

ONSET

Diabetic macular edema (DME), the primary cause of vision loss associated with diabetic retinopathy, is a disease affecting the macula, the part of the retina responsible for central vision. Diabetic retinopathy is the ocular manifestation of the effect of diabetes on the cardiovascular system, where hyperglycemia causes damage to the small blood vessels of the retina, the light-sensitive tissue at the back of the eye. The affected blood vessel walls become weakened and leak fluid. This fluid causes the surrounding tissue to swell. When this swelling involves the macula, this is known as diabetic macular edema. Because the macula is a very small area of the retina where light is focused on the back of the eye, swelling of this tissue leads to distortion and loss of vision. The swelling or edema of this tissue can lead ultimately to irreversible damage to the photoreceptor system which is critical to vision.

STATISTICS

- Approximately 19 percent of patients with diabetes studied over a 10-year period were diagnosed with DME.¹
- At least 382 million people worldwide have diabetes; this figure is likely to rise to 592 million by 2035.²
- More than 560,000 Americans have DME.³
- All people with type 1 or type 2 diabetes are at risk for DME.⁴

PREVENTION, SIGNS AND SYMPTOMS

- As a precaution, patients with diabetes should schedule a comprehensive dilated eye exam once a year. Early detection and timely treatment of diabetic retinopathy can potentially prevent the development of DME and potential vision loss.
- The macula in patients with DME swells due to excess fluid in the tissue from leaking vessels, which have been damaged because of the hyperglycemia associated with diabetes.
- This swelling of the macula blurs central vision, interfering with many daily tasks, such as reading, watching television and driving.
- If left untreated, DME can result in irreversible vision loss.

TREATMENT

- Treatment options in the U.S. include:
 - ILUVIEN® (fluocinolone acetonide intravitreal implant) 0.19 mg – a tiny implant designed to release a continuous, low dose of the corticosteroid fluocinolone acetonide (FAc) into the back of the eye over 36 months. It is indicated in the U.S. for the treatment of DME in patients who have been previously treated with a course of corticosteroids and did not have a clinically significant rise in intraocular pressure. In phase 3 clinical trials in subjects with DME who had previously been treated with laser photocoagulation, the primary efficacy endpoint was met at 24 months.

- Ozurdex®, a bioerodable intravitreal implant, delivers the corticosteroid dexamethasone. In the phase 3 clinical trials, subjects could receive treatment no more frequently than every six months. Efficacy was noted to peak three months after administration and diminish thereafter.
- Retinal Laser photocoagulation is not approved for the treatment of DME, but was the standard of care prior to the approval of pharmacotherapies for DME. It continues to be used adjunctively and as monotherapy in some small, isolated focal areas of DME.
- Ranibizumab and Aflibercept anti-VEGF injections target the cytokine vascular endothelial growth factor. These therapies are biological proteins. Ranibizumab is recommended to be administered by intravitreal injection once per month. Aflibercept is recommended to be administered every two months after five monthly loading doses.

ILUVIEN IMPORTANT SAFETY INFORMATION

CONTRAINDICATIONS

- ILUVIEN is contraindicated in patients with active or suspected ocular or periocular infections including most viral diseases of the cornea and conjunctiva including active epithelial herpes simplex keratitis (dendritic keratitis), vaccinia, varicella, mycobacterial infections and fungal diseases.
- ILUVIEN is contraindicated in patients with glaucoma, who have cup to disc ratios of greater than 0.8.
- ILUVIEN is contraindicated in patients with known hypersensitivity to any components of this product.

WARNINGS AND PRECAUTIONS

- Intravitreal injections have been associated with endophthalmitis, eye inflammation, increased intraocular pressure, and retinal detachments. Patients should be monitored following the intravitreal injection.
- Use of corticosteroids may produce posterior subcapsular cataracts, increased intraocular pressure, glaucoma, and may enhance the establishment of secondary ocular infections due to bacteria, fungi, or viruses. Corticosteroids are not recommended to be used in patients with a history of ocular herpes simplex because of the potential for reactivation of the viral infection.
- Patients in whom the posterior capsule of the lens is absent or has a tear are at risk of implant migration into the anterior chamber.

ADVERSE REACTIONS

- In controlled studies, the most common adverse reactions reported were cataract development (ILUVIEN 82%; sham 50%) and intraocular pressure elevation of >10 mmHg (ILUVIEN 34%; sham 10%).
- Patients are advised to have follow-up eye examinations at appropriate intervals following treatment with ILUVIEN. For full prescribing information, log onto www.ILUVIEN.com.

You are encouraged to report negative side effects of prescription drugs to the FDA. Visit www.fda.gov/medwatch, or call 1-800-FDA-1088.

Please see Full Prescribing Information below.

1. According to the Wisconsin Epidemiologic Study of Diabetic Retinopathy
 2. Source: IDF Diabetes Atlas Sixth Edition, International Diabetes Federation 2013
 3. Ciulla TF, Amador AG, Zinman B. Diabetic retinopathy and diabetic macular edema: pathophysiology, screening and novel therapies. *Diabetes Care*. 2003;26:2653-2664.
 4. National Eye Institute. Facts About Diabetic Retinopathy. Available at: <http://www.nei.nih.gov/health/diabetic/retinopathy.asp>.

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3. Ciulla TF, Amador AG, Zinman B. Diabetic retinopathy and diabetic macular edema: pathophysiology, screening and novel therapies. *Diabetes Care*. 2003;26:2653-2664.
4. National Eye Institute. Facts About Diabetic Retinopathy. Available at: <http://www.nei.nih.gov/health/diabetic/retinopathy.asp>.

Fluocinolone acetonide is a white or almost white, microcrystalline powder, practically insoluble in water, soluble in methanol, ethanol, chloroform and acetone, and sparingly soluble in ether.

Each **ILUVIEN** consists of a light brown 3.5mm x 0.37mm implant containing 0.19 mg of the active ingredient fluocinolone acetonide and the following inactive ingredients: polyimide tube, polyvinyl alcohol, silicone adhesive and water for injection.

12 CLINICAL PHARMACOLOGY

12.1 Mechanism of Action

Corticosteroids inhibit inflammatory responses to a variety of inciting agents. They inhibit edema, fibrin deposition, capillary dilation, leukocyte migration, capillary proliferation, fibroblast proliferation, deposition of collagen, and scar formation associated with inflammation.

Corticosteroids are thought to act by inhibition of phospholipase A₂ via induction of inhibitory proteins collectively called lipocortins. It is postulated that these proteins control biosynthesis of potent mediators of inflammation such as prostaglandins and leukotrienes by inhibiting release of the common precursor, arachidonic acid. Arachidonic acid is released from membrane phospholipids by phospholipase A₂.

12.3 Pharmacokinetics

In a human pharmacokinetic study of **ILUVIEN**, fluocinolone acetonide concentrations in plasma were below the lower limit of quantitation of the assay (100 pg/mL) at all post-administration time points from Day 7 through Month 36 following intravitreal administration of a 0.2 mcg/day or 0.5 mcg/day fluocinolone acetonide insert.

13 NONCLINICAL TOXICOLOGY

13.1 Carcinogenesis, Mutagenesis, Impairment of Fertility

Long-term animal studies have not been conducted to determine the carcinogenic potential or the effect on fertility of **ILUVIEN**.

Fluocinolone acetonide was not genotoxic *in vitro* in the Ames test (*S. typhimurium* and *E. coli*) and the mouse lymphoma TK assay, or *in vivo* in the mouse bone marrow micronucleus assay.

14 CLINICAL STUDIES

The efficacy of **ILUVIEN** was assessed in two three-year, randomized (2:1, active: sham), multicenter, double-masked, parallel-groups studies that enrolled patients with diabetic macular edema that had previously been treated with laser photocoagulation.

The primary efficacy endpoint in both trials was the proportion of subjects in whom vision had improved by 15 letters or more from baseline after 24 months of follow-up.

Table 3: Baseline BCVA (Letters)

	Study 1		Study 2	
	ILUVIEN (N=190)	Sham (N=95)	ILUVIEN (N=186)	Sham (N=90)
Mean (SD)	53 (13)	55 (11)	53 (12)	55 (11)
Median (Range)	57 (19-75)	58 (25-69)	56 (20-70)	58 (21-68)

Table 4: Visual Acuity outcomes at Month 24 (All randomized subjects with LOCF)

Study	Outcomes	ILUVIEN	Sham	Estimated Difference (95% CI)
1 ^a	Gain of ≥15 letters in BCVA (n (%))	51 (27%)	14 (15%)	12.1% (2.6%, 21.6%)
	Loss of ≥15 letters in BCVA (n (%))	26 (14%)	5 (5%)	8.4% (1.8%, 15.1%)
	Mean change from baseline in BCVA (SD)	3.7 (18.7)	3.2 (13.1)	1.8 (-2.8, 6.3)
2 ^b	Gain of ≥15 letters in BCVA (n (%))	57 (31%)	16 (18%)	13.0% (2.7%, 23.4%)
	Loss of ≥15 letters in BCVA (n (%))	22 (12%)	9 (10%)	1.8% (-5.9%, 9.6%)
	Mean change from baseline in BCVA (SD)	5.2 (18.0)	0.0 (15.6)	6.1 (1.4, 10.8)

^aStudy 1: **ILUVIEN**, N=190; Sham, N=95

^bStudy 2: **ILUVIEN**, N=186; Sham, N=90

Visual acuity outcomes by lens status (Phakic or Pseudophakic) at different visits are presented in Figure 2 and Figure 3. The occurrence of cataracts impacted visual acuity during the study. Patients who were pseudophakic at baseline achieved greater mean BCVA change from baseline at the Month 24 study visit.

Figure 2: Proportion of subjects with >=15 Letters Improvement from Baseline BCVA in the Study Eye

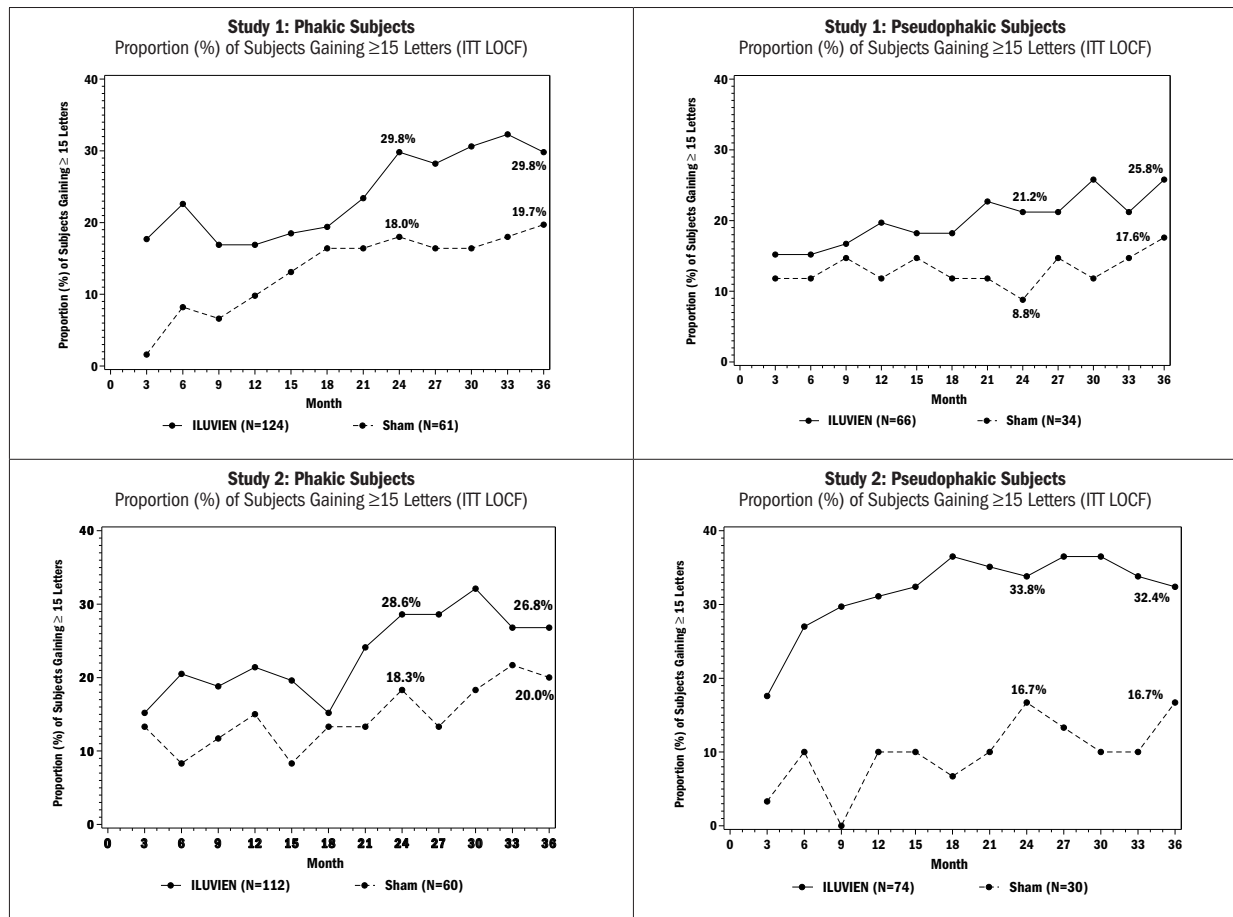
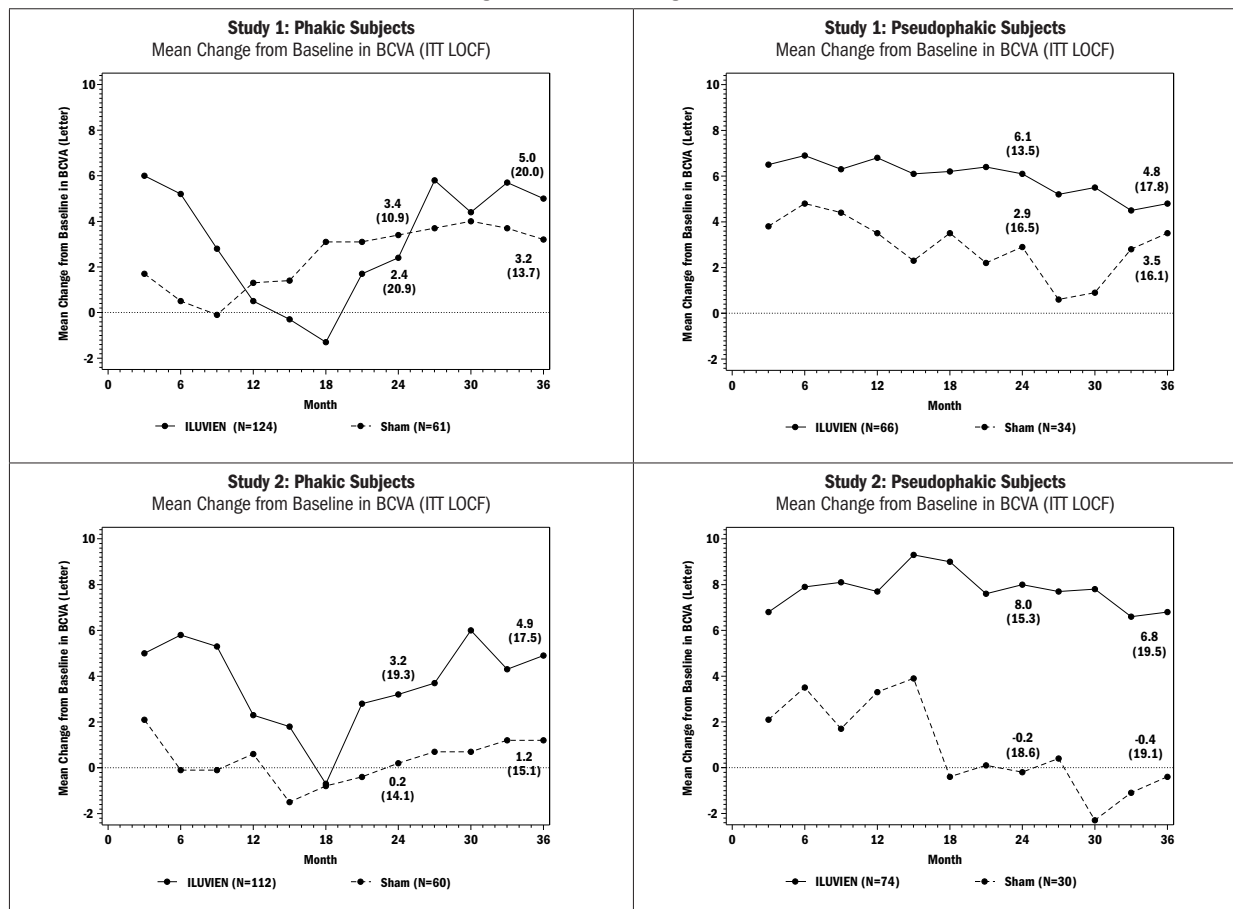


Figure 3: Mean BCVA Change from Baseline



The BCVA outcomes for the Pseudophakic and Phakic subgroups from Studies 1 and 2 at Month 24 are presented in Table 5.

Table 5: Visual Acuity outcomes at Month 24 (Subgroup for pooled data with LOCF)

Lens Status	Outcomes	ILUVIEN	Sham	Estimated Difference (95% CI)
^a Pseudophakic	Gain of ≥15 letters in BCVA (n (%))	39 (28%)	8 (13%)	15.4% (4.4%, 26.3%)
	Loss of ≥15 letters in BCVA (n (%))	7 (5%)	7 (11%)	-5.9% (-14.4%, 2.5%)
	Mean change from baseline in BCVA (SD)	7.1 (14.5)	1.5 (17.4)	5.6 (0.7, 10.6)
^b Phakic	Gain of ≥15 letters in BCVA (n (%))	69 (29%)	22 (18%)	11.1% (2.1%, 20.1%)
	Loss of ≥15 letters in BCVA (n (%))	41 (17%)	7 (6%)	11.6% (5.2%, 18%)
	Mean change from baseline in BCVA (SD)	2.8 (20.1)	1.8 (12.6)	1 (-2.5, 4.4)

^aPseudophakic: **ILUVIEN**, N=140; Sham, N=64

^bPhakic: **ILUVIEN**, N=236; Sham, N=121

16 HOW SUPPLIED/STORAGE AND HANDLING

ILUVIEN[®] (fluocinolone acetonide intravitreal implant) 0.19 mg is supplied in a sterile single use preloaded applicator with a 25-gauge needle, packaged in a tray sealed with a lid inside a carton.

NDC 68611-190-02

Storage: Store at 15°-30° C (59°-86° F).

17 PATIENT COUNSELING INFORMATION

Steroid-related Effects

Advise patients that a cataract may occur after treatment with **ILUVIEN**. If this occurs, advise patients that their vision will decrease, and they will need an operation to remove the cataract and restore their vision.

Advise patients that they may develop increased intraocular pressure with **ILUVIEN** treatment, and the increased IOP may need to be managed with eye drops, or surgery.

Intravitreal Injection-related Effects

Advise patients that in the days following intravitreal injection of **ILUVIEN**, patients are at risk for potential complications including in particular, but not limited to, the development of endophthalmitis or elevated intraocular pressure.

When to Seek Physician Advice

Advise patients that if the eye becomes red, sensitive to light, painful, or develops a change in vision, they should seek immediate care from an ophthalmologist.

Driving and Using Machines

Inform patients that they may experience temporary visual blurring after receiving an intravitreal injection. Advise patients not to drive or use machines until this has been resolved.

Manufactured for:

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