



## **ARVO statement on data standards in ophthalmology**

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Ophthalmology is one of the fields of medicine for which imaging plays an essential and central role. Indeed, ophthalmic imaging may span the greatest breadth of technologies in medicine, ranging from acoustic to optical to radiographic techniques. As such, we are fortunate as ophthalmologists and eye and vision scientists to have a broad array of companies and vendors developing these technologies for clinical and research applications.

While these technologies have led to many breakthroughs in our understanding of ophthalmic disease, progress has been hindered by suboptimal interoperability between imaging data collected from different devices. This is largely due to the use of proprietary formats by the instrument manufacturers to collect and store the raw data. In contrast, imaging data in other fields of medicine—most notably radiology—is stored in formats in compliance with the Digital Imaging and Communications in Medicine (DICOM) standard. Several DICOM supplements have been developed to accommodate the special attributes of specific ophthalmic imaging devices.

Despite the availability of DICOM standards for ophthalmology, few image device manufacturers currently avail themselves of these standard formats. There are many reasons for this including the ease and convenience of using instrument-specific formats during internal technology development within the company as well as a desire to obfuscate key attributes of a device's performance from competitors.

While these may be legitimate reasons, the use of these non-standardized and non-open-source formats create a significant obstacle for clinicians and eye and vision scientists alike. This is a hindrance in this era of big data and artificial intelligence (AI). AI-based analyses are poised to transform eye and vision science research, clinical trials, and clinical but are dependent on the analysis of large, aggregated datasets. Such large datasets are already collected and available in centers across the world, but limited inter-operability because of varying image formats compromises the ability to do integrated analyses.

Recently, the American Academy of Ophthalmology (AAO) has released a position statement strongly encouraging ophthalmic imaging device companies to fully adopt the DICOM standard for raw images. The Association for Research in Vision and Ophthalmology (ARVO) stands in full support of the AAO's position on vendor compliance with the DICOM standard. If our ophthalmic imaging device partners could fully embrace this standard, it would undoubtedly lead to substantial progress in eye and vision research and clinical care.

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The **Association for Research in Vision and Ophthalmology (ARVO)** is the largest eye and vision research organization in the world. Members include approximately 10,000 eye and vision researchers from over 75 countries. ARVO advances research worldwide into understanding the visual system and preventing, treating and curing its disorders. Learn more at [ARVO.org](http://ARVO.org).