

#### 5.4.4 Risk/Case-Mix Adjustment Modeling and/or Stratification Results

##### #3565 Standardized Emergency Department Encounter Ratio (SEDR) for Dialysis Facilities

Please see section 5.4.6 for a list of the final set of risk factors used in the model.

Covariate	Coefficient	P-value	Hazard Ratio
Medicare Advantage (MA) coverage	0.071	<.0001	1.07
Age in period	-0.026	<.0001	N/A*
Age in period, Squared	0.000	<.0001	N/A*
Diabetes	0.3306	<.0001	N/A*
Female	0.424	<.0001	N/A*
Patient in a Nursing Home <90 days in last 365 days	0.007	0.0022	1.01
Patient in a Nursing Home 90 days or more in last 365 days	-0.154	<.0001	0.86
BMI: Underweight	-0.008	0.0998	0.99
BMI: Overweight	-0.014	<.0001	0.99
BMI: Obese	-0.046	<.0001	0.96
Year: 2021	-0.028	<.0001	0.97
Year: 2022	-0.016	<.0001	0.98
Year: 2023	-0.010	<.0001	0.99
Female*Diabetes	0.032	<.0001	N/A*
Age*Diabetes	-0.009	<.0001	N/A*
Age Squared*Diabetes	0.000	<.0001	N/A*
Age*Female	-0.013	<.0001	N/A*
Age Squared*Female	0.000	<.0001	N/A*
Incident Comorbidity: Atherosclerotic heart disease	0.019	<.0001	1.02
Incident Comorbidity: Other cardiac disease	-0.001	0.5257	1.00
Incident Comorbidity: Congestive heart failure	0.029	<.0001	1.03

<b>Covariate</b>	<b>Coefficient</b>	<b>P-value</b>	<b>Hazard Ratio</b>
Incident Comorbidity: Inability to ambulate	-0.003	0.5	1.00
Incident Comorbidity: Chronic obstructive pulmonary disease	0.035	<.0001	1.04
Incident Comorbidity: Inability to transfer	0.0051	0.4342	1.01
Incident Comorbidity: Malignant neoplasm, cancer	-0.012	0.0006	0.99
Incident Comorbidity: Diabetes (all types including cause of ESRD)	0.021	<.0001	1.02
Incident Comorbidity: Peripheral vascular disease	0.007	0.0135	1.01
Incident Comorbidity: Cerebrovascular disease, CVA, TIA	0.052	<.0001	1.05
Incident Comorbidity: Tobacco use (current smoker)	0.079	<.0001	1.08
Incident Comorbidity: Alcohol dependence	0.000	0.9991	1.00
Incident Comorbidity: Drug dependence	0.231	<.0001	1.30
Incident Comorbidity: At least one of the incident comorbidities listed	0.013	<.0001	1.01
Incident Comorbidity: No Medical Evidence (CMS-2728) Form	-0.057	0.0011	0.95
Prevalent Comorbidity: Group 4: HIV infection	0.094	<.0001	1.10
Prevalent Comorbidity: Group 5: Hepatitis	0.075	<.0001	1.08
Prevalent Comorbidity: Group 6: Viral infection	0.015	<.0001	1.02
Prevalent Comorbidity: Group 7: Other infections; including parasitic	0.022	<.0001	1.02
Prevalent Comorbidity: Group 10: Melanomas of skin	-0.074	<.0001	0.93
Prevalent Comorbidity: Group 17: Benign neoplasm of uterus	-0.048	<.0001	0.95
Prevalent Comorbidity: Group 19: Diabetes mellitus without complication	0.041	<.0001	1.04

<b>Covariate</b>	<b>Coefficient</b>	<b>P-value</b>	<b>Hazard Ratio</b>
Prevalent Comorbidity: Group 28: Meningitis (except that caused by tuberculosis or sexually transmitted disease)	-0.118	<.0001	0.89
Prevalent Comorbidity: Group 32: Otitis media and related conditions	0.081	<.0001	1.08
Prevalent Comorbidity: Group 33: Other nervous system disorders	0.027	<.0001	1.03
Prevalent Comorbidity: Group 36: Essential hypertension	0.101	<.0001	1.11
Prevalent Comorbidity: Group 37: Hypertension with complications and secondary hypertension	0.098	<.0001	1.10
Prevalent Comorbidity: Group 38: Acute myocardial infarction	0.047	<.0001	1.05
Prevalent Comorbidity: Group 39: Nonspecific chest pain	0.218	<.0001	1.24
Prevalent Comorbidity: Group 40: Pulmonary heart disease	0.025	<.0001	1.03
Prevalent Comorbidity: Group 41: Other and ill-defined heart disease	0.041	<.0001	1.04
Prevalent Comorbidity: Group 42: Conduction disorders	0.055	<.0001	1.06
Prevalent Comorbidity: Group 47: Other circulatory disease	0.035	<.0001	1.04
Prevalent Comorbidity: Group 48: Phlebitis; thrombophlebitis and thromboembolism	0.020	<.0001	1.02
Prevalent Comorbidity: Group 51: Acute and chronic tonsillitis	0.063	<.0001	1.07
Prevalent Comorbidity: Group 52: Chronic obstructive pulmonary disease and bronchiectasis	0.057	<.0001	1.06
Prevalent Comorbidity: Group 56: Other lower respiratory disease	0.116	<.0001	1.12
Prevalent Comorbidity: Group 57: Other upper respiratory disease	0.016	<.0001	1.02

<b>Covariate</b>	<b>Coefficient</b>	<b>P-value</b>	<b>Hazard Ratio</b>
Prevalent Comorbidity: Group 59: Disorders of teeth and jaw	0.084	<.0001	1.09
Prevalent Comorbidity: Group 60: Esophageal disorders	0.016	<.0001	1.02
Prevalent Comorbidity: Group 61: Gastroduodenal ulcer (except hemorrhage)	0.034	<.0001	1.04
Prevalent Comorbidity: Group 66: Anal and rectal conditions	0.042	<.0001	1.04
Prevalent Comorbidity: Group 67: Peritonitis and intestinal abscess	-0.089	<.0001	0.92
Prevalent Comorbidity: Group 69: Pancreatic disorders (not diabetes)	0.090	<.0001	1.09
Prevalent Comorbidity: Group 70: Gastrointestinal hemorrhage	0.031	<.0001	1.03
Prevalent Comorbidity: Group 71: Noninfectious gastroenteritis	0.066	<.0001	1.07
Prevalent Comorbidity: Group 72: Other gastrointestinal disorders	0.023	<.0001	1.02
Prevalent Comorbidity: Group 76: Urinary tract infections	0.044	<.0001	1.05
Prevalent Comorbidity: Group 77: Other diseases of kidney and ureters	0.002	0.3618	1.01
Prevalent Comorbidity: Group 78: Hyperplasia of prostate	0.028	<.0001	1.03
Prevalent Comorbidity: Group 82: Skin and subcutaneous tissue infections	0.048	<.0001	1.05
Prevalent Comorbidity: Group 83: Infective arthritis and osteomyelitis (except that caused by tuberculosis or sexually transmitted disease)	-0.055	<.0001	0.95
Prevalent Comorbidity: Group 89: Sprains and strains	0.115	<.0001	1.12
Prevalent Comorbidity: Group 93: Complication of device; implant or graft	0.035	<.0001	1.04

<b>Covariate</b>	<b>Coefficient</b>	<b>P-value</b>	<b>Hazard Ratio</b>
Prevalent Comorbidity: Group 95: Superficial injury; contusion	0.091	<.0001	1.10
Prevalent Comorbidity: Group 97: Poisoning by psychotropic agents	0.064	<.0001	1.07
Prevalent Comorbidity: Group 98: Other injuries and conditions due to external causes	0.051	<.0001	1.05
Prevalent Comorbidity: Group 99: Syncope	0.065	<.0001	1.07
Prevalent Comorbidity: Group 102: Gangrene	-0.054	<.0001	0.95
Prevalent Comorbidity: Group 103: Shock	-0.176	<.0001	0.84
Prevalent Comorbidity: Group 104: Nausea and vomiting	0.123	<.0001	1.13
Prevalent Comorbidity: Group 105: Abdominal pain	0.167	<.0001	1.18
Prevalent Comorbidity: Group 106: Malaise and fatigue	0.077	<.0001	1.08
Prevalent Comorbidity: Group 107: Allergic reactions	0.082	<.0001	1.09
Prevalent Comorbidity: Group 115: Anxiety disorders	0.069	<.0001	1.07
Prevalent Comorbidity: Group 116: Attention-deficit conduct and disruptive behavior disorders	0.106	<.0001	1.11
Prevalent Comorbidity: Group 118: Developmental disorders	0.085	<.0001	1.09
Prevalent Comorbidity: Group 121: Mood disorders	0.029	<.0001	1.03
Prevalent Comorbidity: Group 122: Personality disorders	0.175	<.0001	1.19
Prevalent Comorbidity: Group 123: Schizophrenia and other psychotic disorders	0.141	<.0001	1.15
Prevalent Comorbidity: Group 124: Alcohol-related disorders	0.144	<.0001	1.16

<b>Covariate</b>	<b>Coefficient</b>	<b>P-value</b>	<b>Hazard Ratio</b>
Prevalent Comorbidity: Group 125: Suicide and intentional self-inflicted injury	0.143	<.0001	1.15
Prevalent Comorbidity: Group 126: Screening and history of mental health and substance abuse codes	0.044	<.0001	1.05
Prevalent Comorbidity: Group 127: Miscellaneous mental health disorders	0.018	<.0001	1.02
Prevalent Comorbidity: Group 291: Epilepsy; convulsions	0.046	<.0001	1.05
Prevalent Comorbidity: Group 292: Headache; including migraine	0.148	<.0001	1.16
Prevalent Comorbidity: Group 761: Calculus of urinary tract	0.027	<.0001	1.03
Prevalent Comorbidity: Group 841: Other non-traumatic joint disorders	0.067	<.0001	1.09
Prevalent Comorbidity: Group 842: Spondylosis; intervertebral disc disorders; other back problems	0.076	<.0001	1.08
Prevalent Comorbidity: Group 843: Osteoporosis	-0.062	<.0001	0.94
Prevalent Comorbidity: Group 846: Other connective tissue disease	0.060	<.0001	1.06
Prevalent Comorbidity: Insufficient Medicare claims to determine prevalent comorbidities	0.921	<.0001	2.51
*Hazard ratios are not calculated for interaction terms or main effects of variables that have interaction terms.			

Hazard ratios are not shown for interaction terms or main effects of variables that are also included as interaction terms because caution is needed in interpreting these terms. For example, the coefficient for Female cannot be interpreted simply as the difference in risk of ED admission for females compared to males. It is instead the difference in risk for non-diabetic females and non-diabetic males aged 65. The difference in risk for diabetic females vs diabetic males aged 65 is slightly larger as indicated by the positive coefficient for the diabetes by female interaction term.

The table below shows the parameter estimates for patient and area level SDS/SES variables tested based on a model that included these variables along with the original covariates.

**Table SDS/SES 2023**

<b>Covariate</b>	<b>Estimates</b>	<b>P-value</b>	<b>HazardRatio</b>
Race: Black	0.133	<.0001	1.14
Race: AAPI	-0.149	<.0001	0.86
Race: Native American	0.057	<.0001	1.06
Race: Other	0.073	<.0001	1.08
Hispanic Ethnicity	0.017	<.0001	1.018
Dual Eligibility	0.299	<.0001	N/A*
Dual Eligibility*Female	-0.051	<.0001	N/A*
ADI National Rank of Patient's ZIP Code of Residence	0.002	<.0001	1.00

\*Hazard ratios are not shown for interaction terms or main effects of variables that have interaction terms. See below for interpretation.

The Dual Eligibility (DE) main effect can be interpreted as the effect of DE for males. The HR=1.35 meaning that males with dual eligibility have 35% higher risk of ED admission than those without dual eligibility, all else equal. The interaction between Dual Eligibility and Female is negative. This means that the difference in the risk of ED admission for DE females compared to non-DE females is not quite as large as the difference for DE males compared to non-DE males. To calculate the HR for DE females compared to non-DE females, we sum the dual eligibility and dual eligibility by female interaction terms before exponentiating to get a HR ratio of 1.28.