

5.4.6. Interpretation of Risk/Case-mix Factor Findings

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

The following adjustment factors were included in the final model:

- Patient age: Age (continuous); Age squared
- Sex
- Diabetes as cause of ESRD
- ESRD duration: categorized as 91 days-6 months, 6 months-1 year, 1-2 years, 2-3 years, 3-5 years, or 5+ years as of the period start date.
- Medicare Advantage coverage
- Nursing home status in previous 365 days:
 - No Nursing Home care (0 days)
 - Short-term NH care (1 - 89 days)
 - Long-term NH care (90 - 365 days)
- BMI at incidence of ESRD
 - <18.5
 - 18.5-25
 - 25-30
 - ≥30
- Calendar year
- The following incident comorbidities are included. They are taken from the CMS-2728 form. Each comorbidity is included as a separate covariate in the model.
 - Alcohol dependence
 - Atherosclerotic heart disease
 - Cerebrovascular disease
 - Chronic obstructive pulmonary disease
 - Congestive heart failure
 - Diabetes that is not the primary cause of ESRD
 - Drug dependence
 - Inability to ambulate
 - Inability to transfer
 - Malignant neoplasm or cancer
 - Other cardiac disease
 - Peripheral vascular disease
 - Tobacco use (current smoker)
 - No Medical Evidence (CMS-2728) Form
 - At least one of the comorbidities listed
- A set of prevalent comorbidities based on Medicare claims (individual comorbidities categorized into 66 groups).
 - Includes an adjustment for less than 6 months of Medicare covered months in prior calendar year
- Beside main effects, two-way interaction terms between age, sex, and cause of ESRD are also included:
 - Diabetes as cause of ESRD*Sex

- Diabetes as cause of ESRD*Age
- Age*Sex

These patient level covariates were included in the model based on strength of association with the dependent variable (ED visits) suggesting strong predictors of ED events. In addition, the variable definitions are objectively defined using data from national data sets managed by federal agencies and contributed to by all U.S. dialysis facilities and organizations (e.g. EQRS). In addition, prevalent comorbidity groups utilize Medicare claims and Medicare Advantage encounter data.

Risk Adjustment Factors Excluded from the Final Model

- Race: Black
- Race: AAPI
- Race: Native American
- Race: Other
- Hispanic Ethnicity
- Dual Eligibility
- Dual Eligibility*Female
- ADI National Rank of Patient's ZIP Code of Residence

In order to present the most parsimonious, accurate and implementable model, we elected to exclude these covariates as they were found to have very little effect on facility-level flagging (see table below). Specifically, 97.9% of facilities performed the same whether SDS covariates were included or not. For the remainder of facilities, including SDS covariates improved performance for 1.1% of facilities and this was offset by 1.1% of facilities that had lower performance. The sociodemographic variables of race and ADI demonstrated significant, albeit relatively small associations with the patient-level model outcome. While white race was associated with a slightly lower hazard of ED visits, there is concern whether race is a meaningful biological construct and whether there should be an expectation that race is an independent predictor of ED encounters. While the ADI was statistically significant, the impact was very small and near the national norm of 1.00. Finally, we excluded dual eligibility from the model since this is an imperfect proxy for social determinants of health, represents a diverse population, and has geographic inconsistencies for Medicaid eligibility.

	With SDS Covariates		
Without SDS	Better than Expected	As Expected	Worse than Expected
Better than Expected	29 (0.4%)	20 (0.3%)	0 (0.0%)
As Expected	12 (0.2%)	7,004 (93.7%)	58 (0.8%)
Worse than Expected	0 (0.0%)	67 (0.9%)	286 (3.8%)