maximize use within research. When imaging data is addressed in the right way for this use, it becomes more actionable, and research personnel can focus on conducting research. It also enables images to be readily prepared in terms of process for submission to a research PACS, or other external databases.

Through the use of AI, a more intelligent approach to data management can be deployed, overcoming challenges and aligning to the imperatives of researchers for their work experience. Providers must ask themselves whether the organization has the right imaging data management approach so that researchers have the highest-quality and most complete datasets.

Conclusion

If research is going to yield new findings and innovations driving advancements in healthcare products and patient outcomes at a faster rate, the data foundation to do so must be ready for such desired use. With access to clean, standardized, anonymized, and quality imaging data, researchers are best prepared to focus on their main job of discovering ways to overcome the most pressing diseases and conditions facing humanity.

Sources

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