eMeasure Title	Use of High-Risk Medications in the Elderly		
eMeasure Identifier (Measure Authoring Tool)	156	eMeasure Version number	5.1.000
NQF Number	0022	GUID	a3837ff8-1abc-4ba9-800e-fd4e7953adbd
Measurement Period	January 1, 20XX through December 31, 20XX		
Measure Steward	National Committee for Quality Assurance		
Measure Developer	National Committee for Quality Assurance		
Endorsed By	National Quality Forum		
Description	Percentage of patients 66 years of age and older who were ordered high-risk medications. Two rates are reported. a. Percentage of patients who were ordered at least one high-risk medication. b. Percentage of patients who were ordered at least two different high-risk medications.		
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Measure Scoring	Proportion		
Measure Type	Process		
Stratification	None		
Risk Adjustment	None		
Rate Aggregation	None		
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	The measure is based on recommendations from the American Geriatrics Society Beers Criteria for Potentially		

Recommendation Statement	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).
Improvement Notation	Lower score indicates better quality
Reference	Campanelli, Christine M. 2012. "American Geriatrics Society Updated Beers Criteria for Potentially Inappropriate Medication Use in Older Adults: the American Geriatrics Society 2012 Beers Criteria Update Expert Panel." Journal of the American Geriatrics Society 60(4): 616.
Reference	American Geriatrics Society 2015 Beers Criteria Update Expert Panel. 2015. "American Geriatrics Society 2015 Updated Beers Criteria for Potentially Inappropriate Medication Use in Older Adults." Journal of the American Geriatrics Society. 63(11): 2227-2246.
Reference	Zhan, C, et al. Potentially inappropriate medication use in the community-dwelling elderly. JAMA 2001; 286(22):2823-2868.
Reference	Beers, M.H. Explicit criteria for determining potentially inappropriate medication use by the elderly. Arch Intern Med 1997; 157:1531-1536.
Reference	Fick, DM, et al. Updating the Beers criteria for potentially inappropriate medication use in older adults. Arch Intern Med 2003; 163:2716-2724.
Reference	Fu, A.Z., J.Z. Jiang, J.H. Reeves, J.E. Funcham, G.G. Liu, M. Perri. 2007. "Potentially Inappropriate Medication Use and Healthcare Expenditures in the US Community-Dwelling Elderly." Medical Care 45: 472-6.
Reference	Gray, C.L, and C. Gardner. 2009. "Adverse Drug Events in the Elderly: An Ongoing Problem." J Manag Care Pharm 15(7):568-71.
Reference	Fick, D.M., L.C. Mion, M.H. Beers, J.L. Waller. 2008. "Health Outcomes Associated with Potentially Inappropriate Medication Use in Older Adults." Research in Nursing & Health. 31(1): 42-51.
Reference	AHRQ, "Use of High-Risk Medications in the Elderly: Percentage of Medicare Members 65 years of Age and Older who Received at least two different High-Risk Medications." National Quality Measures Clearinghouse. http://www.qualitymeasures.ahrq.gov/popups/printView.aspx?id=24003 (Accessed Web page: December 14, 2015).
Reference	Institute of Medicine (IOM). 2007. Preventing Medication Errors/Committee on Identifying and Preventing Medication Errors. Ed. Aspden P., J.A. Wolcott, J.L. Bootman, L.R. Cronenwatt LR. Quality Chasm Series. Washington, DC: National Academy Press.
Reference	MacKinnon, N.J. and C.D. Hepler. 2003. "Indicators of Preventable Drug-related Morbidity in Older Adults: Use Within a Managed Care Organization." J Managed Care Pharm 9:134-41.
Reference	Kaufman MB, et al. Effect of Prescriber Education on the Use of Medications Contraindicated in Older Adults in a Managed Medicare Population. J Manag Care Pharm 2005 April/May; 11(3):211-219.
Reference	Rothberg, M.B., P.S. Perkow, F. Liu, B. Korc-Grodzicki, M.J. Brennan, S. Bellantonio, M. Heelon, P.K. Lindenauer. 2008. "Potentially Inappropriate Medication Use in Hospitalized Elders." J Hosp Med 3:91-102.
Definition	A high-risk medication is identified by either of the following: 　　a. A prescription for medications classified as high risk at any dose and for any duration 　　b. Prescriptions for medications classified as high risk at any dose with greater than a 90 day supply
Guidance	The intent of Numerator 1 of the measure is to assess if the patient has been prescribed at least one high-risk medication. The intent of Numerator 2 of the measure is to assess if the patient has been prescribed at least two different high-risk medications. The intent of the measure is to assess if the reporting provider ordered the high-risk medication(s). If the patient had a high-risk medication previously prescribed by another provider, they would not be counted towards the numerator unless the reporting provider also ordered a high-risk medication for them. CUMULATIVE MEDICATION DURATION is 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. For example, there is an original prescription for 30 days with 2 refills for thirty days each. After a gap of 3 months, the medication was prescribed again for 60 days with 1 refill for 60 days. The cumulative medication duration is (30 x 3) + (60 x 2) = 210 days over the 10 month period.

Transmission Format	TBD
Initial Population	Patients 66 years and older who had a visit during the measurement period
Denominator	Equals Initial Population
Denominator Exclusions	None
Numerator	Numerator 1: Patients with an order for at least one high-risk medication during the measurement period. Numerator 2: Patients with an order for at least two different high-risk medications during the measurement period.
Numerator Exclusions	Not Applicable
Denominator Exceptions	None
Supplemental Data Elements	For every patient evaluated by this measure also identify payer, race, ethnicity and sex

Table of Contents

Population Criteria

------ Population Criteria 1 ------

- **Initial Population =**
    - AND: Age>= 66 year(s) at: "Measurement Period"
    - AND: Union of:
        - "Encounter, Performed: Office Visit"
        - "Encounter, Performed: Ophthalmologic Outpatient Visit"
        - "Encounter, Performed: Face-to-Face Interaction"
        - "Encounter, Performed: Preventive Care Services - Established Office Visit, 18 and Up"
        - "Encounter, Performed: Preventive Care Services-Initial Office Visit, 18 and Up"
        - "Encounter, Performed: Annual Wellness Visit"
        - "Encounter, Performed: Home Healthcare Services"
        - during "Measurement Period"
- **Denominator =**
    - AND: Initial Population
- **Denominator Exclusions =**
    - None
- **Numerator =**
    - AND:
        - OR: "Medication, Order: High Risk Medications for the Elderly" during "Measurement Period"
        - OR: Sum> 90 day(s): "Medication, Order: High-Risk Medications With Days Supply Criteria (cumulative medication duration)" during "Measurement Period"
- **Numerator Exclusions =**
    - None
- **Denominator Exceptions =**
    - None
- **Stratification =**
    - None

------ Population Criteria 2 ------

- **Initial Population =**
    - AND: Age>= 66 year(s) at: "Measurement Period"
    - AND: Union of:
        - "Encounter, Performed: Office Visit"
        - "Encounter, Performed: Ophthalmologic Outpatient Visit"
        - "Encounter, Performed: Face-to-Face Interaction"
        - "Encounter, Performed: Preventive Care Services - Established Office Visit, 18 and Up"
        - "Encounter, Performed: Preventive Care Services-Initial Office Visit, 18 and Up"
        - "Encounter, Performed: Annual Wellness Visit"
        - "Encounter, Performed: Home Healthcare Services"
        - during "Measurement Period"
- **Denominator =**

AND: Initial Population
- **Denominator Exclusions =**
  - None
- **Numerator =**
  - AND: Count>= 2 : Union of:
    - "Medication, Order: High Risk Medications for the Elderly"
    - "Medication, Order: High-Risk Medications With Days Supply Criteria (cumulative medication duration > 90 day(s))"
    - during "Measurement Period"
- **Numerator Exclusions =**
  - None
- **Denominator Exceptions =**
  - None
- **Stratification =**
  - None

Data Criteria (QDM Variables)

- None

Data Criteria (QDM Data Elements)

- "Encounter, Performed: Annual Wellness Visit" using "Annual Wellness Visit Grouping Value Set (2.16.840.1.113883.3.526.3.1240)"
- "Encounter, Performed: Face-to-Face Interaction" using "Face-to-Face Interaction Grouping Value Set (2.16.840.1.113883.3.464.1003.101.12.1048)"
- "Encounter, Performed: Home Healthcare Services" using "Home Healthcare Services Grouping Value Set (2.16.840.1.113883.3.464.1003.101.12.1016)"
- "Encounter, Performed: Office Visit" using "Office Visit Grouping Value Set (2.16.840.1.113883.3.464.1003.101.12.1001)"
- "Encounter, Performed: Ophthalmologic Outpatient Visit" using "Ophthalmologic Outpatient Visit CPT Value Set (2.16.840.1.113883.3.464.1003.101.11.1206)"
- "Encounter, Performed: Preventive Care Services - Established Office Visit, 18 and Up" using "Preventive Care Services - Established Office Visit, 18 and Up Grouping Value Set (2.16.840.1.113883.3.464.1003.101.12.1025)"
- "Encounter, Performed: Preventive Care Services-Initial Office Visit, 18 and Up" using "Preventive Care Services-Initial Office Visit, 18 and Up Grouping Value Set (2.16.840.1.113883.3.464.1003.101.12.1023)"
- "Medication, Order: High Risk Medications for the Elderly" using "High Risk Medications for the Elderly Grouping Value Set (2.16.840.1.113883.3.464.1003.196.12.1253)"
- "Medication, Order: High-Risk Medications With Days Supply Criteria" using "High-Risk Medications With Days Supply Criteria Grouping Value Set (2.16.840.1.113883.3.464.1003.196.12.1254)"

Supplemental Data Elements

- "Patient Characteristic Ethnicity: Ethnicity" using "Ethnicity CDCREC Value Set (2.16.840.1.114222.4.11.837)"
- "Patient Characteristic Payer: Payer" using "Payer SOP Value Set (2.16.840.1.114222.4.11.3591)"
- "Patient Characteristic Race: Race" using "Race CDCREC Value Set (2.16.840.1.114222.4.11.836)"
- "Patient Characteristic Sex: ONC Administrative Sex" using "ONC Administrative Sex AdministrativeGender Value Set (2.16.840.1.113762.1.4.1)"

Risk Adjustment Variables

- None

Measure Set	None