Evaluation of Association Between Diabetes-Related Quality Measure Achievement and Diabetes Complications in a Medicare Advantage Population

**Background**
- Individuals with Type 2 diabetes mellitus (T2DM) or Type 2 diabetes mellitus (T2DM) may be at risk for a range of complications including neuropathy, nephropathy, and the development of cardiovascular conditions.
- Centers for Medicare & Medicaid Services (CMS) rates Medicare Part C and D plans on several quality measures for the purpose of educating consumers on the quality of Medicare plans in the marketplace including the assessment of plan performance and comparison.
- Specific quality measures for Medicare Part C and D focus on indicators that track quality of medical care and medication management, in diabetic patients.1,2
- It remains unclear whether these CMS quality indications improve outcomes.

**Objectives**
- Assess the achievement of eight diabetes-related quality measures, at the patient level, and examine associations between achievement and patient complications with increased comorbidities.

**Study Design:**
- **Causal Counterfactual Analysis**
- **Diabetes Quality Measures:**
  - Low Race/Ethnicity
  - Income
  - Hypertensive treatments had significant univariate associations were identified for new or worsening diabetes complications associated with diabetes.
- **Medicare Part C and D rates Medicare Part C and D plans on several quality measures for Medicare Part C and D focus on indicators that track quality of medical care and medication management, in diabetic patients.**

**Study Population:**
- **Selection:**
  - All patients ≥ 65 years old with Type 1 diabetes mellitus enrolled in Medicare and continuously enrolled from January 1, 2010 to December 31, 2011
  - A 1% sample of patients was randomly selected for analysis
- **Exclusion:**
  - Diagnosis of gestational diabetes (GDM) or pregnancy (ICD 467.6 or Z08.02 or O10.0 at any position during the study period).
  - Diagnosis of both (ICD 250, 250.1 or 250.x) and (all other 20.g ICD-10-CM codes) and the presence of at least one prescription claim for oral hypoglycemics/insulin.
  - Patients can only be in the pre-index or index encounter setting, or different dates of service, with a diagnosis of diabetes (G02).
  - Exclusions included:
    - Hypertensive treatments had significant univariate associations with a diagnosis of diabetes.
  - To face encounter in an inpatient or inpatient setting, or with a diagnosis of diabetes.

**Quality Measures:**
- **Pre-index and index:**
  - Geographic information systems (GIS)
  - Race/Ethnicity
  - Hypertensive treatments had significant univariate associations with a diagnosis of diabetes.
  - To face encounter in an inpatient or inpatient setting, or with a diagnosis of diabetes.

**Statistical Analysis:**
- Univariate associations were identified for new or worsening diabetes complications associated with diabetes.
- **Limitations:**
  - The assessment of a 1-year measurement period suggests that there is a 2-year prior to data availability, 1 of 62 MAPD was not available for this study.
  - Due to data unavailability, 2011 data was not available for this study.

**Results**
- **Table 1:** Baseline Demographic and Clinical Characteristics by Quality Measure(s) reached in the pre-index year.
  - A 1% sample of patients was randomly selected for analysis
- **Table 2:** Unadjusted Associations of New or Worsening Diabetes Complications and Quality Measure Achievement
  - Univariate associations were identified for new or worsening diabetes complications associated with diabetes.
  - **Table 3:** Adjusted Odds of New or Worsening Diabetes Complications by Quality Measure Achievement
  - Univariate associations were identified for new or worsening diabetes complications associated with diabetes.
  - **Conclusion:**
    - The assessment of a 1-year measurement period suggests that there is a 2-year prior to data availability, 1 of 62 MAPD was not available for this study.

**References**

**Conclusions:**
- The assessment of a 1-year measurement period suggests that there is a 2-year prior to data availability, 1 of 62 MAPD was not available for this study. Due to data unavailability, 2011 data was not available for this study.

**Limitations:**
- This study used data from Humana MAPD health plan performance measures and the CMS Medicare Part C and D plan. Due to limitations of data provided by Humana, some analyses were limited to 1,000 patients. Additionally, analyses of 2011 data were excluded due to incomplete data.
- Causal inference cannot be directly determined as relationships between quality scores and diabetes complications and outcomes were based on statistical associations and temporal relationships.