

Episode-of-Care for Diabetes over 1-year Period

Measure Description

Resource use and costs associated with management of diabetes over a one year period. Identify patients in a management phase of diabetes by including patients with diabetes in the year prior to the measurement year and measure diabetes-related resource use and costs during the measurement year. Patients with new diagnoses of diabetes and those with end stage disease are excluded from the measure. Costs of care are attributed in one of three ways: 1) to a single physician if that provider has more than 70% of the asthma-related E&M visits; 2) to all providers that had 30% or more and 70% or less of E&M visits if no provider has more than 70% of visits; 3) no attribution if no provider has at least 30% of E&M visits during the measurement year.

Required Data Elements

Administrative claims data

Calculation

For patients meeting inclusion criteria, determine diabetes-related resource use and costs over a one-year period in the measurement year. Prices from a standard price list will be applied to the diabetes-related resource use to estimate the costs of the episode of care related to diabetes. Resource use will be defined for ten categories: 1) inpatient facility; 2) evaluation and management; 3) procedures; 4) imaging; 5) tests; 6) DME; 7) other drugs and services; 8) medications; 9) other and 10) outpatient facility. Costs will be risk adjusted for age and comorbidities. For inpatient facility costs, the standard cost is based on a per diem cost for a DRG and will be multiplied by the length of stay for the index event. For each of the other resource use categories, standardized prices will be available for each of the unique codes available under the other four categories.

Episode Definition

Diabetes-related care over a one year period.

Rationale

The Institute of Medicine and AQA have identified diabetes as one of 20 conditions that should be considered priority areas in need of quality improvement based on its relevance to a significant volume of patients, its impact on those patients, and the perception of opportunity to significantly improve the quality of related care. Diabetes had also been previously identified as a priority area in other national initiatives including AHRQ's

Medical Expenditure Panel Survey, the VA's Quality Enhancement Research Initiative, HRSA's Health Disparities Collaboratives, and the Quality Improvement Program at CMS.¹ In addition, the costs of treatment for diabetic patients can be very high in some cases – according to HCUP, there were over 540,000 hospitalizations with a principal diagnosis of diabetes in the U.S. in 2006² – and these costs can vary dramatically from one provider to the next as well as across regions, in part because of underlying patient risk factors and comorbidities (for which this measure adjusts), but also because of variations in practice patterns.

Diabetes is a chronic condition, and therefore the measurement period will be as long as can be considered easily implemented, a one-year period. To reduce the heterogeneity of the denominator population, the inclusion criteria were designed to ensure each of the included patients has diabetes and some history of related physician management, and the exclusion criteria were designed to ensure patients with particularly complex comorbidities that could affect the patient's diabetes treatment will not be evaluated through the same measure.

This measure will be attributed at the level of the individual physician because the vast majority of care provided to a patient with stable managed diabetes is typically the responsibility of a single physician.

The current measure was designed to be aligned with current quality measures used in diabetes management which are typically constrained to a single year. Therefore, the cost of care measure was limited to a single year measure. It is clear that consequences of management of diabetes occur over a timeframe of three to five years rather than in a single year period. That is, appropriate management of hypertension and hyperlipidemia to avoid the macrovascular complications in patients with diabetes leads to reduced rates of myocardial infarction and stroke and their associated resource use over a period of three to five years rather than a single year. Therefore, the measure does not include the resource use and costs of these macrovascular events as the management that occurs in a single year period may not modify the immediate risk of events during this timeframe and would be inappropriate to attribute the costs of these events to a single physician during the measurement period, as that physician may not have been involved in the care of the patient over a timeframe where these events would expect to be modified. However, as it becomes feasible to track patients over more than a two year period, it will be important to modify this measure to include as resource use over a five year period that includes the macrovascular sequelae of diabetes as diabetes-related resource use. In addition to macrovascular events, evidence on the management of osteoporosis in patients with diabetes is beginning to emerge as important for overall care in these patients. However, the current measure does not include this type of resource use as the evidence is still growing and has not been widely adopted. It will be important to revisit the inclusion of osteoporosis-related management in diabetes as the evidence continues to grow.

¹ Priority Areas for National Action: Transforming Health Care Quality. Institute of Medicine. Karen Adams and Janet Corrigan Editors. March 10, 2003.

² Health Care and Utilization Project. AHRQ. <http://hcupnet.ahrq.gov/>. Accessed March 2009.

Measures

- Diabetes-related resource use / costs
 - Inpatient Facility
 - Evaluation and Management
 - Procedures
 - Imaging
 - Tests
 - DME
 - Other drugs and services
 - Exceptions / Unclassified
 - Other
 - Pharmacy
 - Outpatient Facility

Eligible Population

Age	No age restrictions on inclusion in the measure
Enrollment Criteria	Continuous medical and pharmacy benefit enrollment for at least one year preceding the measurement year and during the measurement year, with no more than one gap in enrollment of more than 45 days during each year of continuous enrollment.
Inclusion Criteria	<p>There are two inclusion criteria used to identify those eligible for the diabetes episode measure. The first focuses on those using oral hypoglycemics and the second on those using insulin only.</p> <p>1) Patients included in the measure must have at least one outpatient visit with a diagnosis of 250.x in the first 6 months of the identification year (the year prior to the measurement year); <i>and</i> At least one prescription for an oral hypoglycemic medication in the first 6 months of the identification year; <i>and</i> At least one diabetes-related resource use event (e.g. outpatient visit, hospitalization, medication use) during the measurement year.</p>

OR

- 2) Patients included in the measure must have at least one outpatient visit with a diagnosis of 250.x in the first 6 months of the identification year;
and
 No oral hypoglycemic medications in the first 6 months of the identification year;
and
 At least one insulin claim in the first 6 months of the identification year;
and
 Age \geq 30 years during the identification year;
and
 At least one diabetes-related resource use event (e.g. outpatient visit, hospitalization, medication use) during the measurement year.

Exclusion

Persons with any of the following diagnoses in the measurement year or the year prior to measurement are excluded (see table DIAB-E for codes):
 polycystic ovaries; gestational or steroid-induced diabetes; active cancer; end stage renal disease (ESRD); dialysis; renal failure; organ transplant; HIV/AIDS

Table DIAB-A: Codes to identify diabetes-related care

Description	ICD-9 Code	DRG (v24)	MS-DRG (v25)
Diabetes	250.xx	294, 295	637, 638, 639
Polyneuropathy in Diabetes	357.2		
Diabetic retinopathy	362.0x		
Diabetic cataract	366.41		
Hypertension	401.x, 402.x, 403.x, 404.x		
Hyperlipidemia	272.x		

Codes present in *any* diagnostic field during measurement period on outpatient claims group to the episode. Codes present as *primary* diagnosis for hospitalization group to the episode.

Table DIAB-B: Prescriptions to Identify Eligible Patients with Diabetes

Medication Classes:

1. Alpha-glucosidase inhibitors
2. Meglitinides
3. Sulfonylureas
4. Thiazolidinediones
5. Other oral antidiabetic agents
6. Oral antidiabetic combinations

Table DIAB-C1. Inpatient Facility Codes

Description	CPT
Nonacute inpatient	99301-99313, 99315, 99316, 99318, 99321-99328, 99331-99337
Acute inpatient	99221-99223, 99231-99233, 99238, 99239, 99251-99255, 99261-99263, 99291

These codes will be used to identify those services that should be categorized as “Inpatient” during our analyses. They do not identify the only services that will be included.

Table DIAB-C2. Evaluation and Management Codes

Description	CPT Codes
Office or Other Outpatient Services	99201–99215
Hospital Observation Services	99217–99220
Hospital Inpatient Services	99221–99239
Consultations	99241–99275
Critical Care and Intensive Care Services	99289–99298
Nursing Facility, Domiciliary and Home Services	99301–99350
Case Management Services and Care Plan Oversight Services	99361–99380
Preventive Medicine Services	99381–99429
Other E&M Services	99450–99456, 99354–99357

These codes will be used to help identify those services that should be categorized as “E&M”. To be included codes must have a diabetes-related diagnosis code to be included in the episode.

Table DIAB-D: Additional Codes to Identify Diabetes-Related Services
(claims with these codes are included in the episode regardless of whether they have a diabetes ICD-9 code associated with that claim)

Description	HCPCS
Diabetes Evaluation and Management	G0108, G0109, G0245, G0246, G0247, G8015, G8016, G8017, G8018, G8019, G8020, G8021, G8022, G8023, G8024, G8025, G8026, G8330, G8331, G8332, G8333, G8334, G8335, G8336, G8385, G8386, G8390, G8397, G8398, G8404, G8405, G8406, G8410, G8415, G8416, S9140, S9141, S9145, S9455, S9460, S9465

Procedure and Laboratory

Description	CPT	HCPCS	ICD-9 Diagnosis	ICD-9 Procedure
HBA1c	83036, 83037			
Eye Exams	67028, 67030, 67031, 67036, 67038-67040, 67101, 67105, 67107, 67108, 67110, 67112, 67121, 67141, 67145, 67208, 67210, 67218, 67220, 67221, 67227, 67228, 92002, 92004, 92012, 92014, 92018, 92019, 92225, 92226, 92230, 92235, 92240, 92250, 92260, 99203-99205, 99213-99215, 99242-99245	S0620, S0621, S0625, S3000	V72.0	14.1-14.5, 14.9, 95.02-95.04, 95.11, 95.12, 95.16
Cholesterol	80061, 83700, 83701, 83704, 83718, 83719, 83721			
Glucose	800422, 80424, 82947, 82950, 82951, 92952			
Metabolic panel	80047, 80048, 80050, 80053, 80069			
Insulin tolerance	80434, 80435			
Urinalysis	81000, 81001, 81002, 81003			
Kidney imaging	78700, 78701, 78707, 78708, 78709, 78710			
Foot exams		G8404, G8406, G8405		

Supplies

Description	HCPCS
Treatment / Monitoring	A4230, A4231, A4232, A4233, A4233, A4234, A4235, A4236, A4244, A4245, A4252, A4253, A4254, A4255, A4258, A4259, S1030, S1031
Foot	A5500, A5501, A5503, A5504, A5505, A5506, A5507, A5508, A5509, A5510, A5511, A5512, A5513, L3201, L3202, L3203, L3204, L3206, L3207, L3215, L3216, L3217, L3219, L3221, L3222, L3224, L3225, L3230, L3250, L3251, L3252, L3253, L3254, L3255, L3257, L3500, L3510, L3520, L3530, L3540, L3550, L3560, L3570, L3580, L3590, L3595, L3600, L3610, L3620, L3630, L3640, L3649

Pharmacy

Anti-diabetic medications

Medication Classes:

1. Alpha-glucosidase inhibitors
2. Meglitinides
3. Sulfonylureas
4. Thiazolidinediones
5. Other oral antidiabetic agents
6. Oral antidiabetic combinations
7. Insulin

Other Diabetes-related Medications

Medication Classes:

1. Angiotensin converting enzyme (ACE) inhibitors
2. Angiotensin II inhibitors (ARB)
3. Diuretics
4. Beta-blockers
5. Calcium channel blockers
6. Alpha blockers
7. Alpha2 agonists
8. Antihypertensive combinations
9. Lipid lowering medications

Diabetes-related Medications from HCPCs codes

HCPC	Description
J1815	INJECTION, INSULIN, PER 5 UNITS
J1817	INSULIN FOR ADMINISTRATION THROUGH DME (I.E., INSULIN PUMP) PER 50 UNITS
S5550	INSULIN, RAPID ONSET, 5 UNITS
S5551	INSULIN, MOST RAPID ONSET (LISPRO OR ASPART); 5 UNITS
S5552	INSULIN, INTERMEDIATE ACTING (NPH OR LENTE); 5 UNITS
S5553	INSULIN, LONG ACTING; 5 UNITS
S5560	INSULIN DELIVERY DEVICE, REUSABLE PEN; 1.5 ML SIZE
S5561	INSULIN DELIVERY DEVICE, REUSABLE PEN; 3 ML SIZE
S5565	INSULIN CARTRIDGE FOR USE IN INSULIN DELIVERY DEVICE OTHER THAN PUMP; 150 UNITS
S5566	INSULIN CARTRIDGE FOR USE IN INSULIN DELIVERY DEVICE OTHER THAN PUMP; 300 UNITS
S5570	INSULIN DELIVERY DEVICE, DISPOSABLE PEN (INCLUDING INSULIN); 1.5 ML SIZE
S5571	INSULIN DELIVERY DEVICE, DISPOSABLE PEN (INCLUDING INSULIN); 3 ML SIZE

Table DIAB-E: Codes to Identify Exclusions

Table DIAB-E-Poly: Codes to Identify Polycystic Ovaries

Description	ICD-9-CM Diagnosis
Polycystic ovaries	256.4

Table DIAB-E-Gest: Codes to Identify Gestational or Steroid-induced diabetes

Description	ICD-9-CM Diagnosis
Steroid induced	251.8, 962.0
Gestational diabetes	648.8

Table DIAB-E-Cancer: Codes to Identify Active Cancer Treatment

Description	ICD-9-CM Diagnosis
Cancer	140-208, 230-239

WITH

Description	CPT	ICD-9-CM Procedure	UB Revenue
Treatment	38230, 38240-38242, 77261-77799, 79000-79999, 96400-96549	41.0, 41.91, 92.2	028x, 033x, 0342, 0344, 0973

Table DIAB-E-ESRD: Codes to Identify ESRD & Dialysis

Description	CPT	HCPCS	ICD-9-CM Diagnosis	ICD-9-CM Procedure	UB Revenue	UB Type of Bill	POS
ESRD (including renal dialysis)	36145, 36800-36821, 36831-36833, 90919-90921, 90923-90925, 90935, 90937, 90939, 90940, 90945, 90947, 90989, 90993, 90997, 90999, 99512	G0257, G0311-G0319, G0321-G0323, G0325-G0327, G0392, G0393, S9339	585.5, 585.6, V42.0, V45.1, V56	38.95, 39.27, 39.42, 39.43, 39.53, 39.93, 39.94, 39.95, 54.98	080x, 082x-085x, 088x	72x	65

Table DIAB-E-Renal Failure: Codes to identify renal failure

Description	ICD-9-CM Diagnosis
Chronic Kidney Disease	585.2, 585.3, 585.4

Table DIAB-E-Transplant: Codes to Identify Organ Transplant

Description	CPT	HCPCS	ICD-9-CM Procedure	UB Revenue
Organ transplant	32850-32856, 33930-33945, 44132-44137, 44715-44721, 47133-47147, 48160, 48550-48556, 50300-50380	S2152, S2053-S2055, S2060, S2061, S2065	33.5, 33.6, 37.5, 41.94, 46.97, 50.5, 52.8, 55.6	0362, 0367, 0810-0813, 0819

Table DIAB-E-HIV: Codes to Identify HIV

Description	ICD-9-CM Diagnosis
HIV	042

Risk Adjustment Method

Comorbid conditions indentified as HCCs in 12 months preceding event date using inpatient and outpatient ICD-9 codes.

Episode Severity / Disease Staging

None

Outlier Methodology

All individuals are included in the analysis with costs winsorized at the 2nd and 98th percentile.

Level of Measurement/Analysis

Measurement will take place at the level of the individual physician. Attribution of resource use and costs for a patient will be assigned to a physician or physicians on a hierarchical basis. Total number of E&M codes for the measurement year for diabetes-related services will be determined. Inpatient stays count as a single E&M code for the entire stay. Attribution will be assigned using the following hierarchy:

- 1) Costs and resource use assigned to a single provider if that physician has more than 70% of the E&M claims during the measurement year (single attribution); OR
- 2) If no provider has more than 70% of the E&M claims, costs and resource use are assigned to each of the providers that have more than 30% of E&M claims for a patient during the measurement year (multiple attribution); OR
- 3) If no provider has at least 30% of the E&M claims during the measurement year, the care for that patient is not attributed to any provider (no attribution).

Note: Portions of these measure specifications are based on existing HEDIS measure specifications.