

## Measure Information Form

### Measure Name

### Specifications Tab

### Descriptive Information

**Measure Name (Measure Title De.2.)**

NQF 2362: Glycemic Control – Hyperglycemia

**Measure Type De.1.**

Intermediate Outcome

**Brief Description of Measure De.3.**

Average percentage of hyperglycemic hospital days for individuals with a diagnosis of diabetes mellitus, anti-diabetic drugs (except metformin) administered, or at least one elevated glucose level during the hospital stay

**If Paired or Grouped De.4.**

This measure is paired with NQF 2363: Glycemic Control – Severe Hypoglycemia. The purpose of the pairing is to serve as a balancing measure and avoid unintended consequences.

**Subject/Topic Areas De.5.**

Endocrine: Diabetes

Cross Cutting Areas: Safety: Safety, Safety: Medication Safety

### Measure Specifications

**Measure-Specific Web Page S.1.**

Not applicable

**If This is an eMeasure S.2a.**

Health Quality Measure Format (HQMF) specifications are available on the Office of the National Coordinator (ONC) Project Tracking System under eQCM Development Project (i.e., MUCD Project):

<http://jira.oncprojecttracking.org/#browse/MUCD-44>

**Data Dictionary Code Table S.2b.**

Not applicable

**For Endorsement Maintenance S.3.**

Not applicable

**Numerator Statement S.4.**

Sum of the percentage of hospital days in hyperglycemia for each admission in the denominator

**Time Period for Data S.5.**

Measure data will be aggregated annually (12 months) and reported on a rolling quarter.

**Numerator Details S.6.**

Hyperglycemic hospital days are defined as days in which:

1. Two or more blood glucose levels were elevated ( $>200$  mg/dL [ $11.1$  mmol/L]), measured at least six hours apart;  
Or
2. A single blood glucose level was elevated, if only one value was available that day;  
Or
3. No blood glucose level was measured that day, and it was not preceded by two normoglycemic days.

**Denominator Statement S.7.**

Total number of admissions with a diagnosis of diabetes mellitus, at least one administration of insulin or any anti-diabetic medication except metformin, or at least one elevated blood glucose value ( $>200$  mg/dL [ $11.1$  mmol/L]) at any time during the entire hospital stay

**Target Population Category S.8.**

Populations at Risk: Populations at Risk

**Denominator Details S.9.**

For each admission, hospital days included in the analysis are the first 10 calendar days during the hospital stay after excluding:

- The 1st day (date of admission), if the patient is admitted before noon
- The 1st and 2nd day, if the patient is admitted after noon or the patient is admitted before noon with the first glucose level  $>400$  mg/dL
- The 1st, 2nd, and 3rd day, if the patient is admitted after noon with the first glucose level  $>400$  mg/dL
- The day of discharge

For cardiothoracic (CT) surgery patients, the calendar days adjacent to the time period from operating room (OR) start time until OR end time plus 18 hours are removed from the analysis.

Table 1. Identification of Diabetes Mellitus

ICD-9-CM: 250.xx

ICD-10-CM: E10.10, E10.11, E10.21, E10.22, E10.29, E10.311, E10.319, E10.321, E10.329, E10.331, E10.339, E10.341, E10.349, E10.351, E10.359, E10.36, E10.39, E10.40, E10.41, E10.42, E10.43, E10.44, E10.49, E10.51, E10.52, E10.59, E10.610, E10.618, E10.620, E10.621, E10.622, E10.628, E10.630, E10.638, E10.641, E10.649, E10.65, E10.69, E10.8, E10.9, E11.00, E11.01, E11.21, E11.22, E11.29, E11.311, E11.319, E11.321, E11.329, E11.331, E11.339, E11.341, E11.349, E11.351, E11.359, E11.36, E11.39, E11.40, E11.41, E11.42, E11.43, E11.44, E11.49, E11.51, E11.52, E11.59, E11.610, E11.618, E11.620, E11.621, E11.622, E11.628, E11.630, E11.638, E11.641, E11.649, E11.65, E11.69, E11.8, E11.9, E13.00, E13.01, E13.10, E13.11, E13.21, E13.22, E13.29, E13.311, E13.319, E13.321, E13.329, E13.331, E13.339, E13.341, E13.349, E13.351, E13.359, E13.36, E13.39, E13.40, E13.41, E13.42, E13.43, E13.44, E13.49, E13.51, E13.52, E13.59, E13.610, E13.618, E13.620, E13.621, E13.622, E13.628, E13.630, E13.638, E13.641, E13.649, E13.65, E13.69, E13.8, E13.9

The following are the diabetic medications by class for the denominator. The route of administration includes all oral, inhalation, and injectable formulations of the medications listed below.

Table 2. Anti-Diabetic Medications Excluding Metformin

Generic Names – Brand Names – Rx Norm Codes:

**Alpha-Glucosidase Inhibitors:**

acarbose – (Precose) – (199150, 200132, 199149)

miglitol – (Glyset) – (205331, 205329, 205330)

**Anti-Diabetic Amylin Analogs:**

pramlintide – (Symlin) – (861042, 861044, 861039, 861035)

**Anti-Diabetic Combinations:**

glipizide-metformin (Metaglip, Glipizide/Metformin HCL) – (861731, 861736, 861740)

glyburide-metformin (Glucovance, Glyburide/Metformin HCL) – (861743, 861748, 861753)

linagliptin-metformin (Jentadueto)

pioglitazone-glimepiride (Duetact) – (647237, 647239)

pioglitazone-metformin (Actoplus MET) – (899989, 899996, 899994, 900001, 861783, 861822)

rosiglitazone-glimepiride (Avandaryl) – (602544, 602549, 706895, 602550, 706896)

rosiglitazone-metformin (Avandamet) – (861760, 861763, 861806, 861816)

saxagliptin-metformin (Kombiglyze) – (1043563, 1043570, 1043578, 1043568, 1043575, 1043583)

sitagliptin-metformin (Janumet) – (861769, 861819)

repaglinide-metformin (Prandimet) – (861787, 861790)

sitagliptin-simvastatin (Juvisync) – (1189804, 1189808, 1189821)

**Dipeptidyl Peptidase-4 (dpp-4) Inhibitors:**

sitagliptin – (Januvia) – (665033, 665038, 665042)

saxagliptin – (Onglyza) – (858042, 858036)

linagliptin – (Tradjenta) – (1100702)

**Incretin Mimetics:**

exenatide – (Byetta, Bydureon) – (847915, 847910)

liraglutide – (Victoza) – (897122)

**Insulin:**

insulin detemir – (Levemir) – (847239, 484322)

insulin glargine – (Lantus, Solostar) – (847230, 311041)

insulin isophane & reg (human) – (Humulin, Novolin, Relion) – (245265, 311048, 847187, 847256)

insulin isophane (human) – (Humulin, Novolin, Relion) – (311028, 847197, 847278)

**Rapid/Short-Acting Insulin:**

insulin aspart – (Novolog) – (311040, 847263)

insulin aspart protamine & aspart (human) – (Novolog) – (847191, 351297)

insulin glulisine – (Apidra) – (847259, 485210)

insulin lispro (human) – (Humalog) – (847207, 847416, 242120)

insulin lispro protamine & lispro (human) – (Humalog) – (847252, 847211, 259111, 260265)

insulin regular (human) includes inhalation – (Humulin, Exubera, Novolin) – (763020, 763015, 847417, 847203, 763002, 763007, 763013, 763014, 311034, 249220)

**Meglitinides:**

nateglinide – (Starlix) – (311919, 314142)

repaglinide – (Prandin) – (200257, 200256, 200258)

**Sulfonylureas:**

chlorpropamide – (Diabinese) – (197495, 197496)

glimepiride – (Amaryl) – (199245, 199246, 199247)

glipizide – (Glucotrol) – (315107, 310489, 314006, 844827, 310488, 844809, 844824, 310490)

glyburide – (Micronase, Diabeta) – (197737, 310534, 310537)

tolazamide – (Tolazamide) – (198292, 198293)

tolbutamide – (Tolbutamide) – (198294)

glyburide micronized – (Glynase, Glycron) – (252960, 310536, 310539, 314000)

**Thiazolidinediones:**

pioglitazone – (Actos) – (317573, 312440, 312441)

rosiglitazone – (Avandia) – (312859, 312860, 312861)

**Table 3. LOINC Codes Used to Identify Glucose Tests\***

2309-0 – Glucose [Mass/Volume] in Blood  
 2340-8 – Glucose [Mass/Volume] in Blood by Test Strip Auto  
 2341-6 – Glucose [Mass/Volume] in Blood by Test Strip Manual  
 2345-7 – Glucose [Mass/Volume] in Serum or Plasma  
 32016-8 – Glucose [Mass/Volume] in Capillary Blood  
 41651-1 – Glucose [Mass/Volume] in Arterial Blood  
 41652-9 – Glucose [Mass/Volume] in Venous Blood  
 41653-7 – Glucose [Mass/Volume] in Capillary Blood by Glucometer

\*Definition of eligible glucose tests: random or peri-prandial blood (capillary, serum, plasma, whole blood) glucose tests excluding fasting or post-glucose

Note: Laboratory and point-of-care glucose tests are both required for the calculated measure rate to be valid.

**Table 4. Codes Used to Identify Cardiothoracic (CT) Procedures**

ICD-9-CM: 35.05, 35.06, 35.07, 35.08, 35.09, 35.10, 35.11, 35.12, 35.13, 35.14, 35.20, 35.21, 35.22, 35.23, 35.24, 35.25, 35.26, 35.27, 35.28, 35.31, 35.32, 35.33, 35.34, 35.35, 35.39, 35.42, 35.50, 35.51, 35.53, 35.54, 35.60, 35.61, 35.62, 35.63, 35.70, 35.71, 35.72, 35.73, 35.81, 35.82, 35.83, 35.84, 35.91, 35.92, 35.93, 35.94, 35.98, 35.99, 36.03, 36.10, 36.11, 36.12, 36.13, 36.14, 36.15, 36.16, 36.17, 36.19, 36.31, 36.91, 36.99, 37.10, 37.11, 37.32, 37.33, 37.36, 37.41, 37.49, 37.55, 37.60, 37.62, 37.63, 37.64, 37.66, 37.67

ICD-10-CM: 0210093, 0210098, 0210099, 021009C, 021009F, 021009W, 02100A3, 02100A8, 02100A9, 02100AC, 02100AF, 02100AW, 02100J3, 02100J8, 02100J9, 02100JC, 02100JF, 02100JW, 02100K3, 02100K8, 02100K9, 02100KC, 02100KF, 02100KW, 02100Z3, 02100Z8, 02100Z9, 02100ZC, 02100ZF, 0210493, 0210498, 0210499, 021049C, 021049F, 021049W, 02104A3, 02104A8, 02104A9, 02104AC, 02104AF, 02104AW, 02104J3, 02104J8, 02104J9, 02104JC, 02104JF, 02104JW, 02104K3, 02104K8, 02104K9, 02104KC, 02104KF, 02104KW, 02104Z3, 02104Z8, 02104Z9, 02104ZC, 02104ZF, 0211093, 0211098, 0211099, 021109C, 021109F, 021109W, 02110A3, 02110A8, 02110A9, 02110AC, 02110AF, 02110AW, 02110J3, 02110J8, 02110J9, 02110JC, 02110JF, 02110JW, 02110K3, 02110K8, 02110K9, 02110KC, 02110KF, 02110KW, 02110Z3, 02110Z8, 02110Z9, 02110ZC, 02110ZF, 0211493, 0211499, 021149C, 021149F, 021149W, 02114A3, 02114A8, 02114A9, 02114AC, 02114AF, 02114AW, 02114J3, 02114J8, 02114J9, 02114JC, 02114JF, 02114JW, 02114K3, 02114K8, 02114K9, 02114KC, 02114KF, 02114KW, 02114Z3, 02114Z8, 02114Z9, 02114ZC, 02114ZF, 0212093, 0212098, 0212099, 021209C, 021209F, 021209W, 02120A3, 02120A8, 02120A9, 02120AC, 02120AF, 02120AW, 02120J3, 02120J8, 02120J9, 02120JC, 02120JF, 02120JW, 02120K3, 02120K8, 02120K9, 02120KC, 02120KF, 02120KW, 02120Z3, 02120Z8, 02120Z9, 02120ZC, 02120ZF, 0212493, 0212498, 0212499, 021249C, 021249F, 021249W, 02124A3, 02124A8, 02124A9, 02124AC, 02124AF, 02124AW, 02124J3, 02124J8, 02124J9, 02124JC, 02124JF, 02124JW, 02124K3, 02124K8, 02124K9, 02124KC, 02124KF, 02124KW, 02124Z3, 02124Z8, 02124Z9, 02124ZC, 02124ZF, 0213093, 0213098, 0213099, 021309C, 021309F, 021309W, 02130A3, 02130A8, 02130A9, 02130AC, 02130AF, 02130AW, 02130J3, 02130J8, 02130J9, 02130JC, 02130JF, 02130JW, 02130K3, 02130K8, 02130K9, 02130KC, 02130KF, 02130KW, 02130Z3, 02130Z8, 02130Z9, 02130ZC, 02130ZF, 0213493, 0213498, 0213499, 021349C, 021349F, 021349W, 02134A3, 02134A8, 02134A9, 02134AC, 02134AF, 02134AW, 02134J3, 02134J8, 02134J9, 02134JC, 02134JF, 02134JW, 02134K3, 02134K8, 02134K9, 02134KC, 02134KF, 02134KW, 02134Z3, 02134Z8, 02134Z9, 02134ZC, 02134ZF, 021609P, 021609Q, 021609R, 02160AP, 02160AQ, 02160AR, 02160JP, 02160JQ, 02160JR, 02160KP, 02160KQ, 02160KR, 02160Z7, 02160ZP, 02160ZQ, 02160ZR, 021649P, 021649Q, 021649R, 02164AP, 02164AQ, 02164AR, 02164JP, 02164JQ, 02164JR, 02164KP, 02164KQ, 02164KR, 02164Z7, 02164ZP, 02164ZQ, 02164ZR, 021709P, 021709Q, 021709R, 02170AP, 02170AQ, 02170AR, 02170JP, 02170JQ, 02170JR, 02170KP, 02170KQ, 02170KR, 02170ZP, 02170ZQ, 02170ZR, 021749P, 021749Q, 021749R, 02174AP, 02174AQ, 02174AR, 02174JP, 02174JQ, 02174JR, 02174KP, 02174KQ, 02174KR, 02174ZP, 02174ZQ, 02174ZR, 021K09P, 021K09Q, 021K09R, 021K0AP, 021K0AQ, 021K0AR, 021K0JP, 021K0JQ, 021K0JR, 021K0KP, 021K0KQ, 021K0KR, 021K0Z5, 021K0ZP, 021K0ZQ, 021K0ZR, 021K49P, 021K49Q, 021K49R, 021K4AP, 021K4AQ, 021K4AR, 021K4JP, 021K4JQ, 021K4JR, 021K4KP, 021K4KQ, 021K4KR, 021K4ZP, 021K4ZQ, 021K4ZR, 021L0Z5, 021L0ZW,

021L4ZW, 02540ZZ, 02543ZZ, 02544ZZ, 02550ZZ, 02560ZZ, 02570ZK, 02570ZZ, 02573ZK, 02574ZK, 02580ZZ, 02590ZZ,  
 025D0ZZ, 025D3ZZ, 025D4ZZ, 025F0ZZ, 025G0ZZ, 025H0ZZ, 025J0ZZ, 025K0ZZ, 025L0ZZ, 025M0ZZ, 0270046, 027004Z,  
 02700D6, 02700DZ, 02700T6, 02700TZ, 02700Z6, 02700ZZ, 0271046, 027104Z, 02710D6, 02710DZ, 02710T6, 02710TZ,  
 02710Z6, 02710ZZ, 0272046, 027204Z, 02720D6, 02720DZ, 02720T6, 02720TZ, 02720Z6, 02720ZZ, 0273046, 027304Z,  
 02730D6, 02730DZ, 02730T6, 02730TZ, 02730Z6, 02730ZZ, 027F04Z, 027F0DZ, 027F0ZZ, 027G04Z, 027G0DZ, 027G0ZZ,  
 027H04Z, 027H0DZ, 027H0ZZ, 027J04Z, 027J0DZ, 027J0ZZ, 027K04Z, 027K0DZ, 027K0ZZ, 027K34Z, 027K3DZ, 027K3ZZ,  
 027K44Z, 027K4DZ, 027K4ZZ, 027R04T, 027R0DT, 027R0TZ, 027R34T, 027R3DT, 027R3TZ, 027R44T, 027R4DT,  
 027R4TZ, 02890ZZ, 02893ZZ, 02894ZZ, 028D0ZZ, 028D3ZZ, 028D4ZZ, 02B40ZZ, 02B43ZZ, 02B44ZZ, 02B50ZZ, 02B53ZZ,  
 02B54ZZ, 02B60ZZ, 02B63ZZ, 02B64ZZ, 02B70ZK, 02B70ZZ, 02B73ZK, 02B73ZZ, 02B74ZK, 02B74ZZ, 02B80ZZ, 02B90ZZ,  
 02BD0ZZ, 02BD3ZZ, 02BD4ZZ, 02BF0ZZ, 02BG0ZZ, 02BH0ZZ, 02BJ0ZZ, 02BK0ZZ, 02BK3ZZ, 02BK4ZZ, 02BL0ZZ, 02BL3ZZ,  
 02BL4ZZ, 02BM0ZZ, 02C00ZZ, 02C10ZZ, 02C20ZZ, 02C30ZZ, 02C40ZZ, 02C43ZZ, 02C44ZZ, 02C50ZZ, 02C53ZZ, 02C54ZZ,  
 02C60ZZ, 02C63ZZ, 02C64ZZ, 02C70ZZ, 02C73ZZ, 02C74ZZ, 02C80ZZ, 02C83ZZ, 02C84ZZ, 02C90ZZ, 02C93ZZ, 02C94ZZ,  
 02CD0ZZ, 02CD3ZZ, 02CD4ZZ, 02CF0ZZ, 02CG0ZZ, 02CH0ZZ, 02CJ0ZZ, 02CK0ZZ, 02CK3ZZ, 02CK4ZZ, 02CL0ZZ, 02CL3ZZ,  
 02CL4ZZ, 02CM0ZZ, 02CM3ZZ, 02CM4ZZ, 02FN0ZZ, 02FN3ZZ, 02FN4ZZ, 02H40ZZ, 02H403Z, 02H40DZ, 02H43ZZ,  
 02H433Z, 02H43DZ, 02H44ZZ, 02H443Z, 02H44DZ, 02H60ZZ, 02H603Z, 02H60DZ, 02H63ZZ, 02H633Z, 02H63DZ,  
 02H64ZZ, 02H643Z, 02H64DZ, 02H70ZZ, 02H703Z, 02H70DZ, 02H73ZZ, 02H733Z, 02H73DZ, 02H74ZZ, 02H743Z,  
 02H74DZ, 02HA0QZ, 02HA0RS, 02HA3QZ, 02HA3RS, 02HA4QZ, 02HA4RS, 02HK03Z, 02HK0DZ, 02HK33Z, 02HK3DZ,  
 02HK43Z, 02HK4DZ, 02HL0ZZ, 02HL03Z, 02HL0DZ, 02HL3ZZ, 02HL33Z, 02HL3DZ, 02HL4ZZ, 02HL43Z, 02HL4DZ,  
 02HN0MZ, 02HN3MZ, 02HN4MZ, 02L70CK, 02L70DK, 02L70ZK, 02L73CK, 02L73DK, 02L73ZK, 02L74CK, 02L74DK,  
 02L74ZK, 02LROZZ, 02LS0ZZ, 02LT0ZZ, 02N40ZZ, 02N43ZZ, 02N44ZZ, 02N50ZZ, 02N53ZZ, 02N54ZZ, 02N60ZZ, 02N63ZZ,  
 02N64ZZ, 02N70ZZ, 02N73ZZ, 02N74ZZ, 02N80ZZ, 02N83ZZ, 02N84ZZ, 02N90ZZ, 02N93ZZ, 02N94ZZ, 02ND0ZZ,  
 02ND3ZZ, 02ND4ZZ, 02NF0ZZ, 02NG0ZZ, 02NH0ZZ, 02NH0ZZ, 02NJ0ZZ, 02NK0ZZ, 02NK3ZZ, 02NK4ZZ, 02NLOZZ,  
 02NL3ZZ, 02NL4ZZ, 02NM0ZZ, 02NM3ZZ, 02NM4ZZ, 02PA0ZZ, 02PA03Z, 02PA07Z, 02PA08Z, 02PA0CZ, 02PA0DZ,  
 02PA0JZ, 02PA0KZ, 02PA0QZ, 02PA0RZ, 02PA3ZZ, 02PA33Z, 02PA37Z, 02PA38Z, 02PA3CZ, 02PA3DZ, 02PA3JZ,  
 02PA3KZ, 02PA3QZ, 02PA3RZ, 02PA4ZZ, 02PA43Z, 02PA47Z, 02PA48Z, 02PA4CZ, 02PA4DZ, 02PA4JZ, 02PA4KZ,  
 02PA4QZ, 02PA4RZ, 02Q00ZZ, 02Q03ZZ, 02Q04ZZ, 02Q10ZZ, 02Q13ZZ, 02Q14ZZ, 02Q20ZZ, 02Q23ZZ, 02Q24ZZ,  
 02Q30ZZ, 02Q33ZZ, 02Q34ZZ, 02Q40ZZ, 02Q43ZZ, 02Q44ZZ, 02Q50ZZ, 02Q50ZZ, 02Q53ZZ, 02Q53ZZ, 02Q54ZZ,  
 02Q60ZZ, 02Q63ZZ, 02Q64ZZ, 02Q70ZZ, 02Q73ZZ, 02Q74ZZ, 02Q80ZZ, 02Q83ZZ, 02Q84ZZ, 02Q90ZZ, 02Q93ZZ,  
 02Q94ZZ, 02QA0ZZ, 02QA3ZZ, 02QA4ZZ, 02QB0ZZ, 02QB3ZZ, 02QB4ZZ, 02QC0ZZ, 02QC3ZZ, 02QC4ZZ, 02QD0ZZ,  
 02QD3ZZ, 02QD4ZZ, 02QF0ZZ, 02QF3ZZ, 02QF4ZZ, 02QG0ZZ, 02QG3ZZ, 02QG4ZZ, 02QH0ZZ, 02QH3ZZ, 02QH4ZZ,  
 02QJ0ZZ, 02QJ3ZZ, 02QJ4ZZ, 02QK0ZZ, 02QK3ZZ, 02QK4ZZ, 02QL0ZZ, 02QL3ZZ, 02QL4ZZ, 02QM0ZZ, 02QM3ZZ,  
 02QM4ZZ, 02QN0ZZ, 02QN3ZZ, 02QN4ZZ, 02R507Z, 02R508Z, 02R50JZ, 02R50KZ, 02R547Z, 02R548Z, 02R54JZ,  
 02R54KZ, 02R607Z, 02R608Z, 02R60JZ, 02R60KZ, 02R647Z, 02R648Z, 02R64JZ, 02R64KZ, 02R707Z, 02R708Z, 02R70JZ,  
 02R70KZ, 02R747Z, 02R748Z, 02R74JZ, 02R74KZ, 02R907Z, 02R908Z, 02R90JZ, 02R90KZ, 02R947Z, 02R948Z, 02R94JZ,  
 02R94KZ, 02RD07Z, 02RD08Z, 02RD0JZ, 02RD0KZ, 02RD47Z, 02RD48Z, 02RD4JZ, 02RD4KZ, 02RF07Z, 02RF08Z, 02RF0JZ,  
 02RF0KZ, 02RF37H, 02RF37Z, 02RF38H, 02RF38Z, 02RF3JH, 02RF3JZ, 02RF3KH, 02RF3KZ, 02RF47Z, 02RF48Z, 02RF4JZ,  
 02RF4KZ, 02RG07Z, 02RG08Z, 02RG0JZ, 02RG0KZ, 02RG37H, 02RG37Z, 02RG38H, 02RG38Z, 02RG3JH, 02RG3JZ,  
 02RG3KH, 02RG3KZ, 02RG47Z, 02RG48Z, 02RG4JZ, 02RG4KZ, 02RH07Z, 02RH08Z, 02RH0JZ, 02RH0KZ, 02RH37H,  
 02RH37Z, 02RH38H, 02RH38Z, 02RH3JH, 02RH3JZ, 02RH3KH, 02RH3KZ, 02RH47Z, 02RH48Z, 02RH4JZ, 02RH4KZ,  
 02RJ07Z, 02RJ08Z, 02RJ0JZ, 02RJ0KZ, 02RJ47Z, 02RJ48Z, 02RJ4JZ, 02RJ4KZ, 02RK07Z, 02RK08Z, 02RK0JZ, 02RK0KZ,  
 02RK47Z, 02RK48Z, 02RK4JZ, 02RK4KZ, 02RL07Z, 02RL08Z, 02RL0JZ, 02RL0KZ, 02RL47Z, 02RL48Z, 02RL4JZ, 02RL4KZ,  
 02RM07Z, 02RM08Z, 02RM0JZ, 02RM0KZ, 02RM47Z, 02RM48Z, 02RM4JZ, 02RM4KZ, 02RN07Z, 02RN08Z, 02RN0JZ,  
 02RN0KZ, 02RN47Z, 02RN48Z, 02RN4JZ, 02RN4KZ, 02RPOJZ, 02RQ07Z, 02RQ0JZ, 02RR07Z, 02RR0JZ, 02SPOZZ,  
 02SW0ZZ, 02T50ZZ, 02T53ZZ, 02T54ZZ, 02T80ZZ, 02T90ZZ, 02T93ZZ, 02T94ZZ, 02TD0ZZ, 02TD3ZZ, 02TD4ZZ, 02TH0ZZ,  
 02TH3ZZ, 02TH4ZZ, 02TM0ZZ, 02TM3ZZ, 02TM4ZZ, 02U507Z, 02U508Z, 02U50JZ, 02U50KZ, 02U537Z, 02U538Z,  
 02U53JZ, 02U53KZ, 02U547Z, 02U548Z, 02U54JZ, 02U54KZ, 02U607Z, 02U608Z, 02U60JZ, 02U60KZ, 02U637Z,  
 02U638Z, 02U63JZ, 02U63KZ, 02U647Z, 02U648Z, 02U64JZ, 02U64KZ, 02U707Z, 02U708Z, 02U70JZ, 02U70KZ,  
 02U737Z, 02U738Z, 02U73KZ, 02U747Z, 02U748Z, 02U74KZ, 02U907Z, 02U908Z, 02U90JZ, 02U90KZ, 02U937Z,  
 02U938Z, 02U93JZ, 02U93KZ, 02U947Z, 02U948Z, 02U94JZ, 02U94KZ, 02UA07Z, 02UA08Z, 02UA0JZ, 02UA0KZ,  
 02UA37Z, 02UA38Z, 02UA3JZ, 02UA3KZ, 02UA47Z, 02UA48Z, 02UA4JZ, 02UA4KZ, 02UD07Z, 02UD08Z, 02UD0JZ,  
 02UD0KZ, 02UD37Z, 02UD38Z, 02UD3JZ, 02UD3KZ, 02UD47Z, 02UD48Z, 02UD4JZ, 02UD4KZ, 02UF07Z, 02UF08Z,  
 02UF0JZ, 02UF0KZ, 02UF37Z, 02UF38Z, 02UF3JZ, 02UF3KZ, 02UF47Z, 02UF48Z, 02UF4JZ, 02UF4KZ, 02UG07Z,  
 02UG08Z, 02UG0JZ, 02UG0KZ, 02UG37Z, 02UG38Z, 02UG3JZ, 02UG3KZ, 02UG47Z, 02UG48Z, 02UG4JZ, 02UG4KZ,

02UH07Z, 02UH08Z, 02UH0JZ, 02UH0KZ, 02UH37Z, 02UH38Z, 02UH3JZ, 02UH3KZ, 02UH47Z, 02UH48Z, 02UH4JZ, 02UH4KZ, 02UJ07Z, 02UJ08Z, 02UJ0JZ, 02UJ0KZ, 02UJ37Z, 02UJ38Z, 02UJ3JZ, 02UJ3KZ, 02UJ47Z, 02UJ48Z, 02UJ4JZ, 02UJ4KZ, 02UK07Z, 02UK08Z, 02UK0JZ, 02UK0KZ, 02UK37Z, 02UK38Z, 02UK3JZ, 02UK3KZ, 02UK47Z, 02UK48Z, 02UK4JZ, 02UK4KZ, 02UL07Z, 02UL08Z, 02UL0JZ, 02UL0KZ, 02UL37Z, 02UL38Z, 02UL3JZ, 02UL3KZ, 02UL47Z, 02UL48Z, 02UL4JZ, 02UL4KZ, 02UM07Z, 02UM08Z, 02UM0JZ, 02UM0KZ, 02UM37Z, 02UM38Z, 02UM3JZ, 02UM3KZ, 02UM47Z, 02UM48Z, 02UM4JZ, 02UM4KZ, 02UN07Z, 02UN08Z, 02UN0JZ, 02UN0KZ, 02UN37Z, 02UN38Z, 02UN3JZ, 02UN3KZ, 02UN47Z, 02UN48Z, 02UN4JZ, 02UN4KZ, 02VA0CZ, 02VA0ZZ, 02VA3CZ, 02VA3ZZ, 02VA4CZ, 02VA4ZZ, 02VR0ZT, 02WA02Z, 02WA03Z, 02WA07Z, 02WA08Z, 02WA0CZ, 02WA0DZ, 02WA0KZ, 02WA0QZ, 02WA0RZ, 02WA32Z, 02WA33Z, 02WA37Z, 02WA38Z, 02WA3CZ, 02WA3DZ, 02WA3JZ, 02WA3KZ, 02WA3QZ, 02WA3RZ, 02WA42Z, 02WA43Z, 02WA47Z, 02WA48Z, 02WA4CZ, 02WA4DZ, 02WA4JZ, 02WA4KZ, 02WA4QZ, 02WA4RZ, 0KXF0ZZ, 0KXG0ZZ, OPT10ZZ, OPT20ZZ, OWFD0ZZ, OWFD3ZZ, OWFD4ZZ, OWFDXZZ, 5A02116

**Denominator Exclusions (NQF Includes “Exceptions” in the “Exclusion” Field) S.10.**

The following admissions are excluded from the denominator:

- Admissions with diagnosis of diabetic ketoacidosis (DKA) or hyperglycemic hyperosmolar syndrome (HHS)
- Admissions without any hospital days included in analysis
- Admissions with lengths of stay greater than 120 days

**Denominator Exclusion Details (NQF Includes “Exceptions” in the “Exclusion” Field) S.11.**

Table 5. Identification of Diabetic Ketoacidosis (DKA)

ICD-9-CM: 250.10, 250.11, 250.12, 250.13, 250.30, 250.31, 250.32, 250.33, 249.10, 249.11, 249.30, 249.31  
ICD-10-CM: E08.10, E08.11, E08.641, E08.65, E09.10, E09.11, E09.641, E09.65, E10.10, E10.11, E10.641, E10.65, E11.01, E11.641, E11.65, E11.69, E13.10, E13.11, E13.641

Table 6. Identification of Hyperglycemic Hyperosmolar Syndrome (HHS)

ICD-9-CM: 250.20, 250.21, 250.22, 250.23, 249.20, 249.21  
ICD-10-CM: E08.00, E08.01, E08.65, E09.00, E09.01, E10.65, E10.69, E11.00, E11.01, E11.65, E13.00, E13.01

**Stratification Details/Variables S.12.**

Depending on the operational use of the measure, measure results will be stratified by:

- Care units (intensive care unit vs. non-intensive care unit)  
Hospital days will be assigned to the unit with the majority of time.
- Type of patients (medical vs. surgical)
- Daily cumulative steroid dose ( $\leq 10$  mg,  $> 10$  mg prednisone equivalents)

Table 7. MSDRG Codes Used to Identify Surgical Patients

001, 002, 003, 004, 005, 006, 007, 008, 009, 010, 011, 012, 013, 014, 015, 016, 017, 020, 021, 022, 023, 024, 025, 026, 027, 028, 029, 030, 031, 032, 033, 034, 035, 036, 037, 038, 039, 040, 041, 042, 049, 050, 051, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 400, 401, 402, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 525, 526, 527, 528, 529, 530, 531, 532, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 765, 766, 767, 768, 769, 770, 799, 800, 801, 802, 803, 804, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 853, 854, 855, 856, 857, 858, 876, 901, 902, 903,

904, 905, 906, 907, 908, 909, 927, 928, 929, 939, 940, 941, 955, 956, 957, 958, 959, 969, 970, 981, 982, 983, 984, 985, 986, 987, 988, 989

**Risk Adjustment Type S.13.**

Stratification by risk category/subgroup

**Statistical Risk Model and Variables S.14.**

Not applicable

**Detailed Risk Model Specifications S.15.**

Not applicable

**Type of Score S.16.**

Ratio

**Interpretation of Score S.17.**

Better quality = lower score

**Calculation Algorithm/Measure Logic S.18.**

**Target Population:** Inpatient admissions/encounters where individuals are at least 18 years of age as of the admission date, both admission and discharge dates are within the measurement period, and the length of stay is less than or equal to 120 days

**Denominator:** Total number of admissions with a diagnosis of diabetes mellitus, at least one administration of insulin or any oral anti-diabetic medication except metformin, or at least one elevated blood glucose value (>200 mg/dL [11.1 mmol/L]) at any time during the entire hospital stay

**Create Denominator:**

1. Was the admission during the measurement period? If Yes, go to Step 2. If No, exclude.
2. Determine the patient's age in years. The patient's age is equal to the admission date minus the birth date. If the patient is at least 18 years of age, go to Step 3. If less than 18 years of age, exclude from the measure population.
3. Determine the length of hospital stay in days. The length of stay is equal to the discharge date minus the admission date. If the length of stay is less than or equal to 120 days, move to Step 4. If the length of stay is greater than 120 days, exclude from the measure population.
4. During the admission, did the patient have a diagnosis of diabetes mellitus (Table 1), or receive an anti-diabetic medication excluding Metformin (Table 2), or have at least one elevated blood glucose level greater than 200 mg/dL? The blood glucose results need to be from either random or peri-prandial blood glucose tests (Table 3). If Yes, go to Step 5. If No, exclude from the measure population.
5. If there was no diagnosis of DKA (Table 5) during the admission, go to Step 6. If there was a diagnosis of DKA, exclude from the measure population.
6. If there was no diagnosis of HHS (Table 6) during the admission, determine the measureable days, as described in Step 7. If there was a diagnosis of HHS, exclude from the measure population.
7. To determine the measureable days in the admission:
  - a. Remove the admission and discharge day.
  - b. Remove the first day following the admission date, if the patient was admitted after noon or the patient was admitted before noon with the first blood glucose level greater than 400 mg/dL.
  - c. Remove the first and second day following the admission date, if the patient was admitted after noon with the first glucose level greater than 400 mg/dL.
  - d. Remove any days in which any part of the day was covered by the patient in the operating room (OR) for a CT procedure (Table 4) through 18 hours after he/she left the OR.
8. Is there at least one measurable day left? If Yes, go to Step 9. If No, exclude from the measure population.
9. If there were 10 calendar days or less, go to Step 10. Exclude any calendar days over 10 days.
10. Count the number of admissions left. The total number of the qualifying admissions is the measure denominator.



**Numerator:** Sum of the percentage of hospital days in hyperglycemia for all admissions in the denominator

**Create Numerator:**

1. For each measurable calendar day identified in Step 9 of the denominator logic, extract the test results that are from either random or peri-prandial blood glucose tests (Table 3). Sort them by the collection time in ascending order.
2. For each day, determine if there were at least six hours between the first elevated blood glucose level (>200 mg/dL) and the last elevated blood glucose level; or there was one single elevated blood glucose level (if only one value was available); or no blood glucose level was measured and two normoglycemic days did not precede it. If Yes, mark the day as a Hyperglycemic Day. If No, exclude the day from the numerator population.
3. For each admission, count the number of Hyperglycemic Days (from Step 2) and the number of measureable days qualified for the measure (from Denominator Step 9).
4. Calculate the percentage of hospitals days in hyperglycemia, which is equal to the number of Hyperglycemic Days divided by the number of measureable days.
5. Add the percentages calculated in Step 4 from all the admissions in the denominator. The sum of the percentage is the measure numerator.

**Calculation Algorithm/Measure Logic Diagram URL or Attachment S.19.**

Not applicable

**Sampling S.20.**

Not applicable; this measure does not use a sample or survey.

**Survey/Patient-Reported Data S.21.**

Not applicable; this measure does not use a sample or survey.

**Missing Data S.22.**

Missing data in the electronic health record (EHR) environment can occur due to oversight or when ascertainment or documentation was not considered relevant for clinical or administrative purposes. One concern is that patients may not have certain laboratory values because they were not deemed clinically indicated by the respective provider. This scenario will create missing data, which can only be remediated if ascertainment and documentation were required for measurement purposes (as they are not for clinical reasons). In order to optimize the validity of available information, safeguards have been incorporated into the measure specifications, where hospital variation may introduce bias in measurement or documentation. Specifically, the definition of patients at risk for hyperglycemia for the denominator uses three distinct data repositories (laboratory, diagnoses, and medications) to ensure complete ascertainment. Likewise, failure to monitor glucose levels was included in the numerator definition of uncontrolled hyperglycemia to capture instances where lack of glucose monitoring would suggest appropriate glucose control because elevated values were not captured.

Formative and field testing revealed that distinct data fields that were expected to be fully populated did not have missing values. This concerned socio-demographic and payer information, assignment of at least one diagnosis code, and admission and discharge dates. Of note, some cases were lacking the ICD-9 coding for diabetes. Nevertheless, these cases were still captured in the denominator, based on the use of anti-diabetic medications or elevated blood glucose values.

**Data Source S.23.**

Electronic Clinical Data: Electronic Clinical Data  
Electronic Clinical Data: Electronic Health Record  
Electronic Clinical Data: Laboratory  
Electronic Clinical Data: Pharmacy



**Data Source or Collection Instrument S.24.**

- Hospital electronic health record (EHR) data
- For measure calculation, the following EHR data are required:
  - o Inpatient (IP) Master Patient file with demographic, diagnostic, and procedural information for inpatients
  - o Glucose test file with the names, results, and times of glucose tests for both laboratory and point-of-care testing
  - o Medication administration records (MARs) for anti-diabetic drugs
  - o Location file with the care units and the start and end times of patients' stays

**Data Source or Collection Instrument (Reference) S.25.**

Not applicable

**Level of Analysis S.26.**

Facility

**Care Setting S.27.**

Hospital/Acute Care Facility

**Composite Performance Measure S.28.**

Not applicable

**Version Number and Effective Date**

Version 1.0

January 1, 2014 – December 31, 2014

**Measure Steward**

Centers for Medicare & Medicaid Services (CMS)

Point of Contact: CMS Measures Management System, CMS.Measures.Inventory@hsag.com

Measure Developer: FMQAI, 5201 W. Kennedy Blvd., Suite 900, Tampa, Florida, 33609

**Copyright/Disclaimer**

Limited proprietary coding is contained in the measure specifications for user convenience. Use of these codes may require permission from the code owner or agreement to a license.

ICD-10 codes are copyright © World Health Organization (WHO), Fourth Edition, 2010. The LOINC® codes are copyright © 1995-2013, Regenstrief Institute, Inc. and the Logical Observation Identifiers Names and Codes (LOINC) Committee. SNOMED® and SNOMED CT® are registered trademarks of the International Health Terminology Standards Development Organisation (IHTSDO®). All rights reserved.

This performance measure does not establish a standard of medical care and has not been tested for all potential applications.