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From Measurement to Connected Care: NPi-Connect Brings Pupillometry Data into the EHR

Connecting Objective Neuro Data to the Patient Record

Automated pupillometry has helped advance the pupil exam from subjective bedside observation to objective neurological measurement. The NPi-Connect™ connectivity hub (NeurOptics; Irvine, CA) extends that advance by transferring pupillometry data directly into the electronic health record (EHR), helping hospitals reduce documentation burden, improve accuracy, and make neurological data easier to trend. Patient pupillary data is part of the EHR and audit trail. Just like all vital signs, the patient pupillary data is date and time-stamped.

From Penlight Subjectivity to Quantitative Measurement

For decades, clinicians assessed pupils with a penlight, using subjective terms such as *brisk, sluggish*, or *nonreactive* to describe the pupillary light reflex. In high-acuity settings, where subtle neurologic changes may signal deterioration, such subjectivity can make it difficult to compare findings across clinicians, shifts, and departments.

The NeurOptics NPi® Pupillometer provides a standardized light stimulus, digitally measures the pupillary light reflex, and calculates the Neurological Pupil Index™ (NPi), a quantitative measure of pupil reactivity and a biomarker for brain function. An NPi of 3.0 or higher is considered within the normal range, while an NPi below 3.0 is considered abnormal.

How NPi-Connect Works

NPi-Connect builds on that objective measurement by automating the transfer of pupillometry data from the pupillometer into the patient's EHR. Instead of manually entering multiple data points after each assessment, nurses can perform the exam, place the patient-specific SmartGuard® onto the NPi-Connect connectivity hub, and allow the data to flow directly into the EHR.

The workflow is designed to be straightforward. For a new patient, the nurse links the SmartGuard to the patient's medical record, performs the pupillometry assessment, and places the SmartGuard on the NPi-Connect device. The hub indicates readiness and completion through color changes; when the unit is ready, the pupillometry assessment data transfer into the patient record automatically. Nurses then clean the hub and pupillometer after use.

Saving Nurses' Time and Returning It to the Bedside

Such automation matters because pupillometry can generate several clinically important values, including right and left pupil size, the latency and velocity of pupil constriction or dilation, and the difference in values between eyes. For patients who require frequent neurologic checks, manual documentation can become extremely time-consuming. It also creates the possibility of transcription errors when values are manually copied from a device into the EHR.

By automating documentation, NPi-Connect helps reduce data entry time, minimize transcription risk, and make pupillometry results available in the record more quickly and reliably. For nurses, that can mean fewer minutes spent typing values into the chart after each assessment and more time available for direct patient care, reducing clinical risk.

Such benefits are especially meaningful in critical care, where nurses are managing complex patients while also supporting anxious families. Time saved at the keyboard can be redirected to assessing the patient, coordinating with physicians and respiratory therapists, responding to changes in condition, and helping families understand what is happening. For patients and loved ones, the impact of a more efficient workflow is not abstract: it can mean more nurse presence at the bedside, clearer communication, and more opportunity for reassurance during a frightening hospitalization.

Supporting Neurological Surveillance across Critical Care

The broader value of connected pupillometry is the support it provides for neurological surveillance. Critically ill patients are vulnerable to neurologic complications across many care environments, including neurocritical care, trauma, stroke, cardiac arrest, ECMO, emergency medicine, and intensive care. As hospitals seek more objective, standardized, and connected approaches to monitoring, automated pupillometry is becoming part of the same movement that made pulse oximetry and cardiac telemetry routine components of bedside care.

Part of the Modern Digital Health Ecosystem

NPi-Connect positions pupillometry within the modern digital health ecosystem. It turns an objective bedside measurement into connected, trendable data that can support nursing workflow, documentation quality, clinical communication, and patient safety across acute and critical care.

Nurses' time saved at the keyboard translates into time returned to the bedside, making connected pupillometry meaningful for patients and families.

NPi-Connect on the NeurOptics website

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