Measure #238 (NQF 0022): Use of High-Risk Medications in the Elderly – National Quality Strategy Domain: Patient Safety

2017 OPTIONS FOR INDIVIDUAL MEASURES:
REGISTRY ONLY

MEASURE TYPE:
Process

DESCRIPTION:
Percentage of patients 66 years of age and older who were ordered high-risk medications. Two rates are reported.

1) Percentage of patients who were ordered at least one high-risk medication.

2) Percentage of patients who were ordered at least two different high-risk medications

INSTRUCTIONS:
This measure is to be reported a minimum of **once per performance period** for patients seen during the performance period. There is no diagnosis associated with this measure. This measure may be reported by eligible clinicians who perform the quality actions described in the measure based on the services provided and the measure-specific denominator coding.

This measure will be calculated with 2 performance rates:

1) Percentage of patients who were ordered at least one high-risk medication

2) Percentage of patients who were ordered at least two different high-risk medications

Eligible clinicians should continue to report the measure as specified, with no additional steps needed to account for multiple performance rates.

Measure Reporting:
The listed denominator criteria is used to identify the intended patient population. The numerator options included in this specification are used to submit the quality actions allowed by the measure. The quality-data codes listed do not need to be submitted for registry-based submissions; however, these codes may be submitted for those registries that utilize claims data.

THERE ARE TWO REPORTING CRITERIA FOR THIS MEASURE:

1. **Percentage of patients who were ordered at least one high-risk medication**

OR

2. **Percentage of patients who were ordered at least two different high-risk medications**

REPORTING CRITERIA 1: PERCENTAGE OF PATIENTS WHO WERE ORDERED AT LEAST ONE HIGH-RISK MEDICATION

DENOMINATOR (REPORTING CRITERIA 1):
Patients 66 years and older who had a visit during the measurement period

Denominator Criteria (Eligible Cases) 1:
Patients aged ≥ 66 years on date of encounter
AND

Patient encounter during performance period (CPT or HCPCS): 99201, 99202, 99203, 99204, 99205, 99212, 99213, 99214, 99215, 99341, 99342, 99343, 99344, 99345, 99347, 99348, 99349, 99350, G0438, G0439

AND NOT

DENOMINATOR EXCLUSION:

Patients who use hospice services any time during the measurement period: G9741

NUMERATOR (REPORTING CRITERIA 1):

Percentage of patients who were ordered at least one high-risk medication during the measurement period

Numerator Instructions:

INVERSE MEASURE - A lower calculated performance rate for this measure indicates better clinical care or control. The "Performance Not Met" numerator option for this measure is the representation of the better clinical quality or control. Reporting that numerator option will produce a performance rate that trends closer to 0%, as quality increases. For inverse measures a rate of 100% means all of the denominator eligible patients did not receive the appropriate care or were not in proper control.

A high-risk medication is identified by either of the following:

- A prescription for medications classified as high risk at any dose and for any duration listed in Table 1
- Prescriptions for medications classified as high risk at any dose with greater than a 90 day cumulative medication duration listed in Table 2

Definitions:

Cumulative Medication Duration - an individual's total number of medication days over a specific period; the period counts multiple prescriptions with gaps in between, but does not count the gaps during which a medication was not dispensed.

To determine the cumulative medication duration, determine first the number of the Medication Days for each prescription in the period: the number of doses divided by the dose frequency per day. Then add the Medication Days for each prescription without counting any days between the prescriptions.

Table 1 – High-Risk Medications at any dose or duration

Description	Prescription	
Anticholinergics (excludes TCAs), first-generation antihistamines	• Brompheniramine • Carbinoxamine • Chlorpheniramine • Clemastine • Cyproheptadine • Dexbrompheniramine	• Dexchlorpheniramine • Diphenhydramine (oral) • Doxylamine • Hydroxyzine • Promethazine • Triprolidine
Anticholinergics (excludes TCAs), anti-Parkinson agents	• Benztropine (oral)	• Trihexyphenidyl
Antithrombotics	• Dipyridamole, oral	• Ticlopidine extended-release short-acting (does not apply to the combination with aspirin)
Cardiovascular, alpha agonists, central	• Guanabenz • Methyldopa	• Guanfacine
Cardiovascular, other	• Disopyramide	• Nifedipine, immediate release
Central nervous system, tertiary TCAs	• Amitriptyline • Clomipramine	• Imipramine • Trimipramine
Central nervous system, barbiturates	• Amobarbital • Butabarbital • Butalbital • Mephobarbital	• Pentobarbital • Phenobarbital • Secobarbital
Central nervous system, vasodilators	• Ergot mesylates	• Isoxsuprine
Central nervous system, other	• Thioridazine • Chloral Hydrate	• Meprobamate
Endocrine system, estrogens with or without progestins; include only oral and topical patch products	• Conjugated estrogen • Estropipate	• Estradiol • Esterified estrogen
Endocrine system, sulfonylureas, long- duration	• Chlorpropamide	• Glyburide
Endocrine system, other	• Desiccated thyroid	• Megestrol
Gastrointestinal system, other	• Trimethobenzamide	
Pain medications, skeletal muscle relaxants	• Carisoprodol • Chlorzoxazone • Cyclobenzaprine	• Metaxalone • Methocarbamol • Orphenadrine

Description	Prescription	
Pain medications, other	• Indomethacin • Meperidine	• Ketorolac, includes parenteral Pentazocine

Table 2 - High-Risk Medications With Days Supply Criteria

Description	Prescription		Days Supply Criteria
Anti-Infectives, other	• Nitrofurantoin • Nitrofurantoin macrocrystals	• Nitrofurantoin macrocrystals-monohydrate	>90 days
Nonbenzodiazepine hypnotics	• Eszopiclone • Zaleplon	• Zolpidem	>90 days

NUMERATOR NOTE: *Some high-risk medications are not included in this specific measure but should be avoided above a specified average daily dose. These medications are listed in table DAE-C. To calculate an average daily dose multiply the quantity of pills ordered by the dose of each pill and divide by the days supply. For example, a prescription for a 30-days supply of digoxin containing 15 pills, 0.250 mg each pill, has an average daily dose of 1.125 mg.*

Table 4 - DAE-C: High-Risk Medications With Average Daily Dose Criteria

Description	Prescription	Average Daily Dose Criteria
Alpha agonists, central	• Reserpine	>0.1 mg/day
Cardiovascular, other	• Digoxin	>0.125 mg/day
Tertiary TCAs (as single agent or as part of combination products)	• Doexpin	>6 mg/day

Numerator Options:

Performance Met: One high-risk medication ordered **(G9365)**

OR

Performance Not Met: One high-risk medication not ordered **(G9366)**

REPORTING CRITERIA 2: PERCENTAGE OF PATIENTS WHO WERE ORDERED AT LEAST TWO DIFFERENT HIGH-RISK MEDICATIONS

DENOMINATOR (REPORTING CRITERIA 2):

Patients 66 years and older who had a visit during the measurement period

Denominator Criteria (Eligible Cases) 2:

Patients aged ≥ 66 years on date of encounter

AND

Patient encounter during performance period (CPT or HCPCS): 99201, 99202, 99203, 99204, 99205, 99212, 99213, 99214, 99215, 99341, 99342, 99343, 99344, 99345, 99347, 99348, 99349, 99350, G0438, G0439

AND NOT

DENOMINATOR EXCLUSION:

Patients who use hospice services any time during the measurement period: G9741

NUMERATOR (REPORTING CRITERIA 2):
Percentage of patients who were ordered at least two different high-risk medications during the measurement period

Numerator Instructions:
INVERSE MEASURE - A lower calculated performance rate for this measure indicates better clinical care or control. The "Performance Not Met" numerator option for this measure is the representation of the better clinical quality or control. Reporting that numerator option will produce a performance rate that trends closer to 0%, as quality increases. For inverse measures a rate of 100% means all of the denominator eligible patients did not receive the appropriate care or were not in proper control.

A high-risk medication is identified by either of the following:

- A prescription for medications classified as high risk at any dose and for any duration listed in Table 1
- Prescriptions for medications classified as high risk at any dose with greater than a 90 day cumulative medication duration listed in Table 2

Definitions:
Cumulative Medication Duration – an individual's total number of medication days over a specific period; the period counts multiple prescriptions with gaps in between, but does not count the gaps during which a medication was not dispensed.

To determine the cumulative medication duration, determine first the number of the Medication Days for each prescription in the period: the number of doses divided by the dose frequency per day. Then add the Medication Days for each prescription without counting any days between the prescriptions.

Table *5* - High-Risk Medications at any dose or duration

Description	Prescription	
Anticholinergics (excludes TCAs), first-generation antihistamines	• Brompheniramine • Carbinoxamine • Chlorpheniramine • Clemastine • Cyproheptadine • Dexbrompheniramine • Meclizine	• Dexchlorpheniramine • Diphenhydramine (oral) • Doxylamine • Hydroxyzine • Promethazine • Triprolidine
Anticholinergics, anti-Parkinson agents	• Benztropine (oral)	• Trihexyphenidyl
Antithrombotics	• Dipyridamole, oral short-acting (does not apply to the extended-release combination with aspirin)	• Ticlopidine
Cardiovascular, alpha agonists, central	• Guanabenz • Guanfacine	• Methyldopa
Cardiovascular, other	• Disopyramide	• Nifedipine, immediate release

Description	Prescription	
Central nervous system, antidepressants	• Amitriptyline • Clomipramine • Amoxapine • Desipramine • Nortriptyline • Paroxetine • Protriptyline	• Imipramine • Trimipramine
Central nervous system, barbiturates	• Amobarbital • Butabarbital • Butalbital • Mephobarbital	• Pentobarbital • Phenobarbital • Secobarbital
Central nervous system, vasodilators	• Ergot mesylates	• Isoxsuprine
Central nervous system, other	• Meprobamate	
Endocrine system, estrogens with or without progestins; include only oral and topical patch products	• Conjugated estrogen • Esterified estrogen	• Estradiol • Estropipate

Description	Prescription	
Endocrine system, sulfonylureas, long-duration	• Chlorpropamide	• Glyburide
Endocrine system, other	• Desiccated thyroid	• Megestrol
Pain medications, skeletal muscle relaxants	• Carisoprodol • Chlorzoxazone • Cyclobenzaprine	• Metaxalone • Methocarbamol • Orphenadrine
Pain medications, other	• Indomethacin • Ketorolac, includes parenteral	• Meperidine • Pentazocine

*The registry version of the measure specifications only indicate the classes of drugs that are considered high-risk and do not include the specific coding of RxNorm. However, this measure aligns with the eCQM measure (CMS 156) and providers may review the RxNorm codes in the applicable eCQM value sets for reporting.

Table 6 - High-Risk Medications With Days Supply Criteria

Description	Prescription		Days Supply Criteria
Anti-Infectives, other	• Nitrofurantoin • Nitrofurantoin macrocrystals	• Nitrofurantoin macrocrystals-monohydrate	>90 days

Nonbenzodiazepine hypnotics	• Eszopiclone • Zaleplon	• Zolpidem	>90 days

NUMERATOR NOTE: *Some high-risk medications are not included in this specific measure but should be avoided above a specified average daily dose. These medications are listed in table DAE-C. To calculate an average daily dose multiply the quantity of pills ordered by the dose of each pill and divide by the days supply. For example, a prescription for a 30-days supply of digoxin containing 15 pills, 0.250 mg each pill, has an average daily dose of 0.125 mg.*

Table 7 - DAE-C: High-Risk Medications With Average Daily Dose Criteria

Description	Prescription	Average Daily Dose Criteria
Alpha agonists, central	• Reserpine	>0.1 mg/day
Cardiovascular, other	• Digoxin	>0.125 mg/day
Tertiary TCAs (as single agent or as part of combination products)	• Doxepin	>6 mg/day

Numerator Options:

Performance Met: At least two different high-risk medications ordered **(G9367)**

OR

Performance Not Met: At least two different high-risk medications not ordered **(G9368)**

RATIONALE:

Seniors receiving inappropriate medications are more likely to report poorer health status at follow-up, compared to seniors who receive appropriate medications (Fu, Liu, and Christensen 2004. A study of the prevalence of potentially inappropriate medication use in older adults found that 40 percent of individuals 65 and older filled at least one prescription for a potentially inappropriate medication and 13 percent filled two or more (Fick et al. 2008). While some adverse drug events are not preventable, studies estimate that between 30 and 80 percent of adverse drug events in the elderly are preventable (MacKinnon and Hepler 2003).

Reducing the number of inappropriate prescriptions can lead to improved patient safety and significant cost savings. Conservative estimates of extra costs due to potentially inappropriate medications in the elderly average $7.2 billion a year (Fu et al. 2007). Medication use by older adults will likely increase further as the U.S. population ages, new drugs are developed, and new therapeutic and preventive uses for medications are discovered (Rothberg et al. 2008). The annual direct costs of preventable adverse drug events (ADEs) in the Medicare population have been estimated to exceed $800 million (IOM, 2007). By the year 2030, nearly one in five U.S. residents is expected to be aged 65 years or older; this age group is projected to more than double in number from 38.7 million in 2008 to more than 88.5 million in 2050. Likewise, the population aged 85 years or older is expected to increase almost four-fold, from 5.4 million to 19 million between 2008 and 2050. As the elderly population continues to grow, the number of older adults who present with multiple medical conditions for which several medications are prescribed continues to increase, resulting in polypharmacy (Gray and Gardner 2009).

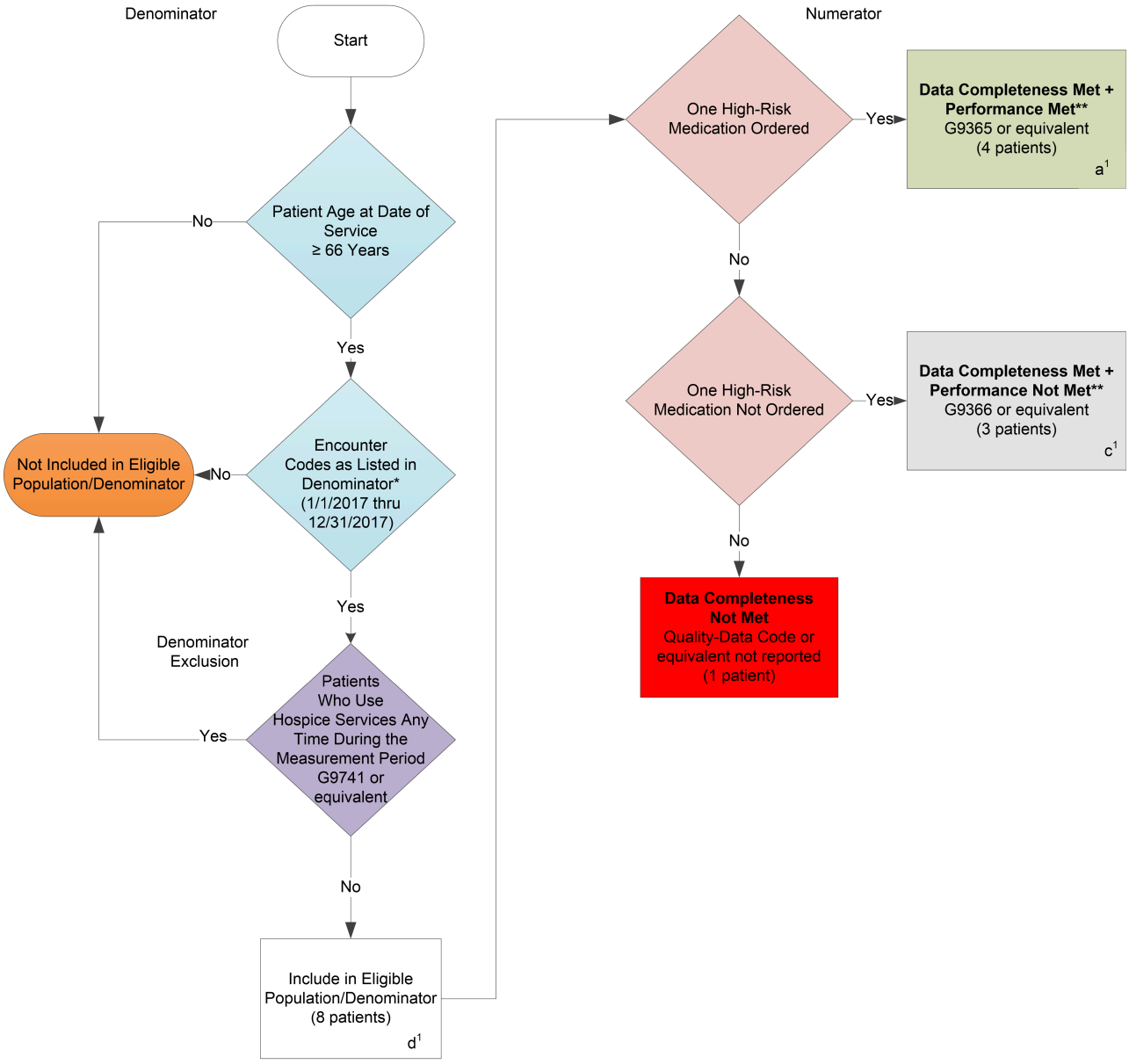
CLINICAL RECOMMENDATION STATEMENTS:

The measure is based on recommendations from the American Geriatrics Society Beers Criteria for Potentially Inappropriate Medication Use in Older Adults. The criteria were developed through key clinical expert consensus processes by Beers in 1997, Zahn in 2001 and an updated process by Fick in 2003, 2012 and 2015. The Beers Criteria identifies lists of drugs that are potentially inappropriate for all older adults and drugs that are potentially inappropriate in the elderly based on various high-risk factors such as dosage, days supply and underlying diseases or conditions. NCQA's Medication Management expert panel selected a subset of drugs that should be used with caution in the elderly for inclusion in the proposed measure based upon the recommendations in the Beers Criteria.

Certain medications (MacKinnon 2003) are associated with increased risk of harm from drug side-effects and drug toxicity and pose a concern for patient safety. There is clinical consensus that these drugs pose increased risks in the elderly (Kaufman 2005). Studies link prescription drug use by the elderly with adverse drug events that contribute to hospitalization, increased length of hospital stay, increased duration of illness, nursing home placement and falls and fractures that are further associated with physical, functional and social decline in the elderly (AHRQ 2009).

2017 Registry Individual Measure Flow
#238 NQF #0022: Use of High-Risk Medications in the Elderly
Reporting Criteria One

Multiple Performance

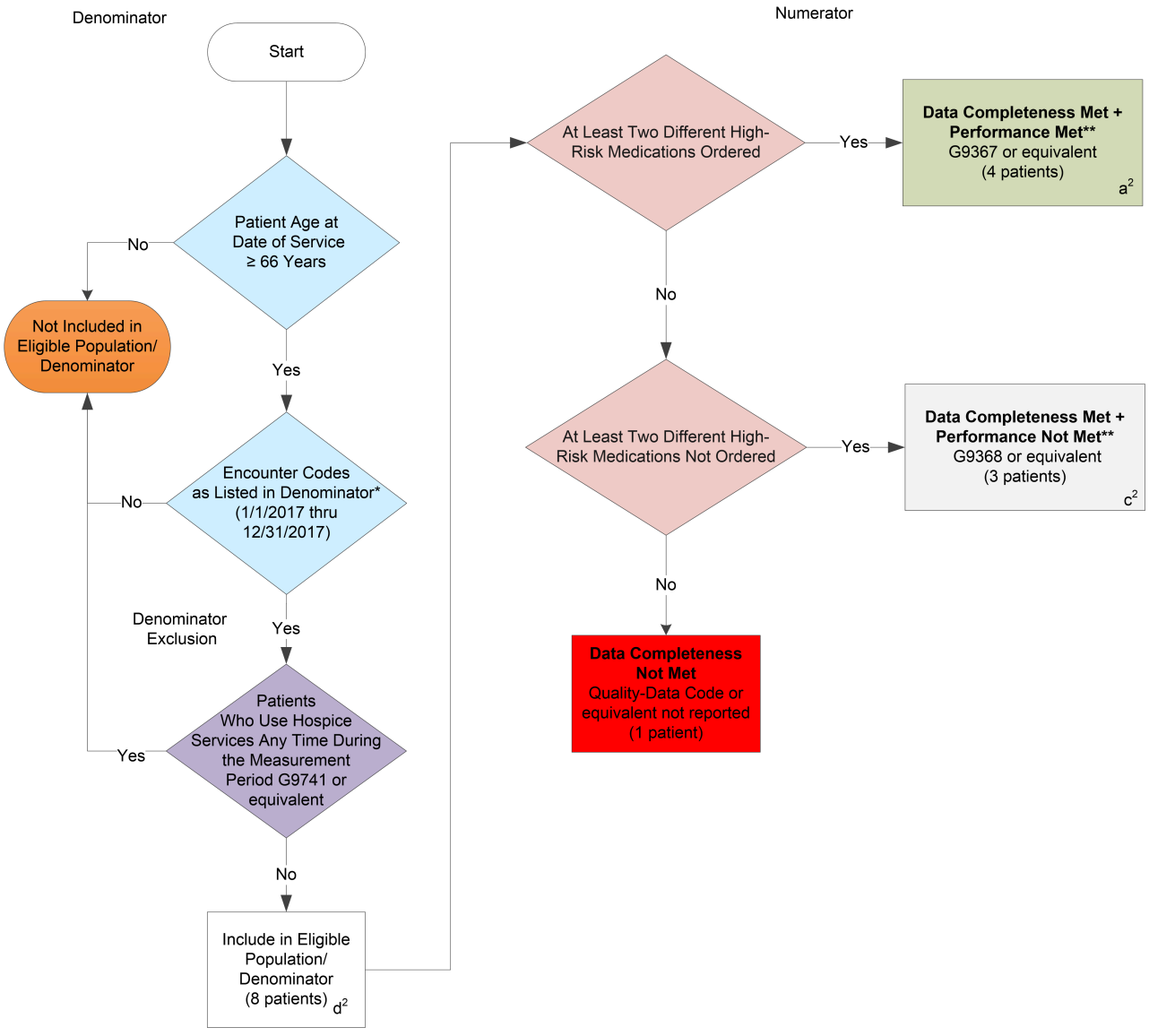


* See the posted Measure Specification for specific coding and instructions to report this measure.
**A lower calculated performance rate for this measure indicates better clinical care or control.
This measure should be calculated with 2 Performance Rates. Review the Sample Calculation to ensure the data completeness and performance rates are calculated accurately.
NOTE: Reporting Frequency: Patient-process

v1

2017 Registry Individual Measure Flow
#238 NQF #0022: Use of High-Risk Medications in the Elderly
Reporting Criteria Two

Multiple Performance



* See the posted Measure Specification for specific coding and instructions to report this measure.
**A lower calculated performance rate for this measure indicates better clinical care or control.
This measure should be calculated with 2 Performance Rates. Review the Sample Calculation to ensure the data completeness and performance rates are calculated accurately.
NOTE: Reporting Frequency: Patient-process

v1

2017 Registry Individual Measure Flow
#238 NQF #0022: Use of High-Risk Medications in the Elderly

Multiple Performance

SAMPLE CALCULATIONS: Data Completeness and Performance Rate One: At Least One High-Risk Medication

Data Completeness=

Performance Met (a^1=4 patients) + Performance Not Met (c^1=3 patients) = 7 patients = **87.50%**

Eligible Population / Denominator (d^1=8 patients) = 8 patients

Performance Rate=**

Performance Met (a^1=4 patients) = 4 patients = **57.14%**

Data Completeness Numerator (7 patients) = 7 patients

SAMPLE CALCULATIONS: Data Completeness and Performance Rate Two: At least Two Different High-Risk Medications

Data Completeness=

Performance Met (a^2=4 patients) + Performance Not Met (c^2=3 patients) = 7 patients = **87.50%**

Eligible Population / Denominator (d^2=8 patients) = 8 patients

Performance Rate=**

Performance Met (a^2=4 patients) = 4 patients = **57.14%**

Data Completeness Numerator (7 patients) = 7 patients

* See the posted Measure Specification for specific coding and instructions to report this measure.
**A lower calculated performance rate for this measure indicates better clinical care or control.
***It is anticipated for registry reporting that for every performance rate, a reporting rate will be submitted. CMS will determine or use the overall data completeness and performance rate.
This measure should be calculated with 2 Performance Rates. Review the Sample Calculation to ensure the data completeness and performance rates are calculated accurately.
NOTE: Reporting Frequency: Patient-process

v1

2017 Registry Individual Measure Flow
#238 NQF #0022: Use of High-Risk Medications in the Elderly
This Measure Requires the Reporting of Two Performance Rates

Please refer to the specific section of the Measure Specification to identify the denominator and numerator information for use in reporting this Individual Measure. This measure will be calculated with 2 Performance Rates and has 2 Reporting Options.

Reporting Criteria One:

1. Start with Denominator
2. Check Patient Age:
    a. If the Age is greater than or equal to 66 years of age on Date of Service and equals No during the measurement period, do not include in Eligible Patient Population. Stop Processing.
    b. If the Age is greater than or equal to 66 years of age on Date of Service and equals Yes during the measurement period, proceed to check Encounter Performed.
3. Check Encounter Performed:
    a. If Encounter as Listed in the Denominator equals No, do not include in Eligible Patient Population. Stop Processing.
    b. If Encounter as Listed in the Denominator equals Yes, proceed to check Patients Who Use Hospice Services Any Time During the Measurement Period.
4. Patients Who Use Hospice Services Any Time During the Measurement Period:
    a. If Patients Who Use Hospice Services Any Time During the Measurement Period equals No, include in the Eligible population.
    b. If Patients Who Use Hospice Services Any Time During the Measurement Period equals Yes, do not include in Eligible Patient Population. Stop Processing.
5. Denominator Population:
    a. Denominator population is all Eligible Patients in the denominator. Denominator is represented as Denominator in the Sample Calculation listed at the end of this document. Letter d equals 8 patients in the sample calculation.
6. Start Numerator
7. Check One High-Risk Medication Ordered:
    a. If One High-Risk Medication Ordered equals Yes, include in Data Completeness Met and Performance Met.
    b. Data Completeness Met and Performance Met letter is represented as Data Completeness and Performance Rate in the Sample Calculation listed at the end of this document. Letter a1 equals 4 patients in Sample Calculation.
    c. If One High-Risk Medication Ordered equals No, proceed to One High-Risk Medication Not Ordered.
8. Check One High-Risk Medication Not Ordered:

a. If One High-Risk Medication Not Ordered equals Yes, include in Data Completeness met and Performance not met.

b. Data Completeness Met and Performance Not Met letter is represented as Data Completeness in the Sample Calculation listed at the end of this document. Letter c1 equals 3 patients in the Sample Calculation.

c. If One High-Risk Medication Not Ordered equals No, proceed to Data Completeness Not Met.

9. Check Data Completeness Not Met:

   a. If Data Completeness Not Met equals No, Quality Data Code or equivalent was not reported. 1 patient has been subtracted from Data Completeness numerator in the sample calculation.

2017 Registry Individual Measure Flow
#238 NQF #0022: Use of High-Risk Medications in the Elderly

Please refer to the specific section of the Measure Specification to identify the denominator and numerator information for use in reporting this Individual Measure.

Reporting Criteria Two:

1. Start with Denominator
2. Check Patient Age:
    a. If the Age is greater than or equal to 66 years of age on Date of Service and equals No during the measurement period, do not include in Eligible Patient Population. Stop Processing.
    b. If the Age is greater than or equal to 66 years of age on Date of Service and equals Yes during the measurement period, proceed to check Encounter Performed.
3. Check Encounter Performed:
    a. If Encounter as Listed in the Denominator equals No, do not include in Eligible Patient Population. Stop Processing.
    b. If Encounter as Listed in the Denominator equals Yes, proceed to check Patients Who Use Hospice Services Any Time During the Measurement Period.
4. Patients Who Use Hospice Services Any Time During the Measurement Period:
    a. If Patients Who Use Hospice Services Any Time During the Measurement Period equals No, include in the Eligible population.
    b. If Patients Who Use Hospice Services Any Time During the Measurement Period equals Yes, do not include in Eligible Patient Population. Stop Processing.
5. Denominator Population:
    a. Denominator population is all Eligible Patients in the denominator. Denominator is represented as Denominator in the Sample Calculation listed at the end of this document. Letter d2 equals 8 patients in the sample calculation.
6. Start Numerator
7. Check At Least Two High-Risk Medications Ordered:
    a. If at Least Two High-Risk Medications Ordered equals Yes, include in Data Completeness Met and Performance Met.
    b. Data Completeness Met and Performance Met letter is represented asData Completeness and Performance Rate in the Sample Calculation listed at the end of this document. Letter a2 equals 4 patients in Sample Calculation.
    c. If at Least Two High-Risk Medications Ordered equals No, proceed to At Least Two High-Risk Medications Not Ordered.
8. Check At Least Two High-Risk Medications Not Ordered:

a. If at Least Two High-Risk Medications Not Ordered equals Yes, include in Data Completeness Met and Performance Not Met.

b. Data Completeness Met and Performance Not Met letter is represented as Data Completeness in the Sample Calculation listed at the end of this document. Letter c2 equals 3 patients in the Sample Calculation.

c. If at Least Two High-Risk Medications Not Ordered equals No, proceed to Data Completeness Not Met.

9. Check Data Completeness Not Met:

   a. If Data Completeness Not Met equals No, Quality Data Code or equivalent was not reported. 1 patient has been subtracted from Data Completeness numerator in the sample calculation.

SAMPLE CALCULATIONS: Data Completeness and Performance Rate One: At Least One High-Risk Medication

Data Completeness=

Performance Met (a^1=4 patients) + Performance Not Met (c^1=3 patients) = 7 patients = **87.50%**

Eligible Population / Denominator (d^1=8 patients) = 8 patients

Performance Rate=**

Performance Met (a^1=4 patients) = 4 patients = **57.14%**

Data Completeness Numerator (7 patients) = 7 patients

SAMPLE CALCULATIONS: Data Completeness and Performance Rate Two: At least Two Different High-Risk Medications

Data Completeness=

Performance Met (a^2=4 patients) + Performance Not Met (c^2=3 patients) = 7 patients = **87.50%**

Eligible Population / Denominator (d^2=8 patients) = 8 patients

Performance Rate=**

Performance Met (a^2=4 patients) = 4 patients = **57.14%**

Data Completeness Numerator (7 patients) = 7 patients