

Online Supplement

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Supplemental Table S1. ICD9 and ICD10 diagnosis codes used to define diabetic macular edema or vision-threatening diabetic retinopathy (DME/VTDR)^a

Code	Description
362.06	Severe non-proliferative diabetic retinopathy
362.02	Proliferative diabetic retinopathy
362.07	Diabetic macular edema
E08.341	Severe non-proliferative diabetic retinopathy with macular edema (diabetes mellitus due to underlying condition)
E09.341	Severe non-proliferative diabetic retinopathy with macular edema (drug or chemical induced diabetes mellitus)
E10.341	Severe non-proliferative diabetic retinopathy with macular edema (type 1 diabetes mellitus)
E11.341	Severe non-proliferative diabetic retinopathy with macular edema (type 2 diabetes mellitus)
E13.341	Severe non-proliferative diabetic retinopathy with macular edema (other specified diabetes mellitus)
E08.349	Severe non-proliferative diabetic retinopathy without macular edema (diabetes mellitus due to underlying condition)
E09.349	Severe non-proliferative diabetic retinopathy without macular edema (drug/chemical-induced diabetes mellitus)
E10.349	Severe non-proliferative diabetic retinopathy without macular edema (type 1 diabetes mellitus)
E11.349	Severe non-proliferative diabetic retinopathy without macular edema (type 2 diabetes mellitus)
E13.349	Severe non-proliferative diabetic retinopathy without macular edema (other specified diabetes mellitus)
E08.351	Proliferative diabetic retinopathy with macular edema (diabetes mellitus due to underlying condition)
E09.351	Proliferative diabetic retinopathy with macular edema (drug or chemical induced diabetes mellitus)
E10.351	Proliferative diabetic retinopathy with macular edema (type 1 diabetes mellitus)
E11.351	Proliferative diabetic retinopathy with macular edema (type 2 diabetes mellitus)
E13.351	Proliferative diabetic retinopathy with macular edema (other specified diabetes mellitus)
E08.352	Proliferative diabetic retinopathy with traction retinal detachment involving the macula (diabetes mellitus due to underlying condition)
E09.352	Proliferative diabetic retinopathy with traction retinal detachment involving the macula (drug/chemical induced diabetes mellitus)
E10.352	Proliferative diabetic retinopathy with traction retinal detachment involving the macula (type 1 diabetes mellitus)
E11.352	Proliferative diabetic retinopathy with traction retinal detachment involving the macula (type 2 diabetes mellitus)
E13.352	Proliferative diabetic retinopathy with traction retinal detachment involving the macula (other specified diabetes mellitus)
E08.353	Proliferative diabetic retinopathy with traction retinal detachment not involving macula (diabetes mellitus due to underlying condition)
E09.353	Proliferative diabetic retinopathy with traction retinal detachment not involving macula (drug/chemical induced diabetes mellitus)
E10.353	Proliferative diabetic retinopathy with traction retinal detachment not involving the macula (type 1 diabetes mellitus)
E11.353	Proliferative diabetic retinopathy with traction retinal detachment not involving the macula (type 2 diabetes mellitus)
E13.353	Proliferative diabetic retinopathy with traction retinal detachment not involving the macula (other specified diabetes mellitus)
E08.354	Proliferative diabetic retinopathy with combined traction retinal detachment & rhegmatogenous retinal detachment (diabetes mellitus due to underlying condition)
E09.354	Proliferative diabetic retinopathy with combined traction retinal detachment & rhegmatogenous retinal detachment (drug/chemical induced diabetes mellitus)
E10.354	Proliferative diabetic retinopathy with combined traction retinal detachment & rhegmatogenous retinal detachment (type 1 diabetes mellitus)
E11.354	Proliferative diabetic retinopathy with combined traction retinal detachment & rhegmatogenous retinal detachment (type 2 diabetes mellitus)
E13.354	Proliferative diabetic retinopathy with combined traction retinal detachment & rhegmatogenous retinal detachment (other specified diabetes mellitus)

^a Diabetic macular edema or vision-threatening diabetic retinopathy is characterized as: diabetic macular edema, severe non-proliferative diabetic retinopathy (with or without diabetic macular edema), or proliferative diabetic retinopathy (with or without diabetic macular edema).

Supplemental Table S1 (continued). ICD9 and ICD10 diagnosis codes used to define diabetic macular edema or vision-threatening diabetic retinopathy (DME/VTDR)^a

Code	Description
E08.355	Stable proliferative diabetic retinopathy (diabetes mellitus due to underlying condition)
E09.355	Stable proliferative diabetic retinopathy (drug or chemical induced diabetes mellitus)
E10.355	Stable proliferative diabetic retinopathy (type 1 diabetes mellitus)
E11.355	Stable proliferative diabetic retinopathy (type 2 diabetes mellitus)
E13.355	Stable proliferative diabetic retinopathy (other specified diabetes mellitus)
E08.359	Proliferative diabetic retinopathy without macular edema (diabetes mellitus due to underlying condition)
E09.359	Proliferative diabetic retinopathy without macular edema (drug/chemical-induced diabetes mellitus)
E10.359	Proliferative diabetic retinopathy without macular edema (type 1 diabetes mellitus)
E11.359	Proliferative diabetic retinopathy without macular edema (type 2 diabetes mellitus)
E13.359	Proliferative diabetic retinopathy without macular edema (other specified diabetes mellitus)
E08.321	Mild non-proliferative diabetic retinopathy with macular edema (diabetes mellitus due to underlying condition)
E09.321	Mild non-proliferative diabetic retinopathy with macular edema (drug or chemical induced diabetes mellitus)
E10.321	Mild non-proliferative diabetic retinopathy with macular edema (type 1 diabetes mellitus)
E11.321	Mild non-proliferative diabetic retinopathy with macular edema (type 2 diabetes mellitus)
E13.321	Mild non-proliferative diabetic retinopathy with macular edema (other specified diabetes mellitus)
E08.331	Moderate non-proliferative diabetic retinopathy with macular edema (diabetes mellitus due to underlying condition)
E09.331	Moderate non-proliferative diabetic retinopathy with macular edema (drug or chemical induced diabetes mellitus)
E10.331	Moderate non-proliferative diabetic retinopathy with macular edema (type 1 diabetes mellitus)
E11.331	Moderate non-proliferative diabetic retinopathy with macular edema (type 2 diabetes mellitus)
E13.331	Moderate non-proliferative diabetic retinopathy with macular edema (other specified diabetes mellitus)
E08.311	Unspecified diabetic retinopathy with macular edema (diabetes mellitus due to underlying condition)
E09.311	Unspecified diabetic retinopathy with macular edema (drug or chemical induced diabetes mellitus)
E10.311	Unspecified diabetic retinopathy with macular edema (type 1 diabetes mellitus)
E11.311	Unspecified diabetic retinopathy with macular edema (type 2 diabetes mellitus)
E13.311	Unspecified diabetic retinopathy with macular edema (other specified diabetes mellitus)
E08.37X	Diabetic macular edema, resolved following treatment (diabetes mellitus due to underlying condition)
E09.37X	Diabetic macular edema, resolved following treatment (drug or chemical induced diabetes mellitus)
E10.37X	Diabetic macular edema, resolved following treatment (type 1 diabetes mellitus)
E11.37X	Diabetic macular edema, resolved following treatment (type 2 diabetes mellitus)
E13.37X	Diabetic macular edema, resolved following treatment (other specified diabetes mellitus)

^a Diabetic macular edema or vision-threatening diabetic retinopathy is characterized as: diabetic macular edema, severe non-proliferative diabetic retinopathy (with or without diabetic macular edema), or proliferative diabetic retinopathy (with or without diabetic macular edema).

Supplemental Table S2. ICD9 and ICD10 diagnosis codes used to define any diabetic macular edema (any DME)^a

Code	Description
362.07	Diabetic macular edema
E08.311	Unspecified diabetic retinopathy with macular edema (diabetes mellitus due to underlying condition)
E09.311	Unspecified diabetic retinopathy with macular edema (drug or chemical induced diabetes mellitus)
E10.311	Unspecified diabetic retinopathy with macular edema (type 1 diabetes mellitus)
E11.311	Unspecified diabetic retinopathy with macular edema (type 2 diabetes mellitus)
E13.311	Unspecified diabetic retinopathy with macular edema (other specified diabetes mellitus)
E08.321	Mild non-proliferative diabetic retinopathy with macular edema (diabetes mellitus due to underlying condition)
E09.321	Mild non-proliferative diabetic retinopathy with macular edema (drug or chemical induced diabetes mellitus)
E10.321	Mild non-proliferative diabetic retinopathy with macular edema (type 1 diabetes mellitus)
E11.321	Mild non-proliferative diabetic retinopathy with macular edema (type 2 diabetes mellitus)
E13.321	Mild non-proliferative diabetic retinopathy with macular edema (other specified diabetes mellitus)
E08.331	Moderate non-proliferative diabetic retinopathy with macular edema (diabetes mellitus due to underlying condition)
E09.331	Moderate non-proliferative diabetic retinopathy with macular edema (drug or chemical induced diabetes mellitus)
E10.331	Moderate non-proliferative diabetic retinopathy with macular edema (type 1 diabetes mellitus)
E11.331	Moderate non-proliferative diabetic retinopathy with macular edema (type 2 diabetes mellitus)
E13.331	Moderate non-proliferative diabetic retinopathy with macular edema (other specified diabetes mellitus)
E08.341	Severe non-proliferative diabetic retinopathy with macular edema (diabetes mellitus due to underlying condition)
E09.341	Severe non-proliferative diabetic retinopathy with macular edema (drug or chemical induced diabetes mellitus)
E10.341	Severe non-proliferative diabetic retinopathy with macular edema (type 1 diabetes mellitus)
E11.341	Severe non-proliferative diabetic retinopathy with macular edema (type 2 diabetes mellitus)
E13.341	Severe non-proliferative diabetic retinopathy with macular edema (other specified diabetes mellitus)
E08.351	Proliferative diabetic retinopathy with macular edema (diabetes mellitus due to underlying condition)
E09.351	Proliferative diabetic retinopathy with macular edema (drug or chemical induced diabetes mellitus)
E10.351	Proliferative diabetic retinopathy with macular edema (type 1 diabetes mellitus)
E11.351	Proliferative diabetic retinopathy with macular edema (type 2 diabetes mellitus)
E13.351	Proliferative diabetic retinopathy with macular edema (other specified diabetes mellitus)
E08.37	Diabetic macular edema, resolved following treatment (diabetes mellitus due to underlying condition)
E09.37	Diabetic macular edema, resolved following treatment (drug or chemical induced diabetes mellitus)
E10.37	Diabetic macular edema, resolved following treatment (type 1 diabetes mellitus)
E11.37	Diabetic macular edema, resolved following treatment (type 2 diabetes mellitus)
E13.37	Diabetic macular edema, resolved following treatment (other specified diabetes mellitus)

a Any diabetic macular edema is characterized as: any ICD9/ICD10 code that contains a diagnosis of diabetic macular edema (by itself or with any stage of diabetic retinopathy).

Supplemental Table S3. ICD9 and ICD10 diagnosis codes used to define non-vision-threatening diabetes-related eye disease^a

Code	Description
362.01	Background diabetic retinopathy
362.03	Non-proliferative diabetic retinopathy (not otherwise specified)
362.04	Mild non-proliferative diabetic retinopathy
362.05	Moderate non-proliferative diabetic retinopathy
250.50	Diabetes with ophthalmic manifestations, type II/unspecified type, not stated as uncontrolled
250.52	Diabetes with ophthalmic manifestations, type II/unspecified type, uncontrolled
250.51	Diabetes with ophthalmic manifestations, type I [juvenile type], not stated as uncontrolled
250.53	Diabetes with ophthalmic manifestations, type I [juvenile type], uncontrolled
249.50	Secondary diabetes mellitus with ophthalmic manifestations, not stated as uncontrolled, or unspecified
249.51	Secondary diabetes mellitus with ophthalmic manifestations, uncontrolled
E08.319	Unspecified diabetic retinopathy without macular edema (diabetes mellitus due to underlying condition)
E09.319	Unspecified diabetic retinopathy without macular edema (drug or chemical induced diabetes mellitus)
E10.319	Unspecified diabetic retinopathy without macular edema (type 1 diabetes mellitus)
E11.319	Unspecified diabetic retinopathy without macular edema (type 2 diabetes mellitus)
E13.319	Unspecified diabetic retinopathy without macular edema (other specified diabetes mellitus)
E08.329	Mild non-proliferative diabetic retinopathy without macular edema (diabetes mellitus due to underlying condition)
E09.329	Mild non-proliferative diabetic retinopathy without macular edema (drug or chemical induced diabetes mellitus)
E10.329	Mild non-proliferative diabetic retinopathy without macular edema (type 1 diabetes mellitus)
E11.329	Mild non-proliferative diabetic retinopathy without macular edema (type 2 diabetes mellitus)
E13.329	Mild non-proliferative diabetic retinopathy without macular edema (other specified diabetes mellitus)
E08.339	Moderate non-proliferative diabetic retinopathy without macular edema (diabetes mellitus due to underlying condition)
E09.339	Moderate non-proliferative diabetic retinopathy without macular edema (drug or chemical induced diabetes mellitus)
E11.339	Moderate non-proliferative diabetic retinopathy without macular edema (type 2 diabetes mellitus)
E10.339	Moderate non-proliferative diabetic retinopathy without macular edema (type 1 diabetes mellitus)
E13.339	Moderate non-proliferative diabetic retinopathy without macular edema (other specified diabetes mellitus)
E08.39	Other diabetic ophthalmic complication (diabetes mellitus due to underlying condition)
E09.39	Other diabetic ophthalmic complication (drug or chemical induced diabetes mellitus)
E10.39	Other diabetic ophthalmic complication (type 1 diabetes mellitus)
E11.39	Other diabetic ophthalmic complication (type 2 diabetes mellitus)
E13.39	Other diabetic ophthalmic complication (other specified diabetes mellitus)

^a Non-vision-threatening diabetes-related eye disease was characterized as: background diabetic retinopathy, non-proliferative diabetic retinopathy (not otherwise specified), unspecified diabetic retinopathy without macular edema, mild non-proliferative diabetic retinopathy (without diabetic macular edema), moderate non-proliferative diabetic retinopathy (without diabetic macular edema), diabetes with ophthalmic manifestations, or other diabetic ophthalmic complication.

Supplemental Table S4: List of CPT and HCPC codes used to define four treatment types for diabetes-related eye disease				
CPT/HCPC Code	CPT/HCPC Code Description	Claim-level additional required codes	Patient-level required diagnosis	Aggregated treatment type
J0178	aflibercept	N/A	Diabetic Eye Diseases	Anti-VEGF injections
J2778	ranibizumab	N/A	Diabetic Eye Diseases	Anti-VEGF injections
J9035	bevacizumab	Claim has primary diagnosis of diabetic eye diseases, or CPT 67028	Diabetic Eye Diseases	Anti-VEGF injections
J3490	bevacizumab	Claim has primary diagnosis of diabetic eye diseases, or CPT 67028	Diabetic Eye Diseases	Anti-VEGF injections
J3590	bevacizumab	Claim has primary diagnosis of diabetic eye diseases, or CPT 67028	Diabetic Eye Diseases	Anti-VEGF injections
C9257	Injection, bevacizumab, 0.25 mg	Claim has primary diagnosis of diabetic eye diseases, or CPT 67028	Diabetic Eye Diseases	Anti-VEGF injections
Q5107	Injection, bevacizumab-awwb, biosimilar, (mvasi), 10 mg	Claim has primary diagnosis of diabetic eye diseases, or CPT 67028	Diabetic Eye Diseases	Anti-VEGF injections
J7999	Compounded drugs	Claim has primary diagnosis of diabetic eye diseases, or CPT 67028	Diabetic Eye Diseases	Anti-VEGF injections
J3590	Unclassified biologics used in medical care	Claim has primary diagnosis of diabetic eye diseases, or CPT 67028	Diabetic Eye Diseases	Anti-VEGF injections
J3490	Unclassified drugs used in medical care	Claim has primary diagnosis of diabetic eye diseases, or CPT 67028	Diabetic Eye Diseases	Anti-VEGF injections
Q9977	Compounded drug, not otherwise classified	Claim has primary diagnosis of diabetic eye diseases, or CPT 67028	Diabetic Eye Diseases	Anti-VEGF injections
67210	Destruction of localized lesion of retina (e.g., macular edema, tumors), 1 or more sessions; photocoagulation	N/A	Diabetic Eye Diseases	Laser photocoagulation
67220	Destruction of localized lesion of choroid (e.g., choroidal neovascularization); photocoagulation 1 or more sessions	N/A	Diabetic Eye Diseases	Laser photocoagulation
67228	Treatment of extensive or progressive retinopathy (e.g., diabetic retinopathy), photocoagulation	N/A	Diabetic Eye Diseases	Laser photocoagulation
67229	Treatment of extensive or progressive retinopathy, 1 or more sessions, preterm infant (less than 37 weeks gestation at birth), performed from birth up to 1 year of age (e.g., retinopathy of prematurity), photocoagulation or cryotherapy	N/A	Diabetic Eye Diseases	Laser photocoagulation
67108	Repair of retinal detachment; with vitrectomy, any method	N/A	Diabetic Eye Diseases	Vitrectomy
67036	Vitrectomy, mechanical, pars plana approach	N/A	Diabetic Eye Diseases	Vitrectomy
67039	Vitrectomy, mechanical, pars plana approach; with focal endolaser photocoagulation	N/A	Diabetic Eye Diseases	Vitrectomy
67040	Vitreous procedures on the posterior segment of the eye	N/A	Diabetic Eye Diseases	Vitrectomy

Abbreviations: CPT (Current Procedural Terminology), HCPC (Healthcare Common Procedure Coding), VEGF (vascular endothelial growth factor). Diabetic eye disease defined as any of the three groups listed in eTables 1-3: 1. Diabetic macular edema or vision-threatening diabetic retinopathy, 2. Diabetic macular edema of any type, or 3. Non-vision-threatening diabetes-related eye disease.

Supplemental Table S4 (continued): List of CPT and HCPC codes used to define four treatment types for diabetes-related eye disease				
CPT/HCPC Code	CPT/HCPC Code Description	Claim-level additional required codes	Patient-level required diagnosis	Aggregated treatment type
67041	Vitrectomy, mechanical, pars plana approach; with removal of preretinal cellular membrane (e.g., macular pucker)	N/A	Diabetic Eye Diseases	Vitrectomy
67042	Vitrectomy, mechanical, pars plana approach; with removal of internal limiting membrane of retina (e.g., for repair of macular hole, diabetic macular edema), includes, if performed, intraocular tamponade (i.e., air, gas or silicone oil)	N/A	Diabetic Eye Diseases	Vitrectomy
67043	Vitrectomy, mechanical, pars plana approach; with removal of subretinal membrane (e.g., choroidal neovascularization), includes, if performed, intraocular tamponade (i.e., air, gas or silicone oil) and laser photocoagulation	N/A	Diabetic Eye Diseases	Vitrectomy
67105	Repair of retinal detachment, including drainage of subretinal fluid when performed; photocoagulation	N/A	Diabetic Eye Diseases	Retinal detachment repair
67145	Prophylaxis of retinal detachment (e.g., retinal break, lattice degeneration) without drainage, one or more sessions; photocoagulation (laser or xenon arc)	N/A	Diabetic Eye Diseases	Retinal detachment repair
67107	Repair of retinal detachment; scleral buckling (such as lamellar scleral dissection, imbrication or encircling procedure), including, when performed, implant, cryotherapy, photocoagulation, and drainage of subretinal fluid	N/A	Diabetic Eye Diseases	Retinal detachment repair
67110	Repair of retinal detachment; by injection of air or other gas (e.g., pneumatic retinopexy)	N/A	Diabetic Eye Diseases	Retinal detachment repair
67108	Repair of retinal detachment; with vitrectomy, any method	N/A	Diabetic Eye Diseases	Retinal detachment repair
67113	Repair of complex retinal detachment (micropulse/retinex)	N/A	Diabetic Eye Diseases	Retinal detachment repair

Abbreviations: CPT (Current Procedural Terminology), HCPC (Healthcare Common Procedure Coding), VEGF (vascular endothelial growth factor). Diabetic eye disease defined as any of the three groups listed in eTables 1-3: 1. Diabetic macular edema or vision-threatening diabetic retinopathy, 2. Diabetic macular edema of any type, or 3. Non-vision-threatening diabetes-related eye disease.

Supplemental Table S5. ICD9 and ICD10 diagnosis codes used to define vision-threatening diabetic retinopathy without diabetic macular edema (VTDR without DME)^a

Code	Description
362.06 (without 362.07)	Severe non-proliferative diabetic retinopathy (without diabetic macular edema)
362.02 (without 362.07)	Proliferative diabetic retinopathy (without diabetic macular edema)
E08.349	Severe non-proliferative diabetic retinopathy without macular edema (diabetes mellitus due to underlying condition)
E09.349	Severe non-proliferative diabetic retinopathy without macular edema (drug/chemical-induced diabetes mellitus)
E10.349	Severe non-proliferative diabetic retinopathy without macular edema (type 1 diabetes mellitus)
E11.349	Severe non-proliferative diabetic retinopathy without macular edema (type 2 diabetes mellitus)
E13.349	Severe non-proliferative diabetic retinopathy without macular edema (other specified diabetes mellitus)
E08.359	Proliferative diabetic retinopathy without macular edema (diabetes mellitus due to underlying condition)
E09.359	Proliferative diabetic retinopathy without macular edema (drug/chemical-induced diabetes mellitus)
E10.359	Proliferative diabetic retinopathy without macular edema (type 1 diabetes mellitus)
E11.359	Proliferative diabetic retinopathy without macular edema (type 2 diabetes mellitus)
E13.359	Proliferative diabetic retinopathy without macular edema (other specified diabetes mellitus)
E08.352	Proliferative diabetic retinopathy with traction retinal detachment involving the macula (diabetes mellitus due to underlying condition)
E09.352	Proliferative diabetic retinopathy with traction retinal detachment involving the macula (drug/chemical induced diabetes mellitus)
E10.352	Proliferative diabetic retinopathy with traction retinal detachment involving the macula (type 1 diabetes mellitus)
E11.352	Proliferative diabetic retinopathy with traction retinal detachment involving the macula (type 2 diabetes mellitus)
E13.352	Proliferative diabetic retinopathy with traction retinal detachment involving the macula (other specified diabetes mellitus)
E08.353	Proliferative diabetic retinopathy with traction retinal detachment not involving macula (diabetes mellitus due to underlying condition)
E09.353	Proliferative diabetic retinopathy with traction retinal detachment not involving macula (drug/chemical induced diabetes mellitus)
E10.353	Proliferative diabetic retinopathy with traction retinal detachment not involving the macula (type 1 diabetes mellitus)
E11.353	Proliferative diabetic retinopathy with traction retinal detachment not involving the macula (type 2 diabetes mellitus)
E13.353	Proliferative diabetic retinopathy with traction retinal detachment not involving the macula (other specified diabetes mellitus)
E08.354	Proliferative diabetic retinopathy with combined traction retinal detachment & rhegmatogenous retinal detachment (diabetes mellitus underlying condition)
E09.354	Proliferative diabetic retinopathy with combined traction retinal detachment & rhegmatogenous retinal detachment (drug/chemical induced diabetes mellitus)
E10.354	Proliferative diabetic retinopathy with combined traction retinal detachment & rhegmatogenous retinal detachment (type 1 diabetes mellitus)
E11.354	Proliferative diabetic retinopathy with combined traction retinal detachment & rhegmatogenous retinal detachment (type 2 diabetes mellitus)
E13.354	Proliferative diabetic retinopathy with combined traction retinal detachment & rhegmatogenous retinal detachment (other specified diabetes mellitus)
E08.355	Stable proliferative diabetic retinopathy (diabetes mellitus due to underlying condition)
E09.355	Stable proliferative diabetic retinopathy (drug or chemical induced diabetes mellitus)
E10.355	Stable proliferative diabetic retinopathy (type 1 diabetes mellitus)
E11.355	Stable proliferative diabetic retinopathy (type 2 diabetes mellitus)
E13.355	Stable proliferative diabetic retinopathy (other specified diabetes mellitus)

^a Vision-threatening diabetic retinopathy without diabetic macular edema is characterized as: severe non-proliferative diabetic retinopathy (without diabetic macular edema) or proliferative diabetic retinopathy (without diabetic macular edema).

Supplemental Table S6. ICD9 and ICD10 diagnosis codes used to define vision-threatening diabetic retinopathy with diabetic macular edema (VTDR with DME)^a

Code	Description
362.06 (with 362.07)	Severe non-proliferative diabetic retinopathy (diabetic macular edema) Proliferative diabetic retinopathy (with diabetic macular edema)
362.02 (with 362.07)	
E08.341 E09.341 E10.341 E11.341 E13.341	Severe non-proliferative diabetic retinopathy with macular edema (diabetes mellitus due to underlying condition) Severe non-proliferative diabetic retinopathy with macular edema (drug or chemical induced diabetes mellitus) Severe non-proliferative diabetic retinopathy with macular edema (type 1 diabetes mellitus) Severe non-proliferative diabetic retinopathy with macular edema (type 2 diabetes mellitus) Severe non-proliferative diabetic retinopathy with macular edema (other specified diabetes mellitus)
E08.351 E09.351 E10.351 E11.351 E13.351	Proliferative diabetic retinopathy with macular edema (diabetes mellitus due to underlying condition) Proliferative diabetic retinopathy with macular edema (drug or chemical induced diabetes mellitus) Proliferative diabetic retinopathy with macular edema (type 1 diabetes mellitus) Proliferative diabetic retinopathy with macular edema (type 2 diabetes mellitus) Proliferative diabetic retinopathy with macular edema (other specified diabetes mellitus)

^a Vision-threatening diabetic retinopathy with diabetic macular edema is characterized as: severe non-proliferative diabetic retinopathy (with diabetic macular edema) or proliferative diabetic retinopathy (with diabetic macular edema).

Supplemental Table S7. ICD9 and ICD10 diagnosis codes used to define any diabetic macular edema (any DME)^a

Code	Description
362.07	Diabetic macular edema
E08.311	Unspecified diabetic retinopathy with macular edema (diabetes mellitus due to underlying condition)
E09.311	Unspecified diabetic retinopathy with macular edema (drug or chemical induced diabetes mellitus)
E10.311	Unspecified diabetic retinopathy with macular edema (type 1 diabetes mellitus)
E11.311	Unspecified diabetic retinopathy with macular edema (type 2 diabetes mellitus)
E13.311	Unspecified diabetic retinopathy with macular edema (other specified diabetes mellitus)
E08.321	Mild non-proliferative diabetic retinopathy with macular edema (diabetes mellitus due to underlying condition)
E09.321	Mild non-proliferative diabetic retinopathy with macular edema (drug or chemical induced diabetes mellitus)
E10.321	Mild non-proliferative diabetic retinopathy with macular edema (type 1 diabetes mellitus)
E11.321	Mild non-proliferative diabetic retinopathy with macular edema (type 2 diabetes mellitus)
E13.321	Mild non-proliferative diabetic retinopathy with macular edema (other specified diabetes mellitus)
E08.331	Moderate non-proliferative diabetic retinopathy with macular edema (diabetes mellitus due to underlying condition)
E09.331	Moderate non-proliferative diabetic retinopathy with macular edema (drug or chemical induced diabetes mellitus)
E10.331	Moderate non-proliferative diabetic retinopathy with macular edema (type 1 diabetes mellitus)
E11.331	Moderate non-proliferative diabetic retinopathy with macular edema (type 2 diabetes mellitus)
E13.331	Moderate non-proliferative diabetic retinopathy with macular edema (other specified diabetes mellitus)
E08.341	Severe non-proliferative diabetic retinopathy with macular edema (diabetes mellitus due to underlying condition)
E09.341	Severe non-proliferative diabetic retinopathy with macular edema (drug or chemical induced diabetes mellitus)
E10.341	Severe non-proliferative diabetic retinopathy with macular edema (type 1 diabetes mellitus)
E11.341	Severe non-proliferative diabetic retinopathy with macular edema (type 2 diabetes mellitus)
E13.341	Severe non-proliferative diabetic retinopathy with macular edema (other specified diabetes mellitus)
E08.351	Proliferative diabetic retinopathy with macular edema (diabetes mellitus due to underlying condition)
E09.351	Proliferative diabetic retinopathy with macular edema (drug or chemical induced diabetes mellitus)
E10.351	Proliferative diabetic retinopathy with macular edema (type 1 diabetes mellitus)
E11.351	Proliferative diabetic retinopathy with macular edema (type 2 diabetes mellitus)
E13.351	Proliferative diabetic retinopathy with macular edema (other specified diabetes mellitus)
E08.37X	Diabetic macular edema, resolved following treatment (diabetes mellitus due to underlying condition)
E09.37X	Diabetic macular edema, resolved following treatment (drug or chemical induced diabetes mellitus)
E10.37X	Diabetic macular edema, resolved following treatment (type 1 diabetes mellitus)
E11.37X	Diabetic macular edema, resolved following treatment (type 2 diabetes mellitus)
E13.37X	Diabetic macular edema, resolved following treatment (other specified diabetes mellitus)

^a Any diabetic macular edema is characterized as: any ICD9/ICD10 code that contains a diagnosis of diabetic macular edema (by itself or with any stage of diabetic retinopathy).

Supplemental Table S8. Statistical Comparison (Wald Test) of the Annual Prevalence of Diabetic Macular Edema or Vision-Threatening Diabetic Retinopathy (DME/VTDR) to Determine Differences by Sex, Age Groups, and Six Age and Sex Groups

2009					
Sex	Male				
Female	0.2736				
Age (years)	18-44	45-54			
45-54	0.0000				
55-64	0.0000	0.0000			
Sex*Age	Male 18-44	Male 45-54	Male 55-64	Female 18-44	Female 45-54
Male 45-54	0.0001				
Male 55-64	0.0000	0.0000			
Female 18-44	0.0000	0.0000	0.0000		
Female 45-54	0.0035	0.2949	0.0000	0.0000	
Female 55-64	0.0000	0.0000	0.0011	0.0000	0.0000
2010					
Sex	Male				
Female	0.0054				
Age (years)	18-44	45-54			
45-54	0.0000				
55-64	0.0000	0.0000			
Sex*Age	Male 18-44	Male 45-54	Male 55-64	Female 18-44	Female 45-54
Male 45-54	0.0001				
Male 55-64	0.0000	0.0000			
Female 18-44	0.0000	0.0000	0.0000		
Female 45-54	0.0047	0.0322	0.0000	0.0000	
Female 55-64	0.0000	0.0000	0.2470	0.0000	0.0000
2011					
Sex	Male				
Female	0.0000				
Age (years)	18-44	45-54			
45-54	0.0000				
55-64	0.0000	0.0000			
Sex*Age	Male 18-44	Male 45-54	Male 55-64	Female 18-44	Female 45-54
Male 45-54	0.0018				
Male 55-64	0.0000	0.0010			
Female 18-44	0.0000	0.0000	0.0000		
Female 45-54	0.2764	0.0000	0.0000	0.0000	
Female 55-64	0.0000	0.0000	0.1039	0.0000	0.0000

Supplemental Table S8 (continued). Statistical Comparison (Wald Test) of the Annual Prevalence of Diabetic Macular Edema or Vision-Threatening Diabetic Retinopathy (DME/VTDR) to Determine Differences by Sex, Age Groups, and Six Age and Sex Groups

2012					
Sex	Male				
Female	0.0000				
Age (years)	18-44	45-54			
45-54	0.0000				
55-64	0.0000	0.0000			
Sex*Age	Male 18-44	Male 45-54	Male 55-64	Female 18-44	Female 45-54
Male 45-54	0.0000				
Male 55-64	0.0000	0.0000			
Female 18-44	0.0000	0.0000	0.0000		
Female 45-54	0.1967	0.0000	0.0000	0.0000	
Female 55-64	0.0000	0.0000	0.6716	0.0000	0.0000
2013					
Sex	Male				
Female	0.0000				
Age (years)	18-44	45-54			
45-54	0.0000				
55-64	0.0000	0.0000			
Sex*Age	Male 18-44	Male 45-54	Male 55-64	Female 18-44	Female 45-54
Male 45-54	0.0000				
Male 55-64	0.0000	0.0001			
Female 18-44	0.0000	0.0000	0.0000		
Female 45-54	0.7969	0.0000	0.0000	0.0000	
Female 55-64	0.0000	0.0004	0.7276	0.0000	0.0000
2014					
Sex	Male				
Female	0.0000				
Age (years)	18-44	45-54			
45-54	0.0000				
55-64	0.0000	0.0000			
Sex*Age	Male 18-44	Male 45-54	Male 55-64	Female 18-44	Female 45-54
Male 45-54	0.0000				
Male 55-64	0.0000	0.0002			
Female 18-44	0.0000	0.0000	0.0000		
Female 45-54	0.9100	0.0000	0.0000	0.0000	
Female 55-64	0.0000	0.0007	0.7514	0.0000	0.0000

Supplemental Table S8 (continued). Statistical Comparison (Wald Test) of the Annual Prevalence of Diabetic Macular Edema or Vision-Threatening Diabetic Retinopathy (DME/VTDR) to Determine Differences by Sex, Age Groups, and Six Age and Sex Groups

2015					
Sex	Male				
Female	0.0000				
Age (years)	18-44	45-54			
45-54	0.0000				
55-64	0.0000	0.0000			
Sex*Age	Male 18-44	Male 45-54	Male 55-64	Female 18-44	Female 45-54
Male 45-54	0.0000				
Male 55-64	0.0000	0.0000			
Female 18-44	0.0000	0.0000	0.0000		
Female 45-54	0.0524	0.0000	0.0000	0.0000	
Female 55-64	0.0000	0.0487	0.0083	0.0000	0.0000
2016					
Sex	Male				
Female	0.0000				
Age (years)	18-44	45-54			
45-54	0.0000				
55-64	0.0000	0.0000			
Sex*Age	Male 18-44	Male 45-54	Male 55-64	Female 18-44	Female 45-54
Male 45-54	0.0000				
Male 55-64	0.0000	0.0026			
Female 18-44	0.0000	0.0000	0.0000		
Female 45-54	0.0288	0.0000	0.0000	0.0000	
Female 55-64	0.0000	0.5433	0.0067	0.0000	0.0000
2017					
Sex	Male				
Female	0.0000				
Age (years)	18-44	45-54			
45-54	0.0000				
55-64	0.0000	0.0000			
Sex*Age	Male 18-44	Male 45-54	Male 55-64	Female 18-44	Female 45-54
Male 45-54	0.0000				
Male 55-64	0.0000	0.0273			
Female 18-44	0.0000	0.0000	0.0000		
Female 45-54	0.3357	0.0000	0.0000	0.0000	
Female 55-64	0.0000	0.5670	0.0677	0.0000	0.0000

Supplemental Table S8 (continued). Statistical Comparison (Wald Test) of the Annual Prevalence of Diabetic Macular Edema or Vision-Threatening Diabetic Retinopathy (DME/VTDR) to Determine Differences by Sex, Age Groups, and Six Age and Sex Groups

2018						
Sex	Male					
Female	0.0000					
Age (years)	18-44	45-54				
45-54	0.0000					
55-64	0.0000	0.0000				
Sex*Age	Male 18-44	Male 45-54	Male 55-64	Female 18-44	Female 45-54	
Male 45-54	0.0000					
Male 55-64	0.0000	0.0086				
Female 18-44	0.0000	0.0000	0.0000			
Female 45-54	0.1186	0.0000	0.0000	0.0000		
Female 55-64	0.0000	0.7438	0.0011	0.0000	0.0000	

Supplemental Table S9. Statistical Comparison (Wald Test) of the Annual Prevalence of Any Diabetic Macular Edema (any DME) to Determine Differences by Sex, Age Groups, and Six Age and Sex Groups

2009					
Sex	Male				
Female	0.1016				
Age (years)	18-44	45-54			
45-54	0.0000				
55-64	0.0000	0.0000			
Sex*Age	Male 18-44	Male 45-54	Male 55-64	Female 18-44	Female 45-54
Male 45-54	0.0000				
Male 55-64	0.0000	0.0000			
Female 18-44	0.0000	0.0000	0.0000		
Female 45-54	0.0002	0.1670	0.0000	0.0000	
Female 55-64	0.0000	0.0000	0.0256	0.0000	0.0000
2010					
Sex	Male				
Female	0.0010				
Age (years)	18-44	45-54			
45-54	0.0000				
55-64	0.0000	0.0000			
Sex*Age	Male 18-44	Male 45-54	Male 55-64	Female 18-44	Female 45-54
Male 45-54	0.0000				
Male 55-64	0.0000	0.0000			
Female 18-44	0.0000	0.0000	0.0000		
Female 45-54	0.0024	0.0110	0.0000	0.0000	
Female 55-64	0.0000	0.0000	0.4635	0.0000	0.0000
2011					
Sex	Male				
Female	0.0000				
Age (years)	18-44	45-54			
45-54	0.0000				
55-64	0.0000	0.0000			
Sex*Age	Male 18-44	Male 45-54	Male 55-64	Female 18-44	Female 45-54
Male 45-54	0.0000				
Male 55-64	0.0000	0.0037			
Female 18-44	0.0000	0.0000	0.0000		
Female 45-54	0.5509	0.0000	0.0000	0.0000	
Female 55-64	0.0000	0.0004	0.4149	0.0000	0.0000

Supplemental Table S9 (continued). Statistical Comparison (Wald Test) of the Annual Prevalence of Any Diabetic Macular Edema (any DME) to Determine Differences by Sex, Age Groups, and Six Age and Sex Groups

2012					
Sex	Male				
Female	0.0000				
Age (years)	18-44	45-54			
45-54	0.0000				
55-64	0.0000	0.0000			
Sex*Age	Male 18-44	Male 45-54	Male 55-64	Female 18-44	Female 45-54
Male 45-54	0.0000				
Male 55-64	0.0000	0.0000			
Female 18-44	0.0000	0.0000	0.0000		
Female 45-54	0.1283	0.0000	0.0000	0.0000	
Female 55-64	0.0000	0.0000	0.3016	0.0000	0.0000
2013					
Sex	Male				
Female	0.0000				
Age (years)	18-44	45-54			
45-54	0.0000				
55-64	0.0000	0.0000			
Sex*Age	Male 18-44	Male 45-54	Male 55-64	Female 18-44	Female 45-54
Male 45-54	0.0000				
Male 55-64	0.0000	0.0000			
Female 18-44	0.0000	0.0000	0.0000		
Female 45-54	0.5487	0.0000	0.0000	0.0000	
Female 55-64	0.0000	0.0000	0.2683	0.0000	0.0000
2014					
Sex	Male				
Female	0.0000				
Age (years)	18-44	45-54			
45-54	0.0000				
55-64	0.0000	0.0000			
Sex*Age	Male 18-44	Male 45-54	Male 55-64	Female 18-44	Female 45-54
Male 45-54	0.0000				
Male 55-64	0.0000	0.0000			
Female 18-44	0.0000	0.0000	0.0000		
Female 45-54	0.7270	0.0000	0.0000	0.0000	
Female 55-64	0.0000	0.0000	0.2398	0.0000	0.0000

Supplemental Table S9 (continued). Statistical Comparison (Wald Test) of the Annual Prevalence of Any Diabetic Macular Edema (any DME) to Determine Differences by Sex, Age Groups, and Six Age and Sex Groups

2015					
Sex	Male				
Female	0.0000				
Age (years)	18-44	45-54			
45-54	0.0000				
55-64	0.0000	0.0000			
Sex*Age	Male 18-44	Male 45-54	Male 55-64	Female 18-44	Female 45-54
Male 45-54	0.0000				
Male 55-64	0.0000	0.0000			
Female 18-44	0.0000	0.0000	0.0000		
Female 45-54	0.3207	0.0000	0.0000	0.0000	
Female 55-64	0.0000	0.0079	0.0034	0.0000	0.0000
2016					
Sex	Male				
Female	0.0000				
Age (years)	18-44	45-54			
45-54	0.0000				
55-64	0.0000	0.0000			
Sex*Age	Male 18-44	Male 45-54	Male 55-64	Female 18-44	Female 45-54
Male 45-54	0.0000				
Male 55-64	0.0000	0.0000			
Female 18-44	0.0000	0.0000	0.0000		
Female 45-54	0.4238	0.0000	0.0000	0.0000	
Female 55-64	0.0000	0.0318	0.0058	0.0000	0.0000
2017					
Sex	Male				
Female	0.0000				
Age (years)	18-44	45-54			
45-54	0.0000				
55-64	0.0000	0.0000			
Sex*Age	Male 18-44	Male 45-54	Male 55-64	Female 18-44	Female 45-54
Male 45-54	0.0000				
Male 55-64	0.0000	0.0005			
Female 18-44	0.0000	0.0000	0.0000		
Female 45-54	0.5494	0.0000	0.0000	0.0000	
Female 55-64	0.0000	0.0573	0.0867	0.0000	0.0000

Supplemental Table S9 (continued). Statistical Comparison (Wald Test) of the Annual Prevalence of Any Diabetic Macular Edema (any DME) to Determine Differences by Sex, Age Groups, and Six Age and Sex Groups

2018					
Sex	Male				
Female	0.0000				
Age (years)	18-44		45-54		
45-54	0.0000				
55-64	0.0000	0.0000			
Sex*Age	Male 18-44	Male 45-54	Male 55-64	Female 18-44	Female 45-54
Male 45-54	0.0000				
Male 55-64	0.0000	0.0000			
Female 18-44	0.0000	0.0000	0.0000		
Female 45-54	0.5706	0.0000	0.0000	0.0000	
Female 55-64	0.0000	0.3615	0.0005	0.0000	0.0000

Supplemental Table S10. Statistical Comparison (Wald Test) of the Annual Prevalence of Non-Vision-Threatening Diabetes-Related Eye Disease to Determine Differences by Sex, Age Groups, and Six Age and Sex Groups

2009					
Sex	Male				
Female	0.0003				
Age (years)	18-44	45-54			
45-54		0.0000			
55-64	0.0000		0.0000		
Sex*Age	Male 18-44	Male 45-54	Male 55-64	Female 18-44	Female 45-54
Male 45-54	0.0000				
Male 55-64	0.0000	0.0000			
Female 18-44	0.0000	0.0000	0.0000		
Female 45-54	0.0000	0.0000	0.0000	0.0000	
Female 55-64	0.0000	0.0000	0.0005	0.0000	0.0000
2010					
Sex	Male				
Female	0.0000				
Age (years)	18-44	45-54			
45-54		0.0000			
55-64	0.0000		0.0000		
Sex*Age	Male 18-44	Male 45-54	Male 55-64	Female 18-44	Female 45-54
Male 45-54	0.0000				
Male 55-64	0.0000	0.0000			
Female 18-44	0.0000	0.0000	0.0000		
Female 45-54	0.0000	0.0000	0.0000	0.0000	
Female 55-64	0.0000	0.0000	0.1093	0.0000	0.0000
2011					
Sex	Male				
Female	0.0000				
Age (years)	18-44	45-54			
45-54		0.0000			
55-64	0.0000		0.0000		
Sex*Age	Male 18-44	Male 45-54	Male 55-64	Female 18-44	Female 45-54
Male 45-54	0.0000				
Male 55-64	0.0000	0.0000			
Female 18-44	0.0000	0.0000	0.0000		
Female 45-54	0.0002	0.0000	0.0000	0.0000	
Female 55-64	0.0000	0.0000	0.2984	0.0000	0.0000

Supplemental Table S10 (continued). Statistical Comparison (Wald Test) of the Annual Prevalence of Non-Vision-Threatening Diabetes-Related Eye Disease to Determine Differences by Sex, Age Groups, and Six Age and Sex Groups

2012					
Sex	Male				
Female	0.0000				
Age (years)	18-44	45-54			
45-54	0.0000				
55-64	0.0000	0.0000			
Sex*Age	Male 18-44	Male 45-54	Male 55-64	Female 18-44	Female 45-54
Male 45-54	0.0000				
Male 55-64	0.0000	0.0000			
Female 18-44	0.0000	0.0000	0.0000		
Female 45-54	0.0000	0.0000	0.0000	0.0000	
Female 55-64	0.0000	0.0000	0.6959	0.0000	0.0000
2013					
Sex	Male				
Female	0.0000				
Age (years)	18-44	45-54			
45-54	0.0000				
55-64	0.0000	0.0000			
Sex*Age	Male 18-44	Male 45-54	Male 55-64	Female 18-44	Female 45-54
Male 45-54	0.0000				
Male 55-64	0.0000	0.0000			
Female 18-44	0.0000	0.0000	0.0000		
Female 45-54	0.0003	0.0000	0.0000	0.0000	
Female 55-64	0.0000	0.0000	0.0254	0.0000	0.0000
2014					
Sex	Male				
Female	0.0000				
Age (years)	18-44	45-54			
45-54	0.0000				
55-64	0.0000	0.0000			
Sex*Age	Male 18-44	Male 45-54	Male 55-64	Female 18-44	Female 45-54
Male 45-54	0.0000				
Male 55-64	0.0000	0.0000			
Female 18-44	0.0000	0.0000	0.0000		
Female 45-54	0.0000	0.0000	0.0000	0.0000	
Female 55-64	0.0000	0.0000	0.1042	0.0000	0.0000

Supplemental Table S10 (continued). Statistical Comparison (Wald Test) of the Annual Prevalence of Non-Vision-Threatening Diabetes-Related Eye Disease to Determine Differences by Sex, Age Groups, and Six Age and Sex Groups

2015					
Sex	Male				
Female	0.0000				
Age	18-44	45-54			
45-54	0.0000				
55-64	0.0000	0.0000			
Sex*Age	Male 18-44	Male 45-54	Male 55-64	Female 18-44	Female 45-54
Male 45-54	0.0000				
Male 55-64	0.0000	0.0000			
Female 18-44	0.0000	0.0000	0.0000		
Female 45-54	0.0001	0.0000	0.0000	0.0000	
Female 55-64	0.0000	0.0000	0.0062	0.0000	0.0000
2016					
Sex	Male				
Female	0.0000				
Age	18-44	45-54			
45-54	0.0000				
55-64	0.0000	0.0000			
Sex*Age	Male 18-44	Male 45-54	Male 55-64	Female 18-44	Female 45-54
Male 45-54	0.0000				
Male 55-64	0.0000	0.0000			
Female 18-44	0.0000	0.0000	0.0000		
Female 45-54	0.6858	0.0000	0.0000	0.0000	
Female 55-64	0.0000	0.0001	0.0000	0.0000	0.0000
2017					
Sex	Male				
Female	0.0000				
Age	18-44	45-54			
45-54	0.0000				
55-64	0.0000	0.0000			
Sex*Age	Male 18-44	Male 45-54	Male 55-64	Female 18-44	Female 45-54
Male 45-54	0.0000				
Male 55-64	0.0000	0.0000			
Female 18-44	0.0000	0.0000	0.0000		
Female 45-54	0.0503	0.0000	0.0000	0.0000	
Female 55-64	0.0000	0.0000	0.0000	0.0000	0.0000

Supplemental Table S10 (continued). Statistical Comparison (Wald Test) of the Annual Prevalence of Non-Vision-Threatening Diabetes-Related Eye Disease to Determine Differences by Sex, Age Groups, and Six Age and Sex Groups

2018					
Sex	Male				
Female	0.0000				
Age	18-44	45-54			
45-54	0.0000				
55-64	0.0000	0.0000			
Sex*Age	Male 18-44	Male 45-54	Male 55-64	Female 18-44	Female 45-54
Male 45-54	0.0000				
Male 55-64	0.0000	0.0000			
Female 18-44	0.0000	0.0000	0.0000		
Female 45-54	0.5621	0.0000	0.0000	0.0000	
Female 55-64	0.0000	0.0079	0.0000	0.0000	0.0000

Supplemental Table S11. Annual prevalence of having ≥1 claim for diabetic macular edema or vision-threatening diabetic retinopathy (DME/VTDR) among adults 18–64 years of age with diabetes, IBM® MarketScan® Database (2009–2018)																		
	All			Males			Females			18-44 years			45-54 years			55-64 years		
Year	%	95% CI		%	95% CI		%	95% CI		%	95% CI		%	95% CI		%	95% CI	
2009	2.07	2.05	2.10	2.09	2.05	2.12	2.06	2.02	2.10	1.60	1.55	1.66	1.97	1.93	2.02	2.31	2.27	2.35
2010	1.99	1.96	2.02	2.03	1.99	2.06	1.95	1.91	1.99	1.56	1.50	1.62	1.93	1.88	1.98	2.18	2.14	2.22
2011	1.84	1.81	1.86	1.90	1.86	1.93	1.78	1.74	1.81	1.50	1.45	1.55	1.76	1.72	1.80	2.01	1.98	2.05
2012	2.13	2.11	2.15	2.21	2.18	2.25	2.04	2.01	2.07	1.63	1.58	1.68	2.04	2.00	2.08	2.37	2.34	2.41
2013	2.20	2.17	2.23	2.29	2.26	2.33	2.10	2.06	2.14	1.72	1.66	1.78	2.12	2.07	2.17	2.42	2.38	2.46
2014	2.46	2.43	2.49	2.57	2.53	2.61	2.34	2.30	2.38	1.92	1.86	1.98	2.37	2.32	2.42	2.72	2.68	2.76
2015	2.86	2.82	2.89	3.01	2.96	3.06	2.69	2.64	2.73	2.14	2.07	2.21	2.78	2.72	2.84	3.16	3.11	3.21
2016	3.24	3.21	3.28	3.44	3.39	3.49	3.03	2.98	3.08	2.37	2.30	2.45	3.17	3.11	3.24	3.60	3.55	3.65
2017	3.28	3.24	3.32	3.47	3.42	3.53	3.07	3.02	3.12	2.47	2.39	2.55	3.21	3.14	3.28	3.61	3.56	3.67
2018	3.38	3.34	3.42	3.59	3.54	3.65	3.15	3.09	3.21	2.54	2.46	2.63	3.32	3.25	3.39	3.72	3.66	3.78

Abbreviations: CI (Confidence Interval). Diabetic macular edema or vision-threatening diabetic retinopathy (DME/VTDR) was defined as diabetic macular edema, severe non-proliferative diabetic retinopathy (with or without diabetic macular edema), or proliferative diabetic retinopathy (with or without diabetic macular edema).

Supplemental Table S11 (continued). Annual prevalence of having ≥1 claim for diabetic macular edema or vision-threatening diabetic retinopathy (DME/VTDR) among adults 18–64 years of age with diabetes, IBM® MarketScan® Database (2009–2018)																		
	Males aged 18-44 years			Males aged 45-54 years			Males aged 55-64 years			Females aged 18-44 years			Females aged 45-54 years			Females aged 55-64 years		
Year	%	95% CI		%	95% CI		%	95% CI		%	95% CI		%	95% CI		%	95% CI	
2009	1.79	1.71	1.88	1.99	1.93	2.06	2.25	2.19	2.30	1.42	1.35	1.50	1.95	1.88	2.01	2.38	2.32	2.44
2010	1.72	1.63	1.80	1.98	1.91	2.04	2.16	2.10	2.22	1.40	1.33	1.48	1.87	1.81	1.94	2.21	2.15	2.27
2011	1.71	1.63	1.78	1.86	1.80	1.92	1.98	1.94	2.03	1.30	1.24	1.37	1.65	1.60	1.71	2.04	1.99	2.09
2012	1.83	1.75	1.90	2.18	2.12	2.23	2.36	2.32	2.41	1.43	1.37	1.50	1.89	1.83	1.94	2.38	2.33	2.43
2013	1.96	1.87	2.05	2.26	2.19	2.32	2.43	2.37	2.49	1.49	1.42	1.57	1.97	1.91	2.04	2.42	2.36	2.48
2014	2.16	2.08	2.25	2.55	2.49	2.62	2.72	2.67	2.78	1.68	1.61	1.76	2.17	2.10	2.24	2.71	2.65	2.77
2015	2.43	2.32	2.54	2.98	2.89	3.07	3.23	3.16	3.30	1.86	1.76	1.95	2.56	2.48	2.65	3.09	3.02	3.16
2016	2.67	2.55	2.79	3.48	3.39	3.58	3.67	3.59	3.74	2.09	1.99	2.20	2.83	2.75	2.93	3.52	3.45	3.60
2017	2.80	2.68	2.93	3.52	3.42	3.62	3.66	3.58	3.74	2.15	2.04	2.26	2.88	2.79	2.98	3.56	3.48	3.64
2018	2.84	2.71	2.97	3.64	3.54	3.74	3.81	3.73	3.90	2.26	2.15	2.38	2.96	2.87	3.06	3.62	3.53	3.70

Abbreviations: CI (Confidence Interval). Diabetic macular edema or vision-threatening diabetic retinopathy (DME/VTDR) was defined as diabetic macular edema, severe non-proliferative diabetic retinopathy (with or without diabetic macular edema), or proliferative diabetic retinopathy (with or without diabetic macular edema).

Supplemental Table S12. Annual prevalence of having ≥ 1 claim for any diabetic macular edema (any DME) among adults 18–64 years of age with diabetes, IBM® MarketScan® Database (2009–2018)

	All			Males			Females			18-44 years			45-54 years			55-64 years		
Year	%	95% CI		%	95% CI		%	95% CI		%	95% CI		%	95% CI		%	95% CI	
2009	0.67	0.65	0.68	0.68	0.66	0.70	0.65	0.63	0.68	0.39	0.36	0.41	0.60	0.58	0.63	0.81	0.79	0.83
2010	0.74	0.72	0.76	0.77	0.74	0.79	0.71	0.69	0.73	0.45	0.42	0.49	0.69	0.66	0.71	0.87	0.85	0.90
2011	0.59	0.57	0.60	0.62	0.60	0.64	0.55	0.53	0.57	0.37	0.35	0.40	0.55	0.53	0.57	0.69	0.67	0.71
2012	1.00	0.99	1.02	1.08	1.05	1.10	0.93	0.90	0.95	0.61	0.58	0.64	0.91	0.89	0.94	1.20	1.18	1.23
2013	1.13	1.11	1.15	1.21	1.18	1.24	1.05	1.02	1.07	0.73	0.69	0.77	1.04	1.00	1.07	1.34	1.31	1.37
2014	1.41	1.39	1.43	1.51	1.48	1.54	1.30	1.27	1.33	0.93	0.89	0.97	1.29	1.26	1.33	1.66	1.63	1.69
2015	1.92	1.89	1.95	2.07	2.03	2.11	1.76	1.72	1.80	1.28	1.23	1.34	1.82	1.77	1.87	2.22	2.18	2.26
2016	2.44	2.40	2.47	2.62	2.58	2.67	2.23	2.19	2.28	1.66	1.60	1.73	2.32	2.26	2.38	2.79	2.74	2.84
2017	2.48	2.45	2.52	2.66	2.62	2.71	2.29	2.24	2.34	1.77	1.70	1.84	2.37	2.32	2.43	2.81	2.76	2.86
2018	2.60	2.57	2.64	2.80	2.75	2.85	2.39	2.34	2.44	1.85	1.78	1.92	2.50	2.44	2.56	2.94	2.89	2.99

Abbreviations: CI (Confidence Interval). Any diabetic macular edema (any DME) was characterized as any diagnosis of diabetic macular edema, by itself or with any stage of diabetic retinopathy.

Supplemental Table S12 (continued). Annual prevalence of having ≥ 1 claim for any diabetic macular edema (any DME) among adults 18–64 years of age with diabetes, IBM® MarketScan® Database (2009–2018)

	Males aged 18-44 years			Males aged 45-54 years			Males aged 55-64 years			Females aged 18-44 years			Females aged 45-54 years			Females aged 55-64 years		
Year	%	95% CI		%	95% CI		%	95% CI		%	95% CI		%	95% CI		%	95% CI	
2009	0.48	0.44	0.52	0.62	0.59	0.66	0.79	0.75	0.82	0.30	0.27	0.33	0.58	0.55	0.62	0.84	0.80	0.87
2010	0.55	0.50	0.60	0.72	0.68	0.76	0.87	0.83	0.90	0.36	0.32	0.40	0.65	0.61	0.69	0.88	0.85	0.92
2011	0.47	0.43	0.51	0.61	0.58	0.65	0.68	0.65	0.71	0.28	0.25	0.31	0.48	0.45	0.52	0.70	0.67	0.73
2012	0.74	0.70	0.79	1.03	0.99	1.07	1.22	1.18	1.25	0.49	0.45	0.53	0.79	0.75	0.82	1.19	1.15	1.23
2013	0.90	0.84	0.96	1.15	1.10	1.19	1.35	1.31	1.39	0.56	0.52	0.61	0.92	0.88	0.97	1.32	1.27	1.36
2014	1.15	1.09	1.22	1.44	1.39	1.49	1.68	1.63	1.72	0.72	0.67	0.77	1.14	1.09	1.19	1.64	1.59	1.69
2015	1.54	1.45	1.63	2.02	1.95	2.10	2.28	2.22	2.34	1.04	0.97	1.11	1.59	1.53	1.66	2.15	2.09	2.21
2016	1.96	1.86	2.06	2.61	2.53	2.69	2.85	2.79	2.92	1.38	1.30	1.46	2.01	1.93	2.09	2.72	2.65	2.79
2017	2.11	2.00	2.22	2.66	2.57	2.75	2.85	2.78	2.92	1.45	1.36	1.54	2.06	1.99	2.15	2.77	2.70	2.84
2018	2.14	2.03	2.26	2.79	2.70	2.88	3.03	2.95	3.10	1.57	1.48	1.67	2.18	2.10	2.27	2.84	2.77	2.92

Abbreviations: CI (Confidence Interval). Any diabetic macular edema (any DME) was characterized as any diagnosis of diabetic macular edema, by itself or with any stage of diabetic retinopathy.

Supplemental Table S13. Annual prevalence of having ≥1 claim for non-vision-threatening diabetes-related eye disease among adults 18–64 years of age with diabetes, IBM® MarketScan® Database (2009–2018)

Year	All			Males			Females			18-44 years			45-54 years			55-64 years		
	%	95% CI		%	95% CI		%	95% CI		%	95% CI		%	95% CI		%	95% CI	
2009	8.93	8.88	8.99	9.03	8.95	9.10	8.83	8.76	8.91	7.06	6.95	7.17	8.37	8.28	8.46	9.98	9.90	10.06
2010	8.56	8.50	8.61	8.72	8.65	8.80	8.38	8.30	8.46	6.76	6.65	6.88	8.06	7.97	8.16	9.53	9.45	9.61
2011	8.43	8.38	8.48	8.61	8.55	8.68	8.23	8.16	8.30	6.61	6.50	6.71	7.78	7.70	7.86	9.51	9.44	9.59
2012	8.33	8.29	8.38	8.55	8.49	8.61	8.10	8.04	8.17	6.50	6.40	6.59	7.68	7.61	7.76	9.42	9.36	9.49
2013	8.24	8.19	8.30	8.51	8.44	8.59	7.95	7.88	8.03	6.44	6.33	6.55	7.69	7.60	7.78	9.26	9.18	9.34
2014	8.53	8.48	8.58	8.80	8.73	8.87	8.24	8.17	8.31	6.61	6.51	6.72	7.98	7.89	8.06	9.59	9.51	9.66
2015	8.17	8.11	8.23	8.46	8.38	8.54	7.86	7.78	7.94	6.23	6.11	6.35	7.58	7.48	7.68	9.25	9.17	9.34
2016	6.01	5.96	6.06	6.35	6.28	6.42	5.64	5.58	5.71	4.75	4.64	4.86	5.69	5.61	5.78	6.67	6.60	6.74
2017	5.92	5.86	5.97	6.23	6.16	6.31	5.57	5.50	5.64	4.57	4.46	4.68	5.60	5.51	5.69	6.61	6.53	6.68
2018	5.96	5.91	6.01	6.33	6.26	6.40	5.56	5.49	5.64	4.66	4.55	4.78	5.67	5.58	5.76	6.62	6.54	6.70

Abbreviations: CI (Confidence Interval). Non-vision-threatening diabetes-related eye disease was characterized as background diabetic retinopathy, non-proliferative diabetic retinopathy (not otherwise specified), unspecified diabetic retinopathy without macular edema, mild non-proliferative diabetic retinopathy (without diabetic macular edema), moderate non-proliferative diabetic retinopathy (without diabetic macular edema), diabetes with ophthalmic manifestations, or other diabetic ophthalmic complication.

Supplemental Table S13 (continued). Annual prevalence of having ≥1 claim for non-vision-threatening diabetes-related eye disease among adults 18–64 years of age with diabetes, IBM® MarketScan® Database (2009–2018)

Year	Males aged 18-44 years			Males aged 45-54 years			Males aged 55-64 years			Females aged 18-44 years			Females aged 45-54 years			Females aged 55-64 years		
	%	95% CI		%	95% CI		%	95% CI		%	95% CI		%	95% CI		%	95% CI	
2009	7.44	7.28	7.61	8.57	8.45	8.70	9.85	9.74	9.96	6.70	6.55	6.86	8.14	8.02	8.27	10.13	10.01	10.24
2010	7.26	7.09	7.43	8.33	8.20	8.46	9.47	9.36	9.58	6.29	6.13	6.45	7.78	7.64	7.91	9.60	9.48	9.72
2011	7.14	6.99	7.29	8.05	7.93	8.16	9.47	9.37	9.58	6.10	5.96	6.24	7.50	7.38	7.61	9.55	9.45	9.66
2012	6.94	6.80	7.08	8.01	7.90	8.11	9.44	9.34	9.53	6.07	5.94	6.20	7.33	7.22	7.44	9.41	9.31	9.51
2013	6.92	6.76	7.08	8.05	7.93	8.17	9.34	9.24	9.45	5.97	5.82	6.12	7.30	7.17	7.42	9.17	9.06	9.28
2014	7.12	6.96	7.27	8.37	8.25	8.49	9.64	9.54	9.75	6.13	5.99	6.28	7.55	7.43	7.67	9.52	9.41	9.63
2015	6.72	6.54	6.90	7.95	7.82	8.09	9.36	9.25	9.48	5.76	5.60	5.93	7.17	7.04	7.31	9.13	9.01	9.25
2016	5.20	5.04	5.37	6.10	5.98	6.23	6.89	6.79	6.99	4.31	4.17	4.46	5.25	5.13	5.37	6.43	6.33	6.53
2017	4.98	4.81	5.15	5.98	5.85	6.11	6.81	6.71	6.92	4.18	4.03	4.33	5.19	5.06	5.31	6.37	6.27	6.48
2018	5.13	4.97	5.31	6.10	5.97	6.23	6.87	6.77	6.98	4.21	4.06	4.37	5.20	5.07	5.33	6.33	6.22	6.44

Abbreviations: CI (Confidence Interval). Non-vision-threatening diabetes-related eye disease was characterized as background diabetic retinopathy, non-proliferative diabetic retinopathy (not otherwise specified), unspecified diabetic retinopathy without macular edema, mild non-proliferative diabetic retinopathy (without diabetic macular edema), moderate non-proliferative diabetic retinopathy (without diabetic macular edema), diabetes with ophthalmic manifestations, or other diabetic ophthalmic complication.

Supplemental Table S14. Annual prevalence of having ≥1 claim for treatment among adults 18–64 years with diabetes, IBM® MarketScan® Database (2009–2018)															
	Anti-VEGF injections			Laser photocoagulation			Vitrectomy			Retinal detachment repair			Anti-VEGF or laser photocoagulation		
Year	%	95% CI		%	95% CI		%	95% CI		%	95% CI		%	95% CI	
Among patients with any diabetic macular edema															
2009	7.95	7.16	8.81	51.32	49.80	52.83	1.72	1.37	2.17	0.77	0.54	1.08	54.67	53.15	56.17
2010	17.27	16.09	18.51	47.80	46.15	49.46	1.28	0.97	1.68	0.61	0.40	0.93	55.37	53.72	57.01
2011	18.50	17.16	19.91	33.48	31.79	35.20	0.76	0.50	1.14	0.26	0.13	0.51	44.04	42.26	45.83
2012	26.96	25.92	28.03	36.09	34.92	37.27	1.09	0.88	1.35	0.79	0.59	1.05	51.68	50.46	52.90
2013	30.05	28.88	31.24	30.97	29.77	32.20	0.81	0.62	1.05	0.73	0.54	1.00	50.25	48.93	51.56
2014	27.63	26.64	28.65	26.10	25.11	27.12	0.52	0.39	0.69	0.47	0.34	0.66	45.19	44.05	46.33
2015	36.12	35.27	36.98	27.69	26.90	28.50	2.47	2.21	2.77	1.79	1.56	2.06	49.88	48.98	50.77
2016	29.83	29.11	30.56	20.83	20.19	21.49	1.27	1.10	1.47	0.91	0.77	1.07	40.74	39.96	41.53
2017	32.01	31.25	32.78	18.57	17.94	19.23	1.16	1.00	1.34	0.78	0.64	0.94	41.38	40.57	42.19
2018	33.74	32.97	34.52	16.56	15.96	17.18	1.11	0.95	1.29	0.68	0.56	0.83	41.58	40.77	42.39
Among patients with vision-threatening diabetic retinopathy with diabetic macular edema															
2009	18.66	17.37	20.02	68.31	66.71	69.87	12.94	11.84	14.13	6.83	6.02	7.74	72.71	71.16	74.19
2010	33.82	32.22	35.46	65.58	63.94	67.18	13.78	12.62	15.02	6.89	6.05	7.84	75.33	73.83	76.78
2011	36.62	35.11	38.16	53.21	51.62	54.78	9.70	8.80	10.69	4.23	3.63	4.94	66.93	65.42	68.40
2012	46.43	45.25	47.61	56.25	55.07	57.41	10.87	10.16	11.63	6.45	5.88	7.07	73.79	72.74	74.81
2013	49.93	48.66	51.20	51.61	50.34	52.87	10.00	9.26	10.79	5.69	5.11	6.32	72.52	71.37	73.63
2014	49.44	48.39	50.50	48.32	47.26	49.37	8.74	8.16	9.36	5.15	4.69	5.65	70.78	69.81	71.73
2015	51.49	50.43	52.55	43.63	42.58	44.69	8.16	7.59	8.77	5.90	5.41	6.44	70.31	69.33	71.27
2016	50.63	49.65	51.61	38.95	38.00	39.91	7.95	7.42	8.50	6.16	5.69	6.67	67.09	66.16	68.00
2017	55.11	54.11	56.11	35.26	34.30	36.23	7.17	6.66	7.71	5.94	5.47	6.45	68.73	67.79	69.66
2018	57.32	56.32	58.31	31.45	30.52	32.39	7.04	6.54	7.58	5.00	4.57	5.47	68.34	67.40	69.27
Among patients with vision-threatening diabetic retinopathy without diabetic macular edema															
2009	3.88	3.59	4.20	33.03	32.30	33.77	9.33	8.89	9.79	4.98	4.65	5.33	34.36	33.63	35.11
2010	5.41	5.02	5.82	31.68	30.86	32.50	8.22	7.75	8.72	4.83	4.46	5.23	33.58	32.76	34.42
2011	8.24	7.81	8.68	28.76	28.06	29.48	6.52	6.14	6.92	3.37	3.10	3.67	32.20	31.47	32.94
2012	8.22	7.81	8.66	25.08	24.42	25.75	7.61	7.21	8.03	4.55	4.24	4.88	28.71	28.02	29.41
2013	9.06	8.56	9.60	25.58	24.80	26.37	7.33	6.87	7.82	4.39	4.03	4.78	29.50	28.68	30.33
2014	7.60	7.16	8.08	21.98	21.27	22.70	6.34	5.93	6.78	4.16	3.82	4.52	25.58	24.83	26.35
2015	10.85	10.26	11.48	22.63	21.82	23.45	6.52	6.05	7.02	4.27	3.89	4.68	27.96	27.10	28.85
2016	5.55	5.04	6.11	13.88	13.10	14.71	3.59	3.18	4.05	2.51	2.17	2.90	16.76	15.91	17.64
2017	8.19	7.54	8.88	12.92	12.12	13.77	4.17	3.71	4.69	2.85	2.47	3.29	17.85	16.93	18.80
2018	11.27	10.49	12.10	12.71	11.89	13.57	4.16	3.68	4.70	4.16	3.68	4.70	19.60	18.61	20.62

Abbreviations: CI (Confidence Interval), VEGF (Vascular Endothelial Growth Factor).

Supplemental Table S15. Characteristics of MarketScan population (adults 18-64 years), by year

Characteristics	Year									
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total population	16,100,307	13,797,769	17,877,430	20,868,026	16,157,417	17,216,907	12,212,860	12,065,508	10,948,058	10,565,188
Diabetes, %	7.0	7.2	7.0	6.9	6.8	7.1	7.4	7.5	7.5	7.4
Population with diabetes	1,123,930	991,864	1,245,064	1,447,640	1,103,917	1,214,799	906,067	901,129	822,157	779,212
Sex, %										
Male	51.9	52.0	52.4	52.7	52.5	52.5	51.5	51.6	51.9	52.9
Female	48.1	48.0	47.6	47.3	47.5	47.5	48.5	48.4	48.1	47.1
Age, %										
18–44 years	17.6	17.7	18.0	18.0	17.8	17.6	17.2	16.4	16.5	16.9
45–54 years	33.0	32.8	33.0	32.7	32.4	32.5	31.8	30.9	31.1	31.4
55–64 years	49.4	49.6	49.0	49.3	49.9	49.9	51.0	52.6	52.4	51.6