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Association of Health Plan's HEDIS Performance with Outcomes of Enrollees with Diabetes

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Purpose

- To assess the association of changes in health outcomes among individual Medicare beneficiaries with their health plan's performance on HEDIS measures for diabetes.

Background

- There is little information on how the quality of care affects outcomes
- Most quality of care efforts focus on process or intermediate outcomes
- One study using Medicare managed care data found a positive correlation between clinical measures and member health status but did not consider longitudinal outcomes or control for health differences in plan populations

Hypothesis

- Diabetic patients enrolled in health plans with high performance on diabetes-related HEDIS measures would have better patient-reported health outcomes than those in lower-performing plans.

Data sources

- **Health Outcomes Survey (HOS)**
 - baseline data collection in 2001 and follow-up survey data in 2003
- **Healthcare Effectiveness Data & Information Set (HEDIS)**
 - clinical data covering services provided in 2002, the year between the baseline and follow-up HOS data.

Patient Eligibility Criteria

- Non-institutionalized, non-proxy respondent, elderly 65+ years
- Returned usable baseline or follow-up English-language survey in 2006 (68.4% response rate)
- Did not indicate they wanted to be removed from list of surveyed individuals
- Returned a usable follow-up survey or died before they could be resurveyed were included in the study (78.6% follow-up response rate.)
- Diabetes (N=8,184): Responded 'yes' to whether a doctor ever told them that they had diabetes, high blood sugar, or sugar in the urine.

Independent Variables: HEDIS Quality of Care Measures

- **Process Composite**
 - Hemoglobin A1c (HbA1c) testing
 - Low-density lipoprotein cholesterol (LDL) screening
 - Eye exams performed
 - Nephropathy monitored
- **Intermediate Outcomes Composite**
 - LDL under control (as measured by a value of LDL of 130 or less);
 - Recommended levels for HbA1c (over 9.0 is poor control – measure inverted)

Dependent Measures: Physical and Mental Functioning

- Physical Component Summary (PCS) and Mental Component Summary (MCS) of the MOS SF-36
- Score is based on national norms, with mean of 50 and SD of 10
- Longitudinal analysis uses methods for scoring that take into account death (Diehr et al.)
- Dependent variable represents the change in the probability of being healthy between the baseline and follow-up period

Analytic Issues

- **Simultaneity bias in the quality/outcome association**
- **Health plan differences in case-mix and other salient features**
- **Clustered sampling design in the HOS survey data**

Analytic Approach

- Multi-level, multivariate linear models
- Unit of analysis is the patient
- Regressions controlled for age, gender, education level, race, marital status, home ownership, number of chronic conditions, diabetes symptom severity, presence of depressed mood, and baseline PCS and MCS

Health Plan HEDIS Performance Rates

	Mean	Standard Deviation
Process Composite	75.1%	9.1%
HbA1c Testing	86.1%	10.8%
Eye Exams	68.6%	12.3%
Cholesterol Screening	88.7%	8.3%
Monitoring Nephropathy	56.9%	14.5%
Intermediate Outcomes Composite	69.9%	11.4%
HbA1c Control (inverted)	76.6%	12.3%
Cholesterol Control	62.8%	11.7%

Patient Characteristics

Demographic	% of patients
Female	53.1%
Married	57.0%
Black	9.0%
Hispanic	3.8%
High school education	69.7%
Owned home	78.1%

Patient Characteristics

Clinical	% of patients
Depression symptoms	14.1%
Diabetes symptom severity	20.8%
Chronic conditions (mean/SD)	4.1/2.0

Baseline and Follow up Measures of Health Functioning

	Baseline N=6744	Follow-up N=6744
Physical Functioning (PCS)	40.2	38.8
Mental Functioning (MCS)	51.5	50.8

*N=1060 (13.0%) members
died between baseline
and follow-up*

Impact of Health Plan Quality on Physical & Mental Functioning

	Physical Functioning (PCS)	Mental Functioning (MCS)
Process Composite	0.067	0.113**
Intermediate Outcomes Composite	0.071*	0.070**

A 10 percentage point increase in health plan's performance on process composite was associated with a 11 percentage point increase in the probability of improved mental functioning

*p<.05, **p<.01

Interaction of Health Plan Quality with Baseline Functioning

	Physical Functioning (PCS)	Mental Functioning (MCS)
Process Composite	0.067	0.113**
Process Composite*Low Baseline PCS	-0.078	-0.095*
Process Composite*Mid Baseline PCS	-0.055	-0.073
Intermediate Outcomes Composite	0.071*	0.070**
Intermediate Outcomes Composite* Low Baseline PCS	-0.074	-0.063
Intermediate Outcomes Composite*Mid Baseline PCS	-0.103*	-0.054

What about other conditions?

- Hypertension
 - positive association, not significant
- Ischemic heart disease
 - Positive on some measures, not significant
- Depression
 - Negative relationship (not significant) for one measure, positive others

Summary of Results

- Health plans' quality performance had a positive impact on longitudinal change in their members' health outcomes
- Quality measures had different outcome on results for diabetics
 - Outcomes composite related to PCS improvement
 - process composite related to MCS improvement
 - Outcomes composite had largest effect on enrollees who were the healthiest of the enrollees with diabetes
- No consistent impact on other conditions

Limitations

- Plan attrition
- Beneficiary attrition
- Self-reported disease status for the identification of enrollees with diabetes
- Few quality measures for some conditions

Implications

- Improved quality of care can result in improvements in health functioning
- Efforts to encourage and monitor quality improvement at health plan should be continued
- Monitoring of outcomes is useful for evaluation