

## 24-hour Intraocular Pressure Fluctuation Monitoring Using an Ocular Telemetry Sensor: Tolerability and Functionality in Healthy Subjects

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### **Abstract**

**Purpose:** To evaluate the tolerability, comfort, and reliability of the signal transmission of an ocular Sensor used for 24-hour intraocular pressure fluctuation monitoring in humans.

**Patients and Methods:** In this uncontrolled open trial involving 10 healthy volunteers, an 8.7-mm radius prototype ocular telemetry Sensor (SENSIMED Triggerfish, Lausanne, Switzerland) and an orbital bandage containing a loop antenna were applied and connected to a portable recorder after full eye examination. Best-corrected visual acuity and position, surface wetting ability, and mobility of the Sensor were assessed after 5 and 30 minutes, 4, 12, and 24 hours. Subjective wearing comfort was scored and activities documented in a logbook. After Sensor removal, a full eye examination was repeated and the recorded signal analyzed.

**Results:** The comfort score was high and did not fluctuate significantly over time. The mobility of the Sensor was limited across follow-up visits and its surface wetting ability remained good. Best-corrected visual acuity was significantly reduced during Sensor wear and immediately after its removal (from 1.07 before, to 0.85 after, P value 0.008). Three subjects developed a mild, transient corneal abrasion. In all but 1 participant, we obtained usable data of a telemetric signal recording with sufficient sensitivity to depict ocular pulsation.

**Conclusions:** This 24-hour trial has encouraging results on the tolerability and functionality of the ocular telemetric Sensor for intraocular pressure fluctuation monitoring. Further studies with different Sensor radii conducted on a larger study population are needed to improve comfort, precision, and interpretation of the telemetric signal.

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