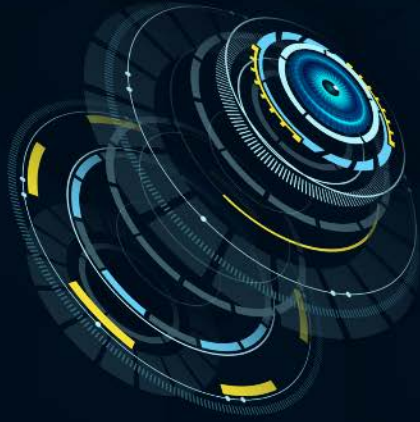# AI IN DRY EYE DISEASE MANAGEMENT

Exploring how AI can revolutionize diagnosis, personalize treatment, and enhance patient care.

BY KARL G. STONECIPHER, MD

The discourse around AI is polarized, with some heralding it as a groundbreaking innovation and others condemning it as a potentially harmful force. The dichotomy in perception stems largely from the varied implications of AI application, particularly in sensitive fields such as academia and health care.

Concerns have been raised about AI's capacity to undertake tasks traditionally reserved for humans, such as passing exams, authoring journal articles, and even making medical diagnoses. Skeptics fear the potential for diagnostic errors, whereas proponents such as myself see AI as a tool that can enhance our diagnostic capabilities and, eventually, treatment outcomes. My optimism is rooted in AI's ability to assimilate information and learn at a pace far exceeding human capability.

AI IN MY PRACTICE

In my practice, the use of AI-driven platforms such as the CSI Dry Eye Software (CSI Dry Eye) offers a practical illustration of AI's utility. This platform enriches the dry eye disease (DED) diagnostic process with visual aids, such as grading scales and images from original articles, to standardize assessments across different practitioners. This promotes consistency in diagnosis, regardless of individual practitioners' training backgrounds. Such a tool helps bridge the gap between varied clinical interpretations.

AI-driven platforms can also facilitate comprehensive pre- and postoperative care by allowing a more efficient and thorough patient evaluation process. By enabling patients to enter detailed medical histories at their convenience, these systems help ensure that crucial information is not overlooked owing to the constraints of traditional consultation settings. This aspect of AI not only streamlines the diagnostic process but also empowers patients to actively participate in their care by providing them with the means to update and refine their medical information as needed.

AI IN DED MANAGEMENT

AI has significantly enhanced my ability to diagnose and treat DED by providing a comprehensive analysis of factors contributing to the condition.

Categorizing DED. AI allows me to categorize DED into buckets such as *aqueous deficient*, *meibomian gland dysfunction*, or *mixed*, covering the majority of cases. Moreover, AI can identify coconspirators or factors contributing to the disease, such as medications that exacerbate DED symptoms. This capability is invaluable because it enables me to pinpoint potential drying medications a patient may be taking, such as certain antihypertensives, selective serotonin reuptake inhibitors, or glaucoma treatments. Upon identifying one of these medications, I can advise patients to consult with their primary care providers about possible alternatives.

Evaluating treatment efficacy. The CSI Dry Eye Software uses subjective scoring systems such as the Ocular Surface Disease Index, Standard Patient Evaluation of Eye Dryness questionnaire, and Comprehensive Dry Eye Risk Factor Survey. These tools help me gauge a patient's perceived improvement, providing both them and me with insights into a treatment's success. A significant change in these scores can indicate whether intervention is making a difference in the patient's quality of life, which is the ultimate goal.

PRACTICAL BENEFITS OF AI INTEGRATION

AI systems offer practical benefits for clinic operations. As the demand for cataract surgery increases and reimbursement rates decline, optimizing clinic efficiency and exploring alternative revenue streams becomes imperative. Leveraging AI for DED management can not only enhance clinic productivity but also contribute to financial sustainability

by introducing new services and treatments for DED, which can be administered by trained technicians. By delegating diagnostic tasks to technicians under clinician supervision, practices can better utilize their resources, allowing physicians to focus on complex cases and surgical procedures.

THE TRANSFORMATIVE ROLE OF AI IN DED MANAGEMENT

The integration of AI into my practice is about augmenting rather than replacing the clinician's expertise. It can also streamline the process, from patient intake to follow-up, and help ensure that my staff and I are equipped with a comprehensive understanding of each patient's condition before they step foot into the office. As DED management evolves, I expect the role of AI to expand, further improving patient care and clinic operations. ■

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