The Role of HMOs in Managing Diabetes

Technical Notes

The Pennsylvania Health Care Cost Containment Council
225 Market Street, Suite 400
Harrisburg, PA 17101
(717) 232-6787
www.phc4.org

Foreword

These *Technical Notes* are intended to accompany the public report, *The Role of HMOs in Managing Diabetes* released by the Pennsylvania Health Care Cost Containment Council (PHC4) in December 1999. The purpose of these *Technical Notes* is to describe how the data in the report were collected and calculated.

These notes discuss the two major sections in the public report. Section 1 provides a "big picture" examination of hospitalizations for short-term complications of diabetes and HMO enrollment in Pennsylvania. Section 2 provides an HMO-specific look at hospitalization rates for diabetes and some of the diabetes disease management initiatives offered by the HMOs in Pennsylvania.

Section 1: Changes in Hospitalization Rates for Short-Term Complications of Diabetes

Section 1 includes maps which present the following information for each county in Pennsylvania: (1) the average hospitalization rate for short-term complications of diabetes in 1998, (2) the HMO enrollment in 1998, (3) the *change* in the hospitalization rate for short-term complications of diabetes between 1995 and 1998, and (4) the *change* in HMO enrollment between 1995 and 1998.

HMO enrollment information is collected by the Pennsylvania Department of Health through their Annual Status Reports.

The hospitalization rates are derived from the PHC4 inpatient database and have been adjusted for differences in age and sex across counties. To adjust the county hospitalization rates for age and sex differences, first a logistic regression model was built to predict the probability of being hospitalized for short-term complications of diabetes based on age and sex (female) (also using age squared, sex*age, and sex*age squared interactions) as predictor variables. Then, using U.S. Census Bureau county-level population estimates of age and sex, an expected hospitalization rate for each county was determined.

The age and sex adjusted rates that were used for the maps showing hospitalization rates were calculated by:

Age and Sex Adjusted Rate = (statewide rate) [(observed county rate) / (expected county rate)]

Appendix A lists the actual values of data that are presented in the maps in Section 1.

Section 2: HMO-Specific Information

Background

The Role of HMOs in Managing Diabetes is a first step in a longer-term effort to work with health plans in Pennsylvania, including HMOs, to make information on health insurance plans available. One of the goals of this demonstration project was to initiate a dialogue with plans and determine what types of information they collect.

In developing the foundation for this project, PHC4 consulted with its Technical Advisory Group, its Payor Advisory Group, and representatives of various health plans. Diabetes was selected for this first report because many plans already monitor their members with diabetes and collect information on the health of these members. In addition, many plans indicate that management of diabetes is a high priority issue. Finally, diabetes is a chronic and financially costly condition which is estimated to affect over 1 million Pennsylvanians.

Data Collection

PHC4 contacted the licensed HMOs in Pennsylvania and asked them to supply information about their members and, where applicable, about their Point-of-Service (POS) plan members for each line of business: Commercial plans and Medicare and Medicaid contracts. HMOs provided *aggregate* information. They were not asked to provide member-level detail. The HMOs were asked for hospitalization rates for members with diabetes, information about their diabetes management efforts, and information about important screening measures relevant to diabetes. A data collection form and manual were given to all plans to facilitate collection of the appropriate data. Only those plans who responded to PHC4's request for information are included in the report. Therefore, if an HMO did not supply the requested information to PHC4, they do not appear in Section 2 of the report.

The information presented in Section 2 was self-reported from the individual health plans and was not verified or audited by PHC4. The responsibility for the accuracy of the data in this section, therefore, lies solely with the individual health plans.

Most of the information requested of the plans was included in the public report; however, for technical reasons (e.g. small sample sizes), some of the information was not included.

HEDIS® (the Health Plan Employer Data and Information Set) is a system of reporting data on managed care organizations used by the National Committee on Quality Assurance (NCQA). HEDIS data play a particular role in the report. Since many HMOs collect and report data to NCQA for inclusion in HEDIS, much of this report was based on definitions and calculations already completed by plans to meet HEDIS requirements for 1998. This approach helped minimize additional data collection and reporting efforts by the health plans. For example, the eye exam rate for HEDIS 1999 reporting (data reported for the 1998 calendar year) calls for a standard definition of members with diabetes (those members with diabetes age 31 and over who meet continuous enrollment criteria as established for HEDIS reporting). This report incorporates that standard definition of diabetes into the hospitalization rates presented in the report.

Throughout the report, the term "members" refers to all lives covered by a plan and line of business. "Members" includes both the primary insured as well as all covered dependents.

The HMO-specific information is presented by the plan's line of business. Commercial HMO and POS plans are presented first. Plans were given the option of reporting HMO and POS data combined or separately. After Commercial plan data is presented, the information for Medicaid HMOs is reported, followed by Medicare HMOs.

Calculation of Measures

Percent of Members with Diabetes

Plans were asked to provide the percentage of their members who have diabetes using the HEDIS definition for the 1998 calendar year reporting of the measure, "Eye Exams for People with Diabetes." This definition includes: all members age 31 years and older and members of the health plan as of December 31, 1998, who were continuously enrolled during 1998 (including enrollees who had no more than one gap in enrollment of up to 45 days during 1998) and who are identified as diabetic. Members were defined as diabetic by using a specific set of CPT codes and ICD.9.CM codes as provided by the NCQA for HEDIS reporting. A list of the relevant CPT codes and ICD.9.CM codes are available from PHC4.

Hospitalization Information

Plans were asked to base their hospitalization information on their members with diabetes as defined by the HEDIS definition described earlier. Plans were permitted to base the hospitalization information on a random sample of these members if necessary. Plans which used a sample size for the hospitalization information are indicated with a double asterisk (**) in the report and their total figures are provided as a footnote.

Hospitalizations for Diabetes

Plans reported the number of members with diabetes using the HEDIS definition (as described earlier) that were admitted into an inpatient setting with a diabetes code as the principal diagnosis code. The number of members hospitalized is reported, not the number of *hospitalizations*. Therefore, if a member was admitted more than once in 1998, this would only be counted as *one* member hospitalized.

Hospitalizations for diabetes include those in which the following ICD.9.CM diagnosis codes appear as the principal diagnosis:

250.00, 250.01, 250.02, 250.03
250.10, 250.11, 250.12, 250.13
250.20, 250.21, 250.22, 250.23
250.30, 250.31, 250.32, 250.33
250.40, 250.41, 250.42, 250.43
250.50, 250.51, 250.52, 250.53
250.60, 250.61, 250.62, 250.63
250.70, 250.71, 250.72, 250.73
250.80, 250.81, 250.82, 250.83
250.90, 250.91, 250.92, 250.93

Hospitalizations for Short-Term Complications of Diabetes

Plans reported the number of members with diabetes that were admitted into an inpatient setting with *short-term complications of diabetes* as the principal diagnosis code.

This is similar to the previous item, however, this item simply uses a different set of principal diagnosis codes – those that identify *short-term complications* of diabetes. As with hospitalizations for *diabetes*, members, not hospitalizations, were counted.

Short-term complications of diabetes include the following ICD.9.CM diagnosis codes in the principal diagnosis position:

250.02, 250.03
250.10, 250.11, 250.12, 250.13
250.20, 250.21, 250.22, 250.23
250.30, 250.31, 250.32, 250.33

Members counted in this item represent a subset of those counted in the hospitalizations for *diabetes*.

Hospitalization Rate

The hospitalization rates were calculated as follows:

Hospitalization Rate for *Diabetes*: "Members hospitalized" (where diabetes was the principal diagnosis) divided by "Members with Diabetes."

Hospitalization Rate for *Short-term Complications of Diabetes*: "Members hospitalized" (where short-term complications of diabetes was the principal diagnosis) divided by "Members with Diabetes."

Average Inpatient Days

Plans were asked to provide the total number of inpatient days for the members hospitalized with diabetes as principal diagnosis and members hospitalized with short-term complications of diabetes as principal diagnosis. The average inpatient days were determined by dividing the total number of inpatient days by the number of members hospitalized for the appropriate principal diagnosis. The average inpatient days reported is the average number of days a member (who was hospitalized) spent in the hospital in 1998, which may include multiple admissions for the same individual.

Plans were also asked to provide information on the number of readmissions for diabetes and the short-term complications of diabetes and the associated inpatient days. Because only a small number of members were rehospitalized for diabetes or the short-term complications of diabetes within 30 days of their original discharge, the data on readmissions is not included in the report.

Preventive Care and Disease Management

Eye Exam Rate

Plans were asked to provide data (the denominator and numerator) for the HEDIS reporting of the measure "Eye Exams for People with Diabetes" (for data on the 1998 calendar year). This represents the percentage of members who had a retinal ophthalmoscopic examination performed by an eye-care professional (i.e., ophthalmologist or optometrist) during 1998 as reported by the plan.

Question on whether the health plan routinely measures the number of members with diabetes who have the Hemoglobin A1c Blood Test, Lipid Profile, and Urinalysis screenings performed

Plans were asked if they routinely measure the number of members with diabetes who have Hemoglobin A1c blood tests, lipid profiles, and urinalysis completed. A checkmark (√) in the corresponding box means that the health plan indicated that it does routinely measure the number of members with diabetes who undergo such screenings.

Plans were also asked to provide the *percentage* of the members with diabetes who undergo these screenings. Due to variation in the ways that plans calculated this information, the rates are not presented in the report, however, plans which were able to provide these rates are noted with an asterisk (*).

Question on whether annual diabetic retinal eye exams require a referral from a primary care provider

Plans were asked if an annual retinal eye exam for a member with diabetes required a referral from a primary care provider in order to be a covered benefit. A checkmark (√) in the corresponding box means that the health plan indicated that a referral is required for an annual retinal eye exam to be covered benefit.

HEDIS® Comprehensive Diabetes Care Measure

Plans were asked to provide the denominator for the HEDIS Comprehensive Diabetes Care Measure and the six numerators for the six different measurements that comprise this measure. The rates were calculated using these figures. The HEDIS Comprehensive Diabetes Care Measure was optional for HEDIS reporting of data on the 1998 calendar year. It will become a mandatory part of the HEDIS® submission for reporting data on the 1999 calendar year. It is comprised of six different rates: Hemoglobin A1c Blood Test Rate, Poor Hemoglobin A1c Control Rate, Eye Exam Rate, Lipid Profile Rate, Lipid Control Rate, and Diabetes Nephropathy Rate. All rates are based on the number of members with diabetes ages 18 to 75.

Additional questions on diabetes disease management – How does the health plan identify members with diabetes? How does the health plan categorize the severity of members with diabetes? How has the health plan worked with providers to support diabetes management? and What information does the health plan use to measure the 'success' of the disease management initiatives?

In responding to these questions, a list of possible responses was provided from which plans could choose multiple responses as appropriate.

Appendix A

County	HMO Enrollment Rate			Hospitalization Rates per 10,000 residents (Age-and Sex-Adjusted)		
	1995 Rate	1998 Rate	Average Change Per Year	1995 Rate	1998 Rate	Average Change Per Year
Adams	5.1%	12.4%	2.4%	6.9	5.2	-0.5
Allegheny	41.5%	60.7%	6.4%	11.0	9.3	-0.5
Armstrong	28.6%	49.2%	6.9%	14.5	6.8	-2.5
Beaver	37.5%	54.6%	5.7%	12.0	9.4	-0.8
Bedford	7.8%	30.9%	7.7%	8.9	7.5	-0.4
Berks	18.1%	25.7%	2.5%	4.2	4.7	+0.2
Blair	21.0%	40.7%	6.6%	5.9	7.6	+0.6
Bradford	7.9%	25.6%	5.9%	7.1	4.5	-0.8
Bucks	39.1%	44.9%	1.9%	5.8	6.1	+0.2
Butler	35.3%	55.0%	6.6%	11.1	5.3	-1.9
Cambria	12.7%	38.3%	8.5%	11.4	8.8	-0.8
Cameron	0.1%	5.0%	1.6%	13.2	8.1	-1.6
Carbon	1.5%	7.8%	2.1%	13.8	15.8	+0.7
Centre	23.6%	36.5%	4.3%	5.5	2.6	-0.9
Chester	32.3%	38.9%	2.2%	4.2	4.5	+0.2
Clarion	6.0%	23.5%	5.8%	14.0	17.5	+1.2
Clearfield	9.5%	26.0%	5.5%	11.0	8.0	-0.9
Clinton	16.4%	31.2%	4.9%	9.3	5.3	-1.3
Columbia	32.8%	39.7%	2.3%	6.4	9.0	+0.9
Crawford	6.7%	30.3%	7.9%	8.4	10.9	+0.9
Cumberland	22.4%	27.0%	1.5%	5.3	5.1	+0.0
Dauphin	25.4%	34.9%	3.2%	9.8	9.3	-0.1
Delaware	39.7%	45.2%	1.8%	8.4	8.5	+0.1
Elk	2.5%	18.7%	5.4%	10.2	4.7	-1.8
Erie	23.0%	52.9%	10.0%	7.2	6.8	-0.1
Fayette	12.2%	35.5%	7.8%	15.9	9.7	-2.0
Forest	2.5%	20.9%	6.1%	34.9	23.5	-3.8
Franklin	1.6%	5.2%	1.2%	5.1	3.5	-0.5
Fulton	0.2%	1.0%	0.3%	8.4	7.0	-0.4
Greene	6.4%	28.7%	7.4%	9.0	9.8	+0.3
Huntingdon	4.7%	16.5%	3.9%	8.3	4.9	-1.1
Indiana	15.5%	37.8%	7.4%	9.9	8.7	-0.3
Jefferson	7.3%	36.8%	9.8%	12.3	9.0	-1.1
Juniata	10.2%	20.3%	3.4%	19.5	6.0	-4.4
Lackawanna	20.7%	37.4%	5.6%	8.8	7.4	-0.4
Lancaster	18.3%	33.9%	5.2%	6.5	5.1	-0.4
Lawrence	15.6%	47.4%	10.6%	13.0	12.0	-0.3
Lebanon	17.3%	26.2%	3.0%	4.9	4.3	-0.2
Lehigh	19.5%	27.8%	2.8%	5.4	5.1	+0.0
Luzerne	21.2%	38.8%	5.9%	10.0	6.3	-1.2

County	HMO Enrollment Rate			Hospitalization Rates per 10,000 residents (Age-and Sex-Adjusted)		
	1995 Rate	1998 Rate	Average Change Per Year	1995 Rate	1998 Rate	Average Change Per Year
Lycoming	25.0%	39.4%	4.8%	6.0	5.2	-0.2
McKean	0.6%	10.1%	3.2%	14.2	10.3	-1.2
Mercer	13.6%	40.6%	9.0%	14.4	9.6	-1.6
Mifflin	17.8%	35.5%	5.9%	7.3	5.9	-0.4
Monroe	7.1%	15.6%	2.8%	4.8	5.6	+0.3
Montgomery	42.1%	48.3%	2.1%	5.1	4.8	+0.0
Montour	86.9%	73.6%	-4.3%	5.4	1.8	-1.1
Northampton	21.0%	27.9%	2.3%	8.7	7.8	-0.3
Northumberland	31.4%	44.3%	4.3%	8.8	8.9	+0.1
Perry	22.9%	24.4%	0.5%	12.6	6.8	-1.9
Philadelphia	52.3%	61.6%	3.1%	19.7	17.9	-0.6
Pike	2.1%	10.2%	2.7%	1.4	1.6	+0.1
Potter	0.1%	2.5%	0.8%	0.0	6.6	+2.3
Schuylkill	4.7%	14.2%	3.2%	12.5	11.1	-0.4
Snyder	18.8%	27.8%	3.0%	6.8	4.2	-0.8
Somerset	17.3%	44.4%	9.0%	10.0	9.6	-0.1
Sullivan	13.8%	33.2%	6.5%	7.2	7.3	+0.1
Susquehanna	9.2%	24.8%	5.2%	7.6	9.0	+0.5
Tioga	0.4%	8.7%	2.8%	1.2	2.8	+0.6
Union	18.0%	27.6%	3.2%	8.6	3.8	-1.6
Venango	3.2%	33.7%	10.2%	18.4	9.5	-2.9
Warren	0.9%	16.6%	5.2%	5.7	5.0	-0.2
Washington	23.1%	51.0%	9.3%	10.4	5.5	-1.6
Wayne	9.1%	28.5%	6.5%	9.7	4.9	-1.5
Westmoreland	33.5%	53.9%	6.8%	7.8	6.3	-0.4
Wyoming	32.8%	49.5%	5.6%	4.3	6.1	+0.6
York	19.6%	24.7%	1.7%	5.2	3.5	-0.5

Rates were rounded to the nearest whole number (or whole percent) before being assigned to the map categories. For example, a county hospitalization rate of 6.7 would be rounded to 7, and assigned to the "7 to 13" category.