August 2, 2022

Glaukos Corporation
Mr. David Fernquist
Vice President Regulatory Affairs
229 Avenida Fabricante
San Clemente, California 92672

Re: K220032
Trade/Device Name: iStent infinite Trabecular Micro-Bypass System, Model iS3
Regulation Number: 21 CFR 886.3920
Regulation Name: Aqueous Shunt
Regulatory Class: Class II
Product Code: KYF
Dated: June 21, 2022
Received: June 24, 2022

Dear Mr. David Fernquist:

We have reviewed your Section 510(k) premarket notification of intent to market the device referenced above and have determined the device is substantially equivalent (for the indications for use stated in the enclosure) to legally marketed predicate devices marketed in interstate commerce prior to May 28, 1976, the enactment date of the Medical Device Amendments, or to devices that have been reclassified in accordance with the provisions of the Federal Food, Drug, and Cosmetic Act (Act) that do not require approval of a premarket approval application (PMA). You may, therefore, market the device, subject to the general controls provisions of the Act. Although this letter refers to your product as a device, please be aware that some cleared products may instead be combination products. The 510(k) Premarket Notification Database located at https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfpmn/pmn.cfm identifies combination product submissions. The general controls provisions of the Act include requirements for annual registration, listing of devices, good manufacturing practice, labeling, and prohibitions against misbranding and adulteration. Please note: CDRH does not evaluate information related to contract liability warranties. We remind you, however, that device labeling must be truthful and not misleading.

If your device is classified (see above) into either class II (Special Controls) or class III (PMA), it may be subject to additional controls. Existing major regulations affecting your device can be found in the Code of Federal Regulations, Title 21, Parts 800 to 898. In addition, FDA may publish further announcements concerning your device in the Federal Register.

Please be advised that FDA's issuance of a substantial equivalence determination does not mean that FDA has made a determination that your device complies with other requirements of the Act or any Federal statutes and regulations administered by other Federal agencies. You must comply with all the Act's

requirements, including, but not limited to: registration and listing (21 CFR Part 807); labeling (21 CFR Part 801); medical device reporting (reporting of medical device-related adverse events) (21 CFR 803) for devices or postmarketing safety reporting (21 CFR 4, Subpart B) for combination products (see https://www.fda.gov/combination-products/guidance-regulatory-information/postmarketing-safety-reporting-combination-products); good manufacturing practice requirements as set forth in the quality systems (QS) regulation (21 CFR Part 820) for devices or current good manufacturing practices (21 CFR 4, Subpart A) for combination products; and, if applicable, the electronic product radiation control provisions (Sections 531-542 of the Act); 21 CFR 1000-1050.

Also, please note the regulation entitled, "Misbranding by reference to premarket notification" (21 CFR Part 807.97). For questions regarding the reporting of adverse events under the MDR regulation (21 CFR Part 803), please go to https://www.fda.gov/medical-devices/medical-device-safety/medical-device-reporting-mdr-how-report-medical-device-problems.

For comprehensive regulatory information about medical devices and radiation-emitting products, including information about labeling regulations, please see Device Advice (https://www.fda.gov/medical-devices/device-advice-comprehensive-regulatory-assistance) and CDRH Learn (https://www.fda.gov/training-and-continuing-education/cdrh-learn). Additionally, you may contact the Division of Industry and Consumer Education (DICE) to ask a question about a specific regulatory topic. See the DICE website (https://www.fda.gov/medical-devices/device-advice-comprehensive-regulatory-assistance/contact-us-division-industry-and-consumer-education-dice) for more information or contact DICE by email (DICE@fda.hhs.gov) or phone (1-800-638-2041 or 301-796-7100).

Sincerely,

Anjana Jain, PhD
Assistant Director
DHT1A: Division of Ophthalmic Devices
OHT1: Office of Ophthalmic, Anesthesia,
Respiratory, ENT and Dental Devices
Office of Product Evaluation and Quality
Center for Devices and Radiological Health

Enclosure

DEPARTMENT OF HEALTH AND HUMAN SERVICES
Food and Drug Administration

Indications for Use

Form Approved: OMB No. 0910-0120
Expiration Date: 06/30/2023
See PRA Statement below.

510(k) Number *(if known)*
K220032

Device Name
iStent infinite® Trabecular Micro-Bypass System Model iS3

Indications for Use *(Describe)*

The iStent infinite® Trabecular Micro-Bypass System Model iS3 an implantable device intended to reduce the intraocular pressure (IOP) of the eye. It is indicated for use in adult patients with primary open-angle glaucoma in whom previous medical and surgical treatment has failed.

Type of Use *(Select one or both, as applicable)*

☒ Prescription Use (Part 21 CFR 801 Subpart D) ☐ Over-The-Counter Use (21 CFR 801 Subpart C)

CONTINUE ON A SEPARATE PAGE IF NEEDED.

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510(k) SUMMARY

This 510(k) summary is being submitted in accordance with the requirements of 21 CFR 807.92.

I. SUBMITTER

Glaukos Corporation
229 Avenida Fabricante
San Clemente, CA 92672

Contact Person: David S. Fernquist
Vice President, Regulatory Affairs
Glaukos Corporation
(949) 367-9600

Date Summary Prepared: August 2, 2022

II. DEVICE

Trade Name: iStent infinite Trabecular Micro-Bypass System Model iS3

Common Name: Glaucoma Implant

Classification Name: Aqueous shunt (21 CFR 886.3920)

Device Class: Class II (special controls)

Device Product Code: KYF ("Implant, Eye Valve")

III. PREDICATE DEVICE

- XEN Glaucoma Treatment System (K161457), 21 CFR 886.3920, Product Code KYF

IV. DEVICE DESCRIPTION

The iStent infinite Trabecular Micro-Bypass System Model iS3 is a sterile, single-use injector system that is pre-loaded with three G2-W stents, and is designed to deliver the stents into Schlemm's canal. The G2-W stents are manufactured from implant grade titanium (Ti6Al4V ELI per ASTM F136) and are coated with stearalkonium heparin. An area of reduced outside diameter, midway along the device, is designed to provide retention within the trabecular meshwork, while multiple outlet lateral lumens (4 outflow orifices) are designed to provide an exit route for aqueous from the anterior chamber. The stent has a single piece design, is 360 µm in diameter, 360 µm in height, and the central inlet and outlet lumen has a diameter of 80 µm. The head of the stent has

four side outlets that each have a diameter of 50 µm.

V. INTENDED USE

The iStent infinite Trabecular Micro-Bypass System Model iS3 has the same intended use as the predicate device and all other devices regulated within the generic type of device known as aqueous shunts in accordance with 21 CFR 886.3920. The iStent infinite is a prescription (Rx) device that is intended to be permanently implanted to reduce intraocular pressure for the management of glaucoma. Both the subject device and predicate device (XEN® Glaucoma Treatment System) have the same intended use for the treatment, namely, "to be permanently implanted to reduce intraocular pressure for the management of glaucoma", as stated above. The iStent infinite will bear the following indications for use statement:

The iStent infinite Trabecular Micro-Bypass System Model iS3 is an implantable device intended to reduce the intraocular pressure (IOP) of the eye. It is indicated for use in adult patients with primary open-angle glaucoma in whom previous medical and surgical treatment has failed.

The indications for use statement for iStent infinite is not substantially different from that of the XEN implant predicate device. The non-substantial difference in the indications for use statement for the iStent infinite vs. the predicate device is that the iStent infinite indication is narrower. Compared to the XEN indications for use statement (shown below), the iStent infinite indications for use statement does not include patients with pseudoexfolative glaucoma or pigmentary glaucoma who have failed maximally tolerated medical therapy. It should be noted that both the pivotal study for XEN and the pivotal study for iStent infinite comprised a substantial majority of primary open-angle glaucoma patients with prior failed surgical intervention and similar baseline characteristics.

The XEN® Glaucoma Treatment System is indicated for the management of refractory glaucomas, including cases where previous surgical treatment has failed, cases of primary open angle glaucoma, and pseudoexfoliative or pigmentary glaucoma with open angles that are unresponsive to maximum tolerated medical therapy.

VI. COMPARISON OF TECHNOLOGICAL CHARACTERISTICS WITH THE SUBJECT DEVICE AND PREDICATE DEVICE

Although the iStent infinite and the XEN do not share identical technological characteristics, those differences do not raise different questions of safety and effectiveness.

Table 1. Comparison of the iStent infinite System and XEN Glaucoma Treatment System (Predicate Device)

Characteristics	Allergan XEN Glaucoma Treatment System K161457 PREDICATE DEVICE	iStent infinite SUBJECT DEVICE
Intended use	To be permanently implanted to reduce intraocular pressure for the management of glaucoma	To be permanently implanted to reduce intraocular pressure for the management of glaucoma
Regulation Number/Product Code	886.3920, KYF	886.3920, KYF
Indication	The XEN Glaucoma Treatment System is indicated for the management of refractory glaucomas, including cases where previous surgical treatment has failed, cases of primary open angle glaucoma, and pseudoexfoliative or pigmentary glaucoma with open angles that are unresponsive to maximum tolerated medical therapy.	The iStent infinite Trabecular Micro-Bypass System Model iS3 is an implantable device intended to reduce the intraocular pressure (IOP) of the eye. It is indicated for use in adult patients with primary open-angle glaucoma in whom previous medical and surgical treatment has failed.
Rx or OTC	Rx	Rx
Permanent Implant	Yes	Yes
Design	Monolithic, round tube design with a central inlet and outlet lumen	Monolithic round tube design with a central inlet and outlet lumen
Material	Gelatin derived from porcine dermis, formed into a tube, and then cross-linked with glutaraldehyde; no coating	Implant grade titanium (Ti6Al4V ELI) with a stearalkonium heparin coating
Size (nominal dimensions)	Dry dimensions: 6 mm length 0.045 mm inner diameter 0.15 mm outside diameter	0.36 mm length 0.36 mm flange diameter 0.23 mm head diameter 0.08 mm central outlet diameter 0.05 mm flow outlet diameter
Sterilization	Terminal gamma ray radiation	Terminal gamma ray radiation
Single-Use	Yes	Yes
Anatomical site	Angle-based implant	Angle-based implant
Mechanism of action	Outflow of aqueous fluid via a subconjunctival bleb	Outflow of aqueous fluid via trabecular bypass
Method of Insertion	Via a preloaded XEN injector	Via a preloaded injector

VII. PERFORMANCE DATA

The following performance data were provided in support of the substantial equivalence determination.

A. Bench Testing

The nonclinical bench testing conducted on the iStent infinite Trabecular Micro-Bypass System Model iS3 included design verification and functional product testing, sterilization validation, packaging and shelf life testing, and biocompatibility testing. Results of the nonclinical testing demonstrate that the iStent infinite Trabecular Micro-Bypass System Model iS3 functions as intended.

Design Verification and Functional Product Testing:

The iStent infinite Trabecular Micro-Bypass System Model iS3 Stent and injector were evaluated to verify that the design output met the original design input and intent. This testing was based on tests described in ANSI Z80.27, Implantable Glaucoma Devices, the FDA guidance document "Aqueous Shunts – 510(k) Submissions", and the FDA guidance document "Premarket Studies of Implantable Minimally Invasive Glaucoma Surgical (MIGS) Devices". All physical and mechanical testing demonstrated that the stent and injector function as intended.

Table 2. Physical & Mechanical Testing	
Test	**Results**
Surface & Edge Quality	High magnification SEM photos of the G2-W stent demonstrated that the stent had smooth edges and was free from surface defects.
Dimensions	Glaukos has validated that stent production meets tolerances to appropriate statistical levels.
Physical Stability	An in-vivo test to evaluate the physical stability of the titanium stent was performed per ANSI Z80.27 Section 5.5. A total of 10 etched and coated stents were pulled from a production lot for the validation, inspected, and were placed into BSS for 14 days at a temperature 35 $\pm$ 2 °C. Visual inspection (at least 10x) and dimensional measurements were performed at baseline and after 14 days. The results of the dimensional inspection showed that the four critical dimension measurements remained the same before and after incubation. The results of the visual inspection demonstrated that the surface finish on the incubated stents maintained the same quality as prior to incubation. The data also show that the coating on the stents remains intact after incubation.
Pressure/Flow Characteristics	Numerical modeling, including computational fluid dynamics, was used to evaluate the flow through the stents over physiologically relevant boundary conditions. The stents were found to have negligible flow resistance.
Structural Integrity	A study was undertaken to evaluate the stress levels during the highest anticipated load conditions for the stent by Finite Element Analysis (FEA). Based on the modeling data, it was determined that the safety factors at the lowest and highest implant velocities were 41x and 14x, respectively. The results confirm that the stent will maintain its structural integrity after implantation with the velocity range seen clinically.
Insertion Testing	As part of the shelf life testing for the iS3 injector, functional testing was performed at baseline and after 1 year of aging to demonstrate that all specified requirements were met e.g. stent delivery, stent singulation, stent implantation and trocar penetration in synthetic tissue. All tested injectors successfully passed all predetermined acceptance criteria for stent delivery.
Stability of Coating	Stability of the stearalkonium heparin coating on the stent was demonstrated for the shelf life period of the finished, sterile device.
MRI Compatibility	Non-clinical testing has demonstrated that the iStent infinite Trabecular Micro-Bypass System (Model iS3) is MR Conditional. A patient with this device can be safely scanned in an MR system meeting conditions specified in the IFU and patient implant card.
Corrosion Resistance	Glaukos submitted samples that were representative of the finished, sterile titanium stent to a contract laboratory for electrochemical evaluation in accordance with ASTM (American Society For Testing and Materials) F2129-15, Standard Test Method for Conducting Cyclic Potentiodynamic Polarization Measurements to Determine the Corrosion Susceptibility of Small Implant Devices". The test lab concluded that test samples displayed acceptable corrosion resistance to pitting and crevice corrosion in the ASTM F2129 test in the received condition.

Sterilization Validation:

The gamma irradiation sterilization method was validated using the VD_{max}^{25} method described in ISO 11137-1:2015 and ISO 11137-2:2015. Validation results demonstrate that a minimum

exposure dose of 25 kGy has been substantiated for the routine sterilization of the iStent infinite Trabecular Micro-Bypass System Model iS3 to provide a 10^{-6} sterility assurance level (SAL).

Bacterial Endotoxin

Endotoxin Limulus amebocyte lysate (LAL) testing has been performed as recommended in the FDA guidance document "Endotoxin Testing Recommendations for Single-Use Intraocular Ophthalmic Devices."

Packaging and Shelf Life Testing:

The iStent infinite Trabecular Micro-Bypass System Model iS3 is labeled with an expiration date of 1 year. The shelf life study evaluated the functional performance of the G2-W Stent and the iS3 injector, as well as the packaging integrity of the tray sealed with the Tyvek lid. Additional testing was completed to evaluate the impact of environmental conditioning and distribution factors. Test results confirm that the G2-W Stent and the iS3 injector meet their functional requirements and the sterile barrier (package integrity) remains intact after simulated distributionand aging. This testing provides the justification for the 1-year shelf life and the maintenance of the sterile barrier.

Biocompatibility Testing

The biocompatibility testing outlined in the tables below (**Table 3** and **Table 4**) was performed on the stent (or representative samples of the finished device) and the patient-contacting portion of the injector in accordance with the relevant parts of International Organization for Standardization (ISO) standard 10993. All testing demonstrated that the device materials have an acceptable biocompatibility profile. With respect to physico-chemical testing of the stent, there is an extensive history of titanium use in medical devices. Therefore, tests for extraction in aqueous and organic solvents and for hydrolytic stability were not performed on the device, since they were considered unnecessary. In addition, the device's titanium material contains no monomers and is not subject to hydrolytic degradation.

Table 3. Biocompatibility Testing - Stent

Test	Purpose	Acceptance Criteria	Results
Cytotoxicity:			
ISO Inhibition Of Cell Growth	To determine the potential biological reactivity of a mammalian cell culture (L929) in response to the test article extract	Cell growth inhibition < 30%	Pass
ISO L929 MEM Elution Test	To determine the biological reactivity of a mammalian cell culture (L929) in response to the test article extract	No cell lysis or toxicity	Pass
Agar Diffusion Test	To determine the biological reactivity of a mammalian monolayer cell culture (L929) in response to the test article	No cell lysis or toxicity	Pass
Genotoxicity:			
Bacterial Reverse Mutation Study	To evaluate the potential of the test article to induce reverse mutations in histidine and tryptophan genes in *S. typhimurium* and *E. coli* respectively	No mutagenic changes	Pass
Mouse Bone Marrow Micronucleus Study	To determine the ability of the test article and/or its metabolites to induce micronuclei in maturing erythrocytes of mice	No toxicity or mutagenic effects	Pass
In Vitro Chromosomal Aberration Study	To determine the ability of the test article to induce chromosome aberrations, structural or numerical, in CHO cells in the presence or absence of an exogenous mammalian activation system	No chromosomal aberrations induced	Pass
Other:			
Intraocular Irritation Study in the Rabbit	To evaluate the potential of the test article extract to cause intraocular irritation or toxicity following an intracameral injection in rabbits	No evidence of irritation	Pass
Guinea Pig Kligman Maximization Test	To evaluate the allergenic potential or sensitizing capacity of the test article	No evidence of delayed dermal contact sensitization	Pass
Muscle Implantation in the Rabbit (2, 4, and 13 Weeks)	To evaluate the test article for local tissue responses and the potential to induce local toxic effects after implantation	No significant reaction	Pass
Acute Systemic Toxicity in the Mouse	To evaluate the test article extracts for potential toxic effects following a single-dose systemic injection in mice	No evidence of systemic toxicity	Pass
USP Material-Mediated Rabbit Pyrogen Study	To determine the potential presence of chemical pyrogens in extracts of the test article	Non-pyrogenic	Pass

Table 4. Biocompatibility Testing - Injector

Test	Purpose	Acceptance Criteria	Results
Cytotoxicity:			
ISO Medium Eluate Method Test (1x CMEM Extract)	To determine the biological reactivity of a mammalian cell culture (L929) in response to the test article extract	No cell lysis or toxicity	Pass
ISO Agar Diffusion Test (Solid Sample)	To determine the biological reactivity of a mammalian monolayer cell culture (L929) in response to the test article	No cell lysis or toxicity	Pass
Other:			
Intraocular Irritation Test (Phosphate Balanced Saline Extract)	To evaluate the potential of the test article extract to cause intraocular irritation or toxicity following an intracameral injection in rabbits	No evidence of irritation	Pass
Guinea Pig Kligman Maximization Test (Saline & Vegetable Oil Extracts)	To evaluate the allergenic potential or sensitizing capacity of the test article	No evidence of delayed dermal contact sensitization	Pass
Rabbit Intracutaneous Reactivity/Irritation Test (Saline & Vegetable Oil Extracts)	To evaluate the test article for potential irritation effects as a result of an intracutaneous injection in New Zealand White rabbits	Non-irritating	Pass
Acute Systemic Toxicity in the Mouse (Saline & Vegetable Oil Extracts)	To evaluate the test article extracts for potential toxic effects following a single-dose systemic injection in mice	No evidence of systemic toxicity	Pass
Rabbit (Material-Mediated) Pyrogen Test (Normal Saline Extract)	To determine the potential presence of chemical pyrogens in extracts of the injector test article using the ISO Rabbit Pyrogen Test (Material Mediated) procedure.	Non-pyrogenic	Pass

B. Clinical Performance Testing

A prospective, multi-center, single-arm, open-label, clinical trial was conducted at 14 sites in the US and one OUS site to evaluate the safety and effectiveness of the iStent infinite in adult patients with primary open-angle glaucoma, pseudoexfoliative or pigmentary glaucoma with open angles, and in whom previous medical and surgical treatment has failed. 61 participants were implanted with the iStent infinite and followed post-operatively for 12 months. The two effectiveness endpoints were 1) the proportion of participants achieving a 20% or greater mean diurnal IOP (MDIOP) reduction from baseline at 12 months on the same or fewer number of medication classes and 2) the change from baseline in MDIOP at 12 months. No washout of IOP-lowering medications was performed before implantation. Safety outcomes included adverse events (AEs), surgical complications, best spectacle corrected visual acuity (BSCVA), and ocular findings from slit-lamp biomicroscopy, fundus examination, gonioscopy, pachymetry, and visual field testing.

Demographics and Preoperative Characteristics

61 participants were implanted. The mean age of participants was 71.7 years (median 71.0, range 49 to 88) and there were 28 men (28/61 or 45.9%) and 33 women (33/61 or 54.1%). 37 of 61 (60.7%) participants were White, 15 of 61 (24.6%) were Black, six of 61 (9.8%) were Asian; race

was not reported for three of 61 (4.9%) subjects. 11 of 61 participants (18.0%) had ethnicity reported as Hispanic or Latino. 55 participants (90.1%) were diagnosed with primary open angle glaucoma (POAG), three (4.9%) had pseudoexfoliative glaucoma, and three (4.9%) had pigmentary glaucoma. All 61 participants had undergone prior filtering or cilioablative glaucoma procedures. Preoperatively, the mean visual field mean deviation (MD) score was -15.1 (SD 8.56) dB (median -13.7 dB, range -31.82 to -1.79 dB). The mean baseline medicated MDIOP was 23.5±2.82 mm Hg (median 22.7 mm Hg, range 20-35 mm Hg). At baseline, participants were using a mean of 3.0 (± 0.9) ocular hypotensive medications, with 19 of 61 (31.1%) on two or fewer medications and 42 of 61 (68.9%) on three or more medications.

Effectiveness Results

Tables 5 and 6 summarize the primary effectiveness analyses based on 12-month diurnal IOP data.

Table 5. Analyses of Responder Effectiveness Endpoint
Proportion of Responders at Month 12

Analysis Population/Imputation Method for Missing Data	iStent infinite n/N (%) (95% CI) N= 61
ITT Population/Worst Postoperative IOP & Last Available Medication Classes[1]	44/61 (72.1%) (59.2%, 82.9%)
ITT Population/Failure Assumption[2]	44/61 (72.1%) (59.2%, 82.9%)
PP Population	43/59 (72.9%) (59.7%, 83.6%)
ITT Population/Exclusion from Cohort[3]	44/60 (73.3%) (60.3%, 83.9%)
ITT Population/Multiple Imputation[4]	73.4% (62.2%, 84.6%)

Participants with hypotony (IOP < 6 mmHg) associated with clinically significant findings, loss of light perception, IOP-related SSIs, cyclodialysis cleft, and/or no stents visible were treated as non-responders.

1. Responder status for the single participant with missing data at Month 12 was determined using the worst postoperative IOP and the last available number of medication classes.
2. The single participant who missed the 12-month evaluation was treated as a non-responder.
3. The single participant who missed the 12-month evaluation was excluded.
4. Multiple imputation was used for the single participant with missing data at Month 12.

Table 6. Analyses of MDIOP Change from Baseline Effectiveness Endpoint
12-Month Diurnal IOP Change from Baseline

Analysis Population/Imputation Method for Missing Data	iStent infinite N Mean ± SD (95% CI)
ITT Population/Worst Postoperative IOP[1]	61 -5.5 ± 5.24 (-6.9, -4.2)
PP Population	59 -5.5 ± 5.29 (-6.9, -4.1)
ITT Population/Exclusion from Cohort[2]	60 -5.6 ± 5.27 (-6.9, -4.2)
ITT Population/Multiple Imputation[3]	61 -5.5 ± 0.67[4] (-6.9, -4.2)

1. The worst postoperative IOP was used as the 12-month MDIOP for the single participant who missed the 12-month evaluation.
2. The single participant who missed the 12-month evaluation was excluded.
3. Multiple imputation was used for the single participant with missing data at Month 12.
4. Mean ± SE for this value.

Safety Results

Ocular adverse events (AEs) are summarized in **Table 7**. There were no intraoperative adverse events (AEs). Five of 61 participants (8.2%) needed the use of a second injector due to non-deployment of the second or third stent, and there was also head movement in one of these 5 participants. There were no reports of corneal decompensation, choroidal effusion, choroidal hemorrhage, hypotony maculopathy, deep stents ("buried" in the trabecular meshwork) that were not visible at the last three scheduled visits of the study, stent explantation, stent dislocation, or stent repositioning. The most common AEs reported were ocular surface disease, substantial increase in IOP vs. baseline, and loss of BSCVA ≥ 2 lines. Stent obstruction occurred in two of 61 participants (3.3%). Two instances of stent migration occurred in one participant (1.6%). Three of 61 participants (4.9%) required secondary surgical intervention (implantation of aqueous shunt) to lower IOP.

Table 7. Postoperative Ocular Adverse Events in the Study Eye (Sorted Alphabetically)

Postoperative Adverse Event	iStent infinite N = 61 Number (Percent) of Subjects with Event
A significant increase in crystalline lens opacity from baseline defined as a change of ARLNS grade of three half-step increments of 0.5 per increment or greater for nuclear opalescence, cortical or posterior subcapsular opacities (as applicable to phakic eyes)	0 (0.0%)
Age-related macular degeneration	0 (0.0%)
Allergic reaction	0 (0.0%)
Anterior chamber fill	0 (0.0%)
Anterior chamber tap	0 (0.0%)
An increase of three half-step increments of 0.5 per increment or greater in anterior subcapsular opacities or a clinically significant cataract eligible for phacoemulsification with BCVA loss (ETDRS) of greater than 10 letters from baseline (as applicable to phakic eyes)	0 (0.0%)
Aqueous misdirection	0 (0.0%)
Atrophy/phthisis	0 (0.0%)
Bleb leak	0 (0.0%)
Blepharitis	3 (4.9%)
Chalazion	0 (0.0%)
Choroidal effusion	0 (0.0%)
Choroidal hemorrhage	0 (0.0%)
Chronic pain in the study eye present greater than 3 months postoperative	0 (0.0%)
Clinically significant cystoid macular edema	0 (0.0%)
Conjunctival erosion due to tube shunt	1 (1.6%)
Conjunctivitis	1 (1.6%)
Corneal abrasion	0 (0.0%)
Deep stents (“buried” in the trabecular meshwork) that are not visible at the last three scheduled visits of the study	0 (0.0%)
Dellen	0 (0.0%)
Disc hemorrhage	1 (1.6%)
Dysesthetic bleb	NA
Elevated IOP[1]	1 (1.6%)
Endophthalmitis	0 (0.0%)
Fixed dilated pupil	0 (0.0%)
Flat or shallow anterior chamber (e.g., shallowing of the anterior chamber that causes any amount of iris-cornea touch)	0 (0.0%)
Hyperemia	2 (3.3%)
Hypotony (IOP < 6 mmHg) associated with clinically significant findings	1 (1.6%)
Implant exposure	0 (0.0%)
Implant migration	0 (0.0%)
IOP increase >= 10 mmHg vs. baseline IOP[1]	5 (8.2%)
IOP increase requiring oral medication[1]	2 (3.3%)
IOP increase requiring surgical intervention[1]	3 (4.9%)
Increase in C/D ratio of > 0.3 units on ophthalmoscopic examination	0 (0.0%)
Intraocular inflammation arising after the protocol's specified medication regimen is complete	1 (1.6%)
Intraocular inflammation following tube shunt surgery	2 (3.3%)
Iridodialysis	0 (0.0%)
Lens/IOL dislocation	0 (0.0%)
Loss of best spectacle corrected visual acuity (BSCVA) of 2 lines or more	7 (11.5%)
<= 30 days	1 (1.6%)
> 30 days[2]	6 (9.8%)
Loss of eye	0 (0.0%)
Macular edema	2 (3.3%)
Macular puckering	0 (0.0%)
Nd:YAG capsulotomy	0 (0.0%)
Needling procedure	NA

Postoperative Adverse Event	iStent infinite N = 61 Number (Percent) of Subjects with Event
Ocular hypotensive medication intolerance	3 (4.9%)
Ocular pain	1 (1.6%)
Ocular surface disease	7 (11.5%)
Perioperative inflammation	4 (6.6%)
Posterior vitreous detachment	1 (1.6%)
Proliferative vitreoretinopathy	0 (0.0%)
Ptosis	0 (0.0%)
Pupillary block	0 (0.0%)
Retinal detachment	0 (0.0%)
Retinal dialysis	0 (0.0%)
Retinal flap tears	0 (0.0%)
Secondary surgical intervention	3 (4.9%)
Significant corneal complications including opacification and decompensation	0 (0.0%)
Significant corneal edema	0 (0.0%)
Significant corneal injury	0 (0.0%)
Significant damage to trabecular meshwork	0 (0.0%)
Significant hyphema (i.e, >= 10% of anterior chamber)	2 (3.3%)
Significant iris damage	0 (0.0%)
Stent dislocation	0 (0.0%)
Stent explant	0 (0.0%)
Stent migration[3]	1 (1.6%)
Stent obstruction[4]	2 (3.3%)
Stent-cornea touch	0 (0.0%)
Stye	1 (1.6%)
Subconjunctival hemorrhage	1 (1.6%)
Toxic Anterior Segment Syndrome (TASS)	0 (0.0%)
Transient hypotony	1 (1.6%)
Visual field loss < 2.5 dB	1 (1.6%)
Visual field loss >= 2.5 dB	4 (6.6%)
Vitreous hemorrhage	0 (0.0%)
Vitreous loss	0 (0.0%)
Wound leak/dehiscence	0 (0.0%)
Wound repair	0 (0.0%)

1. A total of 8 eyes (8/61 or 13.1%) experienced 12 AEs of increased IOP (consisting of elevated IOP, IOP increase >= 10 mmHg vs. baseline IOP, IOP increase requiring oral medication and IOP increase requiring surgical intervention). The 4 eyes with more than one AE of increased IOP are as follows:
   - One eye had an AE of IOP increase >= 10 mmHg vs. baseline IOP and an AE of IOP increase requiring secondary surgical intervention
   - One eye had an AE of IOP increase requiring oral medication and an AE of IOP increase requiring surgical intervention
   - One eye had an AE of elevated IOP and an AE of IOP increase requiring secondary surgical intervention
   - One eye had 2 AES of IOP increase >= 10 mmHg vs. baseline IOP
2. Includes persistent BSCVA loss
3. One subject was reported with 2 events of stent migration. The PI acknowledged that the visualization was impaired during implantation of the 1:00 and 4:30 stents due to corneal arcus, striae and external location-marking dye. The stent reported as implanted at 1:00 was identified in the 1:00 position via UBM ("imbedded deep beyond iris insertion"), and the stent reported as implanted at 4:30 was identified in the 7:30 position via both gonioscopy and UBM.
4. The 2 AEs of stent obstruction involved complete obstruction of 2 stents each. The investigators reported associated findings of significant hyphema in 1 case and pre-existing and postoperative focal goniosynechiae in both cases. One case of stent obstruction resolved following treatment with pilocarpine, and 1 case was not treated and was ongoing at Month 12. Both subjects experienced Month 12 MDIOP reduction on the same medication regimen as preoperative.

VIII. CONCLUSIONS

The iStent infinite Trabecular Micro-Bypass System Model iS3 has the same intended use as the legally marketed predicate device identified in this 510(k) notification and all other aqueous shunts regulated by FDA under 21 CFR § 886.3920. The indications for use statement differs from those for the predicate device, however, the differences do not alter the intended use of the device.

The iStent infinite Trabecular Micro-Bypass System Model iS3 technological characteristics differ from the predicate device, however, the differences do not raise new or different questions of safety or effectiveness. Results of the nonclinical testing demonstrate that the iStent infinite Trabecular Micro-Bypass System Model iS3 functions as intended. Results of clinical performance testing support a favorable safety and effectiveness profile that supports a determination of substantial equivalence. The non-clinical and clinical performance testing demonstrate that the device is as safe, as effective, and performs as well as or better than the legally marketed device predicate.