

## Supplementary Online Content

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This supplementary material has been provided by the authors to give readers additional information about their work.

**eTable 1. International Classification of Diseases-9th Revision-Clinical Modification (ICD-9-CM) and Current Procedural Terminology (CPT) Codes Included in Definition of Cataract and Related Procedures**

<b>Condition</b>	<b>Eligible ICD-9 Diagnosis Code</b>
Cataract	366.x
Pseudophakia	V43.1
Severe cataract	366.13,14,17,18,19
<b>Procedure</b>	<b>Eligible CPT Code</b>
Simple cataract surgery	66984
Complex cataract surgery	66982
Secondary cataract removal	66830
Removal of lens material	66840, 66850, 66852, 66920, 66930, 66940
Intracapsular cataract surgery	66983
<b>Procedure</b>	<b>Eligible ICD-9 Procedure Code</b>
Insertion of intraocular lens	13.71
Phacoemulsification and aspiration of cataract	13.41
Mechanical phacofragmentation and other aspiration of cataract	13.43
Other cataract extraction	13.69
Intracapsular cataract surgery	13.19

**eTable 2. Diseases Included in Mortality Attributed to Specific Systemic Conditions**

<b>Type of Mortality</b>	<b>Included Diseases</b>
Vascular death	Definite coronary heart disease, cerebrovascular disease, pulmonary embolism, possible coronary heart disease, other cardiovascular disease, unknown cardiovascular disease
Cancer death	Breast cancer, ovarian cancer, endometrial cancer, colon cancer, rectosigmoid cancer, rectum cancer, uterine cancer, other cancer death, unknown cancer site, lung cancer, non-Hodgkin's lymphoma, leukemia, brain cancer, multiple myeloma, accessory sinus cancer, adrenal gland cancer, anal cancer, appendix cancer, biliary tract cancer, bladder cancer, bone-limb cancer, bone non-limb cancer, central nervous system cancer, cervical cancer, connective tissue cancer, endocrine gland cancer, esophageal cancer, eye and adnexal cancer, gall bladder cancer, genital organ cancer, gum cancer, heart cancer, hypopharynx cancer, kidney cancer, larynx cancer, liver cancer, lymph node cancer, Hodgkin's lymphoma, melanoma, meninges cancer, nasopharynx cancer, oral cancer, oropharynx cancer, other digestive cancer, other lip cancer, palate cancer, parotid gland cancer, peripheral nerve cancer, peritoneum cancer, renal pelvis cancer, salivary gland cancer, small intestine cancer, stomach cancer, thymus cancer, thyroid cancer, tongue cancer, tonsil cancer, ureter cancer, urinary organ cancer, vaginal cancer, vulva cancer
Accident-related death	Accident
Neurologic death	Alzheimer's disease, amyotrophic lateral sclerosis, Parkinson's disease
Pulmonary death	Chronic obstructive pulmonary disease, pulmonary fibrosis
Infection-related death	Pneumonia, sepsis

**eTable 3. International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) Codes Included in the Definition of Comorbidities**

<b>Comorbidity</b>	<b>Eligible ICD-9 Codes</b>
Myocardial Infarction	410-412.x
Congestive Heart Failure	398.91, 402.x, 404.x, 428.x
Peripheral Vascular Disease	440.24, 443.81, 443.89, 443.9, 785.4
Cerebrovascular Disease	430-438.x,
Dementia	290.x, 291.2, 292.82, 294.1, 294.8
Chronic Pulmonary Disease	490-496.x, 500-505.x, 506.4, 508.1
Rheumatologic Disease	710.x, 714.x, 720.x, 725.x
Peptic Ulcer Disease	531-534.x
Cirrhosis	571.x
Hepatic Failure	070.x, 456.x, 570.x, 572.x
Immunosuppression	279.9
Diabetes Mellitus	250.0-3x, 250.8-9x
Diabetes Mellitus w/ Complications	250.4-7x
Hemi/Paraplegia	342-344.x
Chronic Renal Disease	403-404.x, 582-583.x, 585-586.x, 588.x, 593.9
Malignant Neoplasms	140-172.x, 174-176.x 179-195.x
Multiple Myeloma/Leukemia	203, 204, 205, 206,207,207208
Lymphomas	200-202.x
Metastatic Solid Tumor	196-198.x, 199.0-1x
AIDS	042-043.x
Glaucoma	365.x
Diabetes Mellitus with Ophthalmic Manifestations	250.5x, 362.0x
Age-Related Macular Degeneration	362.50-52

**eTable 4. Systemic and Ocular Comorbidities Collected within the Women's Health Initiative (WHI) and Medicare Databases**

<b>Comorbidity</b>	<b>Available in WHI</b>	<b>Available in Medicare</b>
Myocardial Infarction	X	X
Congestive Heart Failure	X	X
Peripheral Vascular Disease	X	X
Cerebrovascular Disease	X	X
Dementia		X
Chronic Pulmonary Disease	X	X
Rheumatologic Disease	X	X
Peptic Ulcer Disease	X	X
Cirrhosis		X
Hepatic Failure		X
Immunosuppression	X	X
Diabetes Mellitus		X
Diabetes Mellitus w/ Complications		X
Hemi/Paraplegia		X
Chronic Renal Disease		X
Malignant Neoplasms	X	X
Multiple Myeloma/Leukemia	X	X
Lymphomas	X	X
Metastatic Solid Tumor		X
AIDS		X
Glaucoma		X
Diabetes Mellitus with Ophthalmic Manifestations		X
Age-Related Macular Degeneration		X

**eTable 5. Baseline Characteristics of Patients With Cataract in the Women's Health Initiative from 1993-2013 (n=74,044)**

	<b>Surgery Group (n=41,735)</b>		<b>Non-surgery Group (n=32,309)</b>
<b>Age at Time of Cataract Diagnosis (Years)</b>			
65-69	19,035 (45.6)		17,948 (55.6)
70-74	14,642 (35.1)		9,241 (28.6)
75-79	6,826 (16.4)		3,963 (12.3)
80-84	1,095 (2.6)		927 (2.9)
≥85	137 (0.3)		230 (0.7)
<b>WHI Study Arm</b>			
Clinical Trial	17,719 (42.5)		14,138 (43.8)
Observational Study	24,016 (57.5)		18,171 (56.2)
<b>Race</b>			
White	36,992 (88.9)		27,438 (85.1)
Black/African American	2,495 (6.0)		2,798 (8.7)
Asian/Pacific Islander	798 (1.9)		712 (2.2)
Hispanic/Latino	855 (2.1)		868 (2.7)
American Indian/Alaskan Native	122 (0.3)		110 (0.3)
Other	368 (0.9)		306 (1.0)
Unknown	105 (0.2)		77 (0.2)
<b>Region of United States Residence</b>			
Northeast	9,610 (23.0)		8,585 (26.6)
West	8,807 (21.1)		6,621 (20.5)
Midwest	10,682 (25.6)		8,509 (26.3)
South	12,636 (30.3)		8,594 (26.6)
<b>Education Level</b>			
High School or Less <sup>a</sup>	9,504 (22.8)		6,767 (20.9)
More than High School <sup>b</sup>	32,041 (76.8)		25,379 (78.6)
Unknown	190 (0.5)		163 (0.5)
<b>Annual Income</b>			
<\$50,000	24,867 (59.6)		17,296 (53.5)
≥\$50,000	15,241 (36.5)		13,820 (42.8)
Unknown	1,627 (3.9)		1,193 (3.7)
<b>Health Insurance at WHI Study Baseline</b>			
No Insurance	1,046 (2.5)		1,145 (3.5)
Medicare or MediCal Only	4,307 (10.3)		2,517 (7.8)
Private, Health Maintenance Organization (HMO), Military, or Other Insurance <sup>c</sup>	36,382 (87.2)		28,647 (88.7)
<b>Utilization of Health Prevention Services</b>			
Mammogram	40,324 (96.7)		31,141 (96.3)
Pap Smear	38,070 (91.2)		29,571 (91.5)
<b>Charlson Comorbidity Index (CCI) Score</b>			
	<b>At Time of Cataract Surgery</b>	<b>At Time of Cataract Diagnosis</b>	
0	7,797 (18.7)	14,673 (35.2)	11,925 (36.9)
1-2	15,122 (36.2)	17,016 (40.8)	12,728 (39.4)
3-4	10,241 (24.5)	7,187 (17.2)	5,032 (15.6)
≥5	8,575 (20.6)	2,859 (6.9)	2,624 (8.1)
<b>Systemic Comorbidities in the CCI</b>			
	<b>At Time of Cataract Surgery</b>	<b>At Time of Cataract Diagnosis</b>	
Myocardial Infarction	4,777 (11.5)	4,043 (9.7)	2,228 (6.9)
Congestive Heart Failure	6,734 (16.1)	2,993 (7.2)	2,367 (7.3)
Peripheral Vascular Disease	10,499 (25.2)	4,395 (10.5)	3,782 (11.7)
Cerebrovascular Disease	11,946 (28.6)	4,719 (11.3)	4,225 (13.1)
Dementia	1,222 (2.9)	259 (0.6)	515 (1.6)
Chronic Pulmonary Disease <sup>d</sup>	15,238 (36.5)	8,948 (21.4)	6,511 (20.2)
Chronic Renal Disease	2,300 (5.5)	618 (1.5)	773 (2.4)
Connective Tissue Disease	5,668 (13.6)	2,791 (6.7)	2,072 (6.4)

Peptic Ulcer Disease	5,008 (12.0)	3,944 (9.5)	2,595 (8.0)
Diabetes Mellitus (DM) Without Complications	10,610 (25.4)	5,416 (13.0)	5,069 (15.7)
DM With Complications	200 (0.5)	127 (0.3)	118 (0.4)
Hemiplegia	916 (2.2)	404 (1.0)	317 (1.0)
Leukemia/Multiple Myeloma	517 (1.2)	279 (0.7)	252 (0.8)
Lymphoma	714 (1.7)	432 (1.0)	329 (1.0)
Solid Malignant Neoplasm	12,472 (29.9)	11,202 (26.8)	7,616 (23.6)
Metastatic Solid Malignant Neoplasm	1,422 (3.4)	608 (1.5)	672 (2.1)
Mild Liver Disease	4,142 (9.9)	1,569 (3.8)	1,732 (5.4)
Moderate/Severe Liver Disease	81 (0.2)	34 (0.1)	23 (0.1)
Acquired Immune Deficiency Syndrome	53 (0.1)	23 (0.0)	16 (0.1)
<b>Ocular Comorbidities</b>			
Age-Related Macular Degeneration	10,993 (26.3)		3,702 (11.5)
Glaucoma	13,173 (31.6)		5,639 (17.5)
Severe Cataract <sup>e</sup>	18,611 (44.6)		2,470 (7.6)
<b>Smoking Status</b>			
Never smoker	21,206 (50.8)		16,534 (51.2)
Past smoker	17,676 (42.3)		13,487 (41.7)
Current smoker	2,312 (5.5)		1,910 (5.9)
Unknown	541 (1.3)		378 (1.2)
<b>Alcohol Intake</b>			
Non-Drinker	4,747 (11.4)		3,395 (10.5)
Past Drinker	7,533 (18.0)		5,485 (17.0)
<1 Drink Per Month	4,807 (11.5)		3,884 (12.0)
<1 Drink Per Week	8,419 (20.2)		6,712 (20.8)
1 to <7 Drinks Per Week	10,709 (25.6)		8,703 (26.9)
7+ Drinks Per Week	5,225 (12.5)		3,905 (12.1)
Unknown	295 (0.7)		225 (0.7)
<b>Body Mass Index</b>			
<25	15,104 (36.2)		11,856 (36.7)
25-29	12,537 (30.0)		9,364 (29.0)
>29	14,094 (33.8)		11,089 (34.3)
<b>Metabolic Equivalent Tasks (METs) Per Week</b>			
0	5,867 (14.0)		4,587 (14.2)
1-4	8,091 (19.3)		6,326 (19.6)
5-12	25,726 (61.6)		19,811 (61.3)
Unknown	2,051 (4.9)		1,585 (4.9)

<sup>a</sup> Includes no school, 1-4 years of grade school, 5-8 years of grade school, some high school, high school diploma or GED

<sup>b</sup> Includes vocational/training school, some college/associate degree, college graduate/baccalaureate degree, some post-graduate or professional, master's degree, doctoral degree

<sup>c</sup> Includes individuals who also have simultaneous Medicare or MediCal coverage

<sup>d</sup> Includes chronic bronchitis, emphysema, asthma, bronchiectasis, alveolitis, chronic airway obstruction, pneumoconioses, and asbestosis

<sup>e</sup> Includes anterior and posterior subcapsular cataracts, total/mature cataract, hypermature cataract, combined forms of cataract.

**eTable 6. Source of Diagnosis for Selected Systemic Comorbidities Dually Assessed in the Women’s Health Initiative (WHI) and Medicare Databases**

<b>Comorbidity</b>	<b>Number (%) Diagnosed in WHI Only</b>	<b>Number (%) Diagnosed in Medicare Only</b>	<b>Number (%) Diagnosed in Both WHI and Medicare</b>	<b>P Value</b>
Myocardial Infarction (n=7,005)	3,632 (51.8)	1,907 (27.2)	1,466 (20.9)	<.0001
Congestive Heart Failure (n=9,101)	402 (4.4)	7,542 (82.9)	1,157 (12.7)	<.0001
Cerebrovascular Disease (n=16,171)	85 (0.5)	15,090 (93.3)	996 (6.2)	<.0001
Solid Malignant Neoplasm (20,088)	8,182 (40.7)	3,716 (18.5)	8,190 (40.8)	<.001