NQF #0043 Pneumonia vaccination status for older adults

NATIONAL QUALITY FORUM

Measure Submission and Evaluation Worksheet 5.0

This form contains the information submitted by measure developers/stewards, organized according to NQF’s measure evaluation criteria and process. The evaluation criteria, evaluation guidance documents, and a blank online submission form are available on the submitting standards web page.

<table>
<thead>
<tr>
<th>NQF #: 0043</th>
<th>NQF Project: Population Health: Prevention Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>(for Endorsement Maintenance Review)</td>
<td></td>
</tr>
<tr>
<td>Original Endorsement Date: Aug 10, 2009</td>
<td>Most Recent Endorsement Date: Aug 10, 2009</td>
</tr>
</tbody>
</table>

**BRIEF MEASURE INFORMATION**

<table>
<thead>
<tr>
<th>De.1 Measure Title:</th>
<th>Pneumonia vaccination status for older adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>Co.1.1 Measure Steward:</td>
<td>National Committee for Quality Assurance</td>
</tr>
<tr>
<td>De.2 Brief Description of Measure:</td>
<td>Percentage of patients 65 years of age and older who ever received a pneumococcal vaccination</td>
</tr>
</tbody>
</table>

2a1.1 Numerator Statement: The number of patients in the denominator who responded “Yes” to the question “Have you ever had a pneumonia shot? This shot is usually given only once or twice in the person’s lifetime and is different from the flu shot. It is also called the pneumococcal vaccine.”

2a1.4 Denominator Statement: The number of members who responded “Yes” or “No” to the question “Have you ever had a pneumonia shot? This shot is usually given only once or twice in a person’s lifetime and is different from the flu shot. It is also called the pneumococcal vaccine.”

2a1.8 Denominator Exclusions: Does not meet age criteria

1.1 Measure Type: Process

2a1.25-26 Data Source: Administrative claims, Healthcare Provider Survey, Paper Records, Patient Reported Data/Survey

2a1.33 Level of Analysis: Clinician: Group/Practice, Clinician: Individual, Clinician: Team, Facility, Health Plan, Integrated Delivery System, Population: County or City

1.2-1.4 Is this measure paired with another measure? No

De.3 If included in a composite, please identify the composite measure (title and NQF number if endorsed):

**STAFF NOTES (issues or questions regarding any criteria)**

Comments on Conditions for Consideration:

<table>
<thead>
<tr>
<th>Is the measure untested?</th>
<th>Yes ☐ No ☐</th>
<th>If untested, explain how it meets criteria for consideration for time-limited endorsement:</th>
</tr>
</thead>
</table>

1a. Specific national health goal/priority identified by DHHS or NPP addressed by the measure (check De.5): 5. Similar/related endorsed or submitted measures (check 5.1):

Other Criteria:

Staff Reviewer Name(s):

**1. IMPACT, OPPORTUNITY, EVIDENCE - IMPORTANCE TO MEASURE AND REPORT**

Importance to Measure and Report is a threshold criterion that must be met in order to recommend a measure for endorsement. All three subcriteria must be met to pass this criterion. See guidance on evidence.
Measures must be judged to be important to measure and report in order to be evaluated against the remaining criteria. (evaluation criteria)

1a. High Impact: H □ M □ L □ I □
(The measure directly addresses a specific national health goal/priority identified by DHHS or NPP, or some other high impact aspect of healthcare.)

De.4 Subject/Topic Areas (Check all the areas that apply): Infectious Diseases, Prevention
De.5 Cross Cutting Areas (Check all the areas that apply): Population Health

1a.1 Demonstrated High Impact Aspect of Healthcare: Affects large numbers, A leading cause of morbidity/mortality, Patient/societal consequences of poor quality, Severity of illness

1a.2 If “Other,” please describe:

1a.3 Summary of Evidence of High Impact (Provide epidemiologic or resource use data):
Pneumonia is a common cause of illness and death in the elderly and persons with certain underlying conditions such as heart failure, diabetes, cystic fibrosis, asthma, sickle cell anemia, or chronic obstructive pulmonary disease (NHLBI, 2011). In 1998, an estimated 3,400 adults aged >65 years died as a result of invasive pneumococcal disease (IPD) (CDC, 2003). Pneumococcal infection accounts for more deaths than any other vaccine-preventable bacterial disease (Pneumococcal Pneumonia, 2004). Among the 91.5 million US adults aged >50 years, 29,500 cases of IPD, 502,600 cases of nonbacteremic pneumococcal pneumonia and 25,400 pneumococcal-related deaths are estimated to occur yearly; annual direct and indirect costs are estimated to total $3.7 billion and $1.8 billion, respectively. Pneumococcal disease remains a substantial burden among older US adults, despite increased coverage with 23-valent pneumococcal polysaccharide vaccine, (PPV23) and indirect benefits afforded by PCV7 vaccination of young children (Weycker, et al., 2011).
The Centers for Disease Control and Prevention (CDC) also analyzed cost-effectiveness of a measure for pneumococcal immunization. Using conservative health impact figures, the study’s principal conclusions indicate that a 10 percent absolute increase in immunization among Medicare HMO enrollees would result in cost savings of $8,471 for an average HMO with 17,000 enrollees, and that deaths due to pneumococcal disease would be reduced. The study only considers the prevention of pneumococcal bacteria; actual savings may be greater, as vaccination is also likely to confer protection against pneumococcal pneumonia (nonbacteremic pneumococcal). Vaccination has been found to be effective against bacteremic cases (OR: 0.34; 95% CI: 0.27–0.66) as well as nonbacteremic cases (OR: 0.58; 95% CI: 0.39–0.86). Vaccine effectiveness was highest against bacteremic infections caused by vaccine types (OR: 0.24; 95% CI: 0.09–0.66) (Vila-Corcoles, et al., 2009). The Geriatrics Measurement Advisory Panel (GMAP) believes that the reporting of this measure will improve both patient and provider awareness of the importance of receiving this vaccination. Over time, the GMAP expects that this increased awareness should improve the accuracy of self-reported immunization information and encourage health plans to develop automated data systems to track pneumococcal vaccination status.


CDC. Public health and aging: influenza vaccination coverage among adults aged >50 years and pneumococcal vaccination coverage among adults aged >65 years—United States, 2002. MMWR 2003;(52);987–92.


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1b. Opportunity for Improvement: H □ M □ L □ I □
(There is a demonstrated performance gap - variability or overall less than optimal performance)

1b.1 Briefly explain the benefits (improvements in quality) envisioned by use of this measure:
The disease burden is large for older adults and the potential for prevention is high. Pneumococcal infections result in significant health care expenditures each year, and vaccination is safe and effective. Modest cash outlays for vaccination have been shown to result in substantial cost savings and significantly lower morbidity.

One of the Healthy People 2010 objectives was to increase pneumococcal immunization levels for the noninstitutionalized, high-risk populations to at least 90 percent (objective no. 14.29). While the percent of persons 65 years and older receiving the pneumococcal vaccine has increased, it still remains considerably below the Health People 2010 objective. According to the National Health Interview Survey (NHIS), which is used to track performance on year 2010 objectives, in 1998 only 46 percent of adults age 65 years and older report receiving the vaccine (National Center for Health Statistics, 2005). In 2007, pneumonia vaccine coverage had grown to 67 percent amongst the American elderly population, up from 15 percent in 1989 (Plotkin & Jackson, 2008).

1b.2 Summary of Data Demonstrating Performance Gap (Variation or overall less than optimal performance across providers):
[For Maintenance – Descriptive statistics for performance results for this measure - distribution of scores for measured entities by quartile/decile, mean, median, SD, min, max, etc.]

Pneumonia Rate

<table>
<thead>
<tr>
<th>Data Element;</th>
<th>2009;</th>
<th>2008;</th>
<th>2007;</th>
</tr>
</thead>
<tbody>
<tr>
<td>N;</td>
<td>295;</td>
<td>279;</td>
<td>241;</td>
</tr>
<tr>
<td>MEAN;</td>
<td>65.4;</td>
<td>63.8;</td>
<td>65.1;</td>
</tr>
<tr>
<td>STDEV;</td>
<td>14.8;</td>
<td>15.8;</td>
<td>15.8;</td>
</tr>
<tr>
<td>STDERR;</td>
<td>0.86;</td>
<td>0.95;</td>
<td>1.02;</td>
</tr>
<tr>
<td>MIN;</td>
<td>13.4;</td>
<td>13.5;</td>
<td>16.0;</td>
</tr>
<tr>
<td>MAX;</td>
<td>94.2;</td>
<td>87.9;</td>
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<tr>
<td>P10;</td>
<td>45.2;</td>
<td>42.7;</td>
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<td>P25;</td>
<td>58.4;</td>
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<td>P75;</td>
<td>75.8;</td>
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<td>75.9;</td>
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<tr>
<td>P90;</td>
<td>81.4;</td>
<td>81.3;</td>
<td>81.4;</td>
</tr>
</tbody>
</table>

1b.3 Citations for Data on Performance Gap: [For Maintenance – Description of the data or sample for measure results reported in 1b.2 including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included]

Section 1b.2 references data from the most recent three years of measurement for HEDIS. The data in section 1b.2 includes percentiles, mean, min, max, standard deviation and standard error. There were 815 submissions for this measure/rate.

1b.4 Summary of Data on Disparities by Population Group: [For Maintenance –Descriptive statistics for performance results for this measure by population group]

The measure does not include any stratification other than the two measures have different age groups. Data is not available on performance results on disparities.

1b.5 Citations for Data on Disparities Cited in 1b.4: [For Maintenance – Description of the data or sample for measure results reported in 1b.4 including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included]
1c. Evidence (Measure focus is a health outcome OR meets the criteria for quantity, quality, consistency of the body of evidence.)

Is the measure focus a health outcome? Yes ☐ No ☐ If not a health outcome, rate the body of evidence.

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Quality</th>
<th>Consistency</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-H</td>
<td>M-H</td>
<td>M-H</td>
</tr>
<tr>
<td>L</td>
<td>M-H</td>
<td>M</td>
</tr>
<tr>
<td>L-M-H</td>
<td>L-M-H</td>
<td>L</td>
</tr>
</tbody>
</table>

Does the measure pass subcriterion 1c?

Health outcome – rationale supports relationship to at least one healthcare structure, process, intervention, or service

Does the measure pass subcriterion 1c?

1c.1 Structure-Process-Outcome Relationship (Briefly state the measure focus, e.g., health outcome, intermediate clinical outcome, process, structure; then identify the appropriate links, e.g., structure-process-health outcome; intermediate clinical outcome-health outcome):

The reporting of this measure will improve both patient and provider awareness of the importance of receiving this vaccination.

1c.2-3 Type of Evidence (Check all that apply):

Clinical Practice Guideline

1c.4 Directness of Evidence to the Specified Measure (State the central topic, population, and outcomes addressed in the body of evidence and identify any differences from the measure focus and measure target population):

The Advisory Committee on Immunization Practices’ (ACIP) Updated Recommendations for Prevention of Invasive Pneumococcal Disease Among Adults Using the 23-Valent Pneumococcal Polysaccharide Vaccine recommends pneumococcal vaccine for all immunocompetent individuals who are 65 and older or otherwise at increased risk for pneumococcal disease. Routine revaccination is not recommended, but a second dose is appropriate for those who received PPV23 before age 65 years for any indication if at least 5 years have passed since their previous dose (USPSTF, 1989; ACIP, 2010). Both primary vaccination and revaccination with PPV23 induce antibody responses that persist during 5 years of observation (Musher, et al., 2010). Subsequently, Medicare Part B fully covers the cost of the vaccine and its administration every five years.

The elderly have a much higher mortality from community-acquired pneumonia due to increased risk factors such as comorbidities, an increase in the number of medications taken and weaknesses or disease of lung tissue. Pneumonia accounts for an estimated 20 percent of nosocomial infections among the elderly, second only to urinary tract infections (Ely, E, 1997). The disease burden is large for older adults and the potential for prevention is high. Drugs such as penicillin were once effective in treating these infections; but the disease has become more resistant, making treatment of pneumococcal infections more difficult (CDC, 2005). Furthermore, the University of Maryland Medical Center has stated symptoms in the elderly population may present slower, be fewer in number, or altogether different compared to younger people. They suggest hyperawareness and suggest that a minor cough or weakness lasting for more than a day should receive medical attention (UMMC, 2009). This makes prevention of the disease through vaccination even more important.

Krueger, St. Amant, & Loeb identified a wide range of factors including demographic (older age), co-morbidity (having at least one health condition; low amount of bodily pain), quality of life (the extent that health problems limited usual activities), social support (frequency chatting or doing something with a friend) and lifestyle (recent influenza immunization; and the amount that spiritual values or religious faith played a role in life) to be associated with pneumococcal vaccination status among older adults with clinically diagnosed community-acquired pneumonia (CAP) (2010). The authors noted the importance of socialization as a predictor of pneumonia vaccination. Indeed, Madhavan, et al., determined that the single biggest predictor in pneumonia vaccination in the elderly was someone reporting they had a friend with pneumonia. They also found that people were far more inclined to get the pneumococcal vaccination if they believed vaccines were always beneficial (Madhavan, et al., 2004).

Currently, the only pneumococcal vaccine approved for use in adults in the United States is PPV23. The 7- and 13-valent pneumococcal protein conjugate vaccines (PCV7 & PCV13) are only approved for use in children, however the immunogenicity of...
PCV7 in high-risk adults suggests potential for PCV13 in adults as well (Metersky, Dransfield & Jackson, 2011). A recent study evaluated the effectiveness of PPV23 and PCV7 in reducing adult pneumococcal mortality by comparing historically predicted declines in pneumococcal disease mortality with observed patterns since the introduction of PPV-23 and PCV-7. The authors found that PPV23 introduction was associated with a reduction in pneumococcal mortality among older adults 65 years of age beyond levels predicted by secular trends, whereas PCV-7 introduction was not. Mortality reduction was not uniformly experienced across the population, revealing the need for additional strategies to reduce pneumococcal mortality in older adults (Soneji & Metlay, 2011). Furthermore, since the introduction of PC7 in 2000 for use in children, the overall rates of IPD and pneumonia infections in adults and elderly have decreased significantly to 40 percent from 58 percent, potentially due to stronger herd immunity (Plotkin & Jackson, 2008).

Fifty-one percent of Hispanics reported not ever receiving a pneumococcal vaccination compared to 30 percent of whites, a 21 percent difference. Furthermore, 47 percent of blacks and Asian/Pacific Islanders reported not ever receiving a pneumococcal vaccination, a 17 percent difference from whites. In addition, among adults with less than a high school education, nearly 41 percent reported never receiving a pneumococcal vaccination, more than 10 percent higher than those with some college education. According to the report, challenges underlying these disparities are complex and reach beyond the traditional health care arena of patient-provider interactions. Furthermore, the report states older adults being unaware of the services recommended for their age group or not knowing that the services are covered by Medicare (CDC, 2011). A 2010 study examining the underuse of pneumococcal vaccines in the African-American population found a strong association between the receipt of influenza and pneumococcal vaccinations. Furthermore, the association between race and pneumococcal vaccination lost significance when adjusted for influenza vaccination. This suggests, the authors claimed, that patient and provider attitudes toward vaccination, rather than traditional confounders such as education and income, may help explain the underuse of pneumococcal vaccination in older African Americans (Jones, et al., 2010). The need exists for cultural and linguistically appropriate immunization outreach methods for older adults and practitioners. A recent study observing community-dwelling adults found that people were more likely to be immunized for pneumococcal and influenza diseases if they claimed English as their primary language (Farmer, et al., 2011).

1c.5 Quantity of Studies in the Body of Evidence (Total number of studies, not articles): Refer to ACIP

1c.6 Quality of Body of Evidence (Summarize the certainty or confidence in the estimates of benefits and harms to patients across studies in the body of evidence resulting from study factors. Please address: a) study design/flaws; b) directness/indirectness of the evidence to this measure (e.g., interventions, comparisons, outcomes assessed, population included in the evidence); and c) imprecision/wide confidence intervals due to few patients or events): Good quality of evidence based on consistency of guidelines and evidence review.

1c.7 Consistency of Results across Studies (Summarize the consistency of the magnitude and direction of the effect): Refer to ACIP

1c.8 Net Benefit (Provide estimates of effect for benefit/outcome; identify harms addressed and estimates of effect; and net benefit - benefit over harms): Refer to ACIP

1c.9 Grading of Strength/Quality of the Body of Evidence. Has the body of evidence been graded? No

1c.10 If body of evidence graded, identify the entity that graded the evidence including balance of representation and any disclosures regarding bias:

1c.11 System Used for Grading the Body of Evidence: Other

1c.12 If other, identify and describe the grading scale with definitions: N/A

1c.13 Grade Assigned to the Body of Evidence:

1c.14 Summary of Controversy/Contradictory Evidence: While studies have suggested pneumococcal vaccination to be effective in 50-80% of immunocompetent older adults, two recent meta-analyses are conflicting with respect to the immunocompromised and the very old (ACIP, 2010). A recent meta-analysis of 15 randomized controlled trials (RCTs) and seven...
nonrandomized observational studies of PPSV23 efficacy and effectiveness suggested an overall efficacy of 74% against invasive pulmonary disease (IPD) (CI = 56%–85%), based on pooled results of 10 of the RCTs (Moberley, Holden, Tatham, & Andrews, 2008). Analysis of the results from the seven observational studies yielded a pooled vaccine effectiveness estimate of 52% (CI = 39%–63%). In contrast, a recent meta-analysis that included six RCTs estimated the combined PPSV23 efficacy against pneumococcal bacteremia at only 10%, with a very wide CI (CI = -77%–54%) (Huss, Scott, Stuck, Trotter, & Egger, 2009). The large difference in findings from these two meta-analyses might be related to inclusion of different trials (ACIP, 2010). Huss, et al., further suggested a more widespread use of protein conjugate vaccines in children. Countries that have introduced a widespread protein conjugate vaccine program experienced decreased incidence even in unvaccinated adults (Huss, et al., 2009).

More contradictory evidence comes out of a recent Canadian cohort study. This study found that the use of PPV did not significantly reduce the risk of death or subsequent hospitalization for potentially vaccine-preventable infections (Johnstone, et al., 2010). In fact, these authors also cite consistency between their findings and the aforementioned Huss, et al. meta-analysis.

1c.15 Citations for Evidence other than Guidelines(Guidelines addressed below):


The Advisory Committee on Immunization Practices' (ACIP) Updated Recommendations for Prevention of Invasive Pneumococcal Disease Among Adults Using the 23-Valent Pneumococcal Polysaccharide Vaccine recommends pneumococcal vaccine for all immunocompetent individuals who are 65 and older or otherwise at increased risk for pneumococcal disease. Routine revaccination is not recommended, but a second dose is appropriate for those who received PPV23 before age 65 years for any indication if at least 5 years have passed since their previous dose (USPSTF, 1989; ACIP, 2010). The major updates for the 2010 update are: 1) the indications for which PPSV23 vaccination is recommended now include smoking and asthma, and 2) routine use of PPSV23 is no longer recommended for Alaska Natives or American Indians aged <65 years unless they have medical or other indications for PPV23 (ACIP, 2010). Medicare Part B fully covers the cost of the vaccine and its administration every five years.

The Institute for Clinical Systems Improvement's (ICSI) Preventative Services for Adults requires providers and care systems administering adult preventive services to assess the need for and offer pneumococcal immunization immediately at age 65 if not done previously, and to high-risk groups. If the vaccine was previously received more than 5 years ago and before age 65, or an immunocompromising condition is present, re-immunization once (ICSI, 2010).
permissive stance. This guideline does not contain the new grading scheme; however, future updates to this guideline should include this grading system once ACIP implements.

1c.24 Rationale for Using this Guideline Over Others: NCQA convened an expert panel of diverse stakeholders to review the guidelines and evidence for this measure. The panel determined the measure was scientifically sound using the full body of evidence and guidelines for this measure concept.

Based on the NQF descriptions for rating the evidence, what was the developer’s assessment of the quantity, quality, and consistency of the body of evidence?

<table>
<thead>
<tr>
<th>1c.25 Quantity:</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>1c.26 Quality:</td>
<td>High</td>
</tr>
<tr>
<td>1c.27 Consistency:</td>
<td>High</td>
</tr>
</tbody>
</table>

Was the threshold criterion, Importance to Measure and Report, met? (1a & 1b must be rated moderate or high and 1c yes)  Yes ☐ No ☐

Provide rationale based on specific subcriteria:

For a new measure if the Committee votes NO, then STOP.
For a measure undergoing endorsement maintenance, if the Committee votes NO because of 1b. (no opportunity for improvement), it may be considered for continued endorsement and all criteria need to be evaluated.

### 2. RELIABILITY & VALIDITY - SCIENTIFIC ACCEPTABILITY OF MEASURE PROPERTIES

Extent to which the measure, as specified, produces consistent (reliable) and credible (valid) results about the quality of care when implemented. **(evaluation criteria)**

Measure testing must demonstrate adequate reliability and validity in order to be recommended for endorsement. Testing may be conducted for data elements and/or the computed measure score. Testing information and results should be entered in the appropriate field. Supplemental materials may be referenced or attached in item 2.1. See guidance on measure testing.

S.1 Measure Web Page (In the future, NQF will require measure stewards to provide a URL link to a web page where current detailed specifications can be obtained). Do you have a web page where current detailed specifications for this measure can be obtained?  No

S.2 If yes, provide web page URL:

2a. RELIABILITY. Precise Specifications and Reliability Testing:  H ☐ M ☐ L ☐ I ☐

2a1. Precise Measure Specifications. **(The measure specifications precise and unambiguous.)**

2a1.1 Numerator Statement *(Brief, narrative description of the measure focus or what is being measured about the target population, e.g., cases from the target population with the target process, condition, event, or outcome):*

The number of patients in the denominator who responded “Yes” to the question “Have you ever had a pneumonia shot? This shot is usually given only once or twice in the person’s lifetime and is different from the flu shot. It is also called the pneumococcal vaccine.”

2a1.2 Numerator Time Window *(The time period in which the target process, condition, event, or outcome is eligible for inclusion):*

Currently enrolled at the time the survey is completed.

2a1.3 Numerator Details *(All information required to identify and calculate the cases from the target population with the target process, condition, event, or outcome such as definitions, codes with descriptors, and/or specific data collection items/responses: No codes are used to collect the numerator for the survey measure.)*

2a1.4 Denominator Statement *(Brief, narrative description of the target population being measured):*

The number of members who responded “Yes” or “No” to the question “Have you ever had a pneumonia shot? This shot is usually given only once or twice in a person’s lifetime and is different from the flu shot. It is also called the pneumococcal vaccine.”

2a1.5 Target Population Category *(Check all the populations for which the measure is specified and tested if any):*  Adult/Elderly Care

2a1.6 Denominator Time Window *(The time period in which cases are eligible for inclusion):*
Currently enrolled at the time the survey is completed.

2a1.7 Denominator Details *(All information required to identify and calculate the target population/denominator such as definitions, codes with descriptors, and/or specific data collection items/responses)*: Collected by CMS using the Medicare CAHPS Survey. No codes are used to collect the denominator information.

2a1.8 Denominator Exclusions *(Brief narrative description of exclusions from the target population)*: Does not meet age criteria

2a1.9 Denominator Exclusion Details *(All information required to identify and calculate exclusions from the denominator such as definitions, codes with descriptors, and/or specific data collection items/responses)*:

2a1.10 Stratification Details/Variables *(All information required to stratify the measure results including the stratification variables, codes with descriptors, definitions, and/or specific data collection items/responses)*:

2a1.11 Risk Adjustment Type *(Select type. Provide specifications for risk stratification in 2a1.10 and for statistical model in 2a1.13)*: No risk adjustment or risk stratification 2a1.12 If "Other," please describe:

2a1.13 Statistical Risk Model and Variables *(Name the statistical method - e.g., logistic regression and list all the risk factor variables. Note - risk model development should be addressed in 2b4.)*:

2a1.14-16 Detailed Risk Model Available at Web page URL *(or attachment). Include coefficients, equations, codes with descriptors, definitions, and/or specific data collection items/responses. Attach documents only if they are not available on a webpage and keep attached file to 5 MB or less. NQF strongly prefers you make documents available at a Web page URL. Please supply login/password if needed:

2a1.17-18. Type of Score: Rate/proportion

2a1.19 Interpretation of Score *(Classification interpretation of score according to whether better quality is associated with a higher score, a lower score, a score falling within a defined interval, or a passing score): Better quality = Higher score*

2a1.20 Calculation Algorithm/Measure Logic *(Describe the calculation of the measure score as an ordered sequence of steps including identifying the target population; exclusions; cases meeting the target process, condition, event, or outcome; aggregating data; risk adjustment; etc.): Survey method for Medicare CAHPS does not specify a calculation algorithm. Specified as a numerator and denominator question.

2a1.21-23 Calculation Algorithm/Measure Logic Diagram URL or attachment:

2a1.24 Sampling (Survey) Methodology. If measure is based on a sample (or survey), provide instructions for obtaining the sample, conducting the survey and guidance on minimum sample size (response rate): Beginning in 2011, CMS will require all MA and PDP contracts with at least 600 enrollees to contract with approved survey vendors to collect and report CAHPS survey data following a specific timeline and protocols established by CMS. The CAHPS surveys will be conducted at the contract level for Medicare Advantage only (MA), Medicare Advantage Prescription Drug (MA-PD), and Stand-Alone Prescription Drug plans (PDPs). CMS will provide the sample for each contract.

2a1.25 Data Source *(Check all the sources for which the measure is specified and tested). If other, please describe:*

See Guidance for Definitions of Rating Scale: H=High; M=Moderate; L=Low; I=Insufficient; NA=Not Applicable
||| | || || ||
|---|---|---|---|---|---|---|---|
| Administrative claims, Healthcare Provider Survey, Paper Records, Patient Reported Data/Survey | | | | | | |
| **2a.26 Data Source/Data Collection Instrument** (Identify the specific data source/data collection instrument, e.g. name of database, clinical registry, collection instrument, etc.): | Medicare CAHPS |
| **2a.27-29 Data Source/data Collection Instrument Reference Web Page URL or Attachment:** | URL http://ma-pdcahps.org/content/homepage.aspx |
| **2a.30-32 Data Dictionary/Code Table Web Page URL or Attachment:** | | | | | | |
| **2a.33 Level of Analysis** (Check the levels of analysis for which the measure is specified and tested): | Clinician : Group/Practice, Clinician : Individual, Clinician : Team, Facility, Health Plan, Integrated Delivery System, Population : County or City |
| **2a.34-35 Care Setting** (Check all the settings for which the measure is specified and tested): | Ambulatory Care : Clinician Office, Home Health, Hospital/Acute Care Facility, Pharmacy, Post Acute/Long Term Care Facility : Nursing Home/Skilled Nursing Facility, Post Acute/Long Term Care Facility : Rehabilitation |
| **2a.2 Reliability Testing.** (Reliability testing was conducted with appropriate method, scope, and adequate demonstration of reliability.) | | | | | | |
| **2a.2.1 Data/Sample** (Description of the data or sample including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included): | This is HEDIS 2010 data |
| **2a.2.2 Analytic Method** (Describe method of reliability testing & rationale): | Reliability was estimated by using the beta-binomial model. Beta-binomial is a better fit when estimating the reliability of simple pass/fail rate measures as is the case with most HEDIS® health plan measures. The beta-binomial model assumes the plan score is a binomial random variable conditional on the plan’s true value that comes from the beta distribution. The beta distribution is usually defined by two parameters, alpha and beta. Alpha and beta can be thought of as intermediate calculations to get to the needed variance estimates. The beta distribution can be symmetric, skewed or even U-shaped. Reliability used here is the ratio of signal to noise. The signal in this case is the proportion of the variability in measured performance that can be explained by real differences in performance. A reliability of zero implies that all the variability in a measure is attributable to measurement error. A reliability of one implies that all the variability is attributable to real differences in performance. The higher the reliability score, the greater is the confidence with which one can distinguish the performance of one plan from another. A reliability score greater than or equal to 0.7 is considered very good. |
| **2a.2.3 Testing Results** (Reliability statistics, assessment of adequacy in the context of norms for the test conducted): | 0.9777342 (Reliability Statistic) |
| **2b. VALIDITY. Validity, Testing, including all Threats to Validity:** | H M L I |
| **2b1.1 Describe how the measure specifications (measure focus, target population, and exclusions) are consistent with the evidence cited in support of the measure focus (criterion 1c) and identify any differences from the evidence:** | Consistent-no differences |
| **2b2. Validity Testing.** (Validity testing was conducted with appropriate method, scope, and adequate demonstration of validity.) | | | | | | |
| **2b2.1 Data/Sample** (Description of the data or sample including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included): | Refer to Section 1b.2 for 3-year trending data that speaks to the validity of the measure. |
| **2b2.2 Analytic Method** (Describe method of validity testing and rationale; if face validity, describe systematic assessment): | | | | | | |
NCQA tested the measure for face validity using a panel of stakeholders with specific expertise in measurement and geriatric care. This panel included representatives from key stakeholder groups, including geriatricians, health plans, Medicare officials and researchers. Experts assessed whether the results were consistent with expectations, whether the measure represented quality care, and whether we were measuring the most important aspect of care in this area.

2b2.3 Testing Results (Statistical results, assessment of adequacy in the context of norms for the test conducted; if face validity, describe results of systematic assessment):

Cognitive testing provides useful information about respondents’ comprehension of the questions, their ability to answer the questions, and the adequacy of the response choices. It also helps identify words that can be used to describe health care providers accurately and consistently across a range of consumers (e.g., commercially insured, Medicaid, fee-for-service, managed care, lower socioeconomic status (SES), middle SES, low literacy, higher literacy) and explores whether key words and concepts work equally well in both English and Spanish.

Field tests and psychometric analyses provide information about the items’ reliability and validity. Many existing questionnaires about health care have been tested primarily or exclusively using a psychometric approach, but the CAHPS team views the combination of cognitive and psychometric approaches as essential to producing the best possible survey instrument.

During development of the measure, the Geriatrics MAP concluded that self-reported information is the most appropriate method to obtain pneumococcal vaccination status because this vaccine is rendered infrequently, or may be rendered several years prior to enrollment in the health plan, or may be rendered outside the health plan. Given the factors above, documentation of the vaccine is often missing from administrative databases and medical charts.

Self-reported immunization status has long been recognized as a valid method to gather and assess vaccination status of populations. The NHIS and BRFSS contain items on pneumonia and influenza vaccination status. The accuracy of self-reported information is difficult to ascertain because evidence of the immunization may be missing from a patient’s medical record.

### POTENTIAL THREATS TO VALIDITY

(All potential threats to validity were appropriately tested with adequate results.)

2b3. Measure Exclusions. (Exclusions were supported by the clinical evidence in 1c or appropriately tested with results demonstrating the need to specify them.)

2b3.1 Data/Sample for analysis of exclusions (Description of the data or sample including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included):

2b3.2 Analytic Method (Describe type of analysis and rationale for examining exclusions, including exclusion related to patient preference):

2b3.3 Results (Provide statistical results for analysis of exclusions, e.g., frequency, variability, sensitivity analyses):

2b4. Risk Adjustment Strategy. (For outcome measures, adjustment for differences in case mix (severity) across measured entities was appropriately tested with adequate results.)

2b4.1 Data/Sample (Description of the data or sample including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included):

2b4.2 Analytic Method (Describe methods and rationale for development and testing of risk model or risk stratification including selection of factors/variables):

Risk-adjustment is not required since all elderly 65 and older, regardless of chronic condition are included in the measure. The measure does not look at the rate of vaccination for persons younger than 65 years of age who have an increased risk for complications from pneumococcal infection. High-risk adults less than 65 years of age are excluded because of the difficulty to accurately identify the high-risk populations.

2b4.3 Testing Results (Statistical risk model: Provide quantitative assessment of relative contribution of model risk factors; risk
NQF #0043 Pneumonia vaccination status for older adults

model performance metrics including cross-validation discrimination and calibration statistics, calibration curve and risk decile plot, and assessment of adequacy in the context of norms for risk models. Risk stratification: Provide quantitative assessment of relationship of risk factors to the outcome and differences in outcomes among the strata:

2b4.4 If outcome or resource use measure is not risk adjusted, provide rationale and analyses to justify lack of adjustment: The measure assesses pneumococcal vaccination in a general population of people aged 65 and older; risk adjustment is not indicated.

2b5. Identification of Meaningful Differences in Performance. (The performance measure scores were appropriately analyzed and discriminated meaningful differences in quality.)

2b5.1 Data/Sample (Describe the data or sample including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included):
N/A – Measure in current use.

2b5.2 Analytic Method (Describe methods and rationale to identify statistically significant and practically/meaningfully differences in performance):
Comparison of means and percentiles; analysis of variance against established benchmarks

2b5.3 Results (Provide measure performance results/scores, e.g., distribution by quartile, mean, median, SD, etc.; identification of statistically significant and meaningfully differences in performance):
Refer to 1b.2

2b6. Comparability of Multiple Data Sources/Methods. (If specified for more than one data source, the various approaches result in comparable scores.)

2b6.1 Data/Sample (Describe the data or sample including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included):
There are no data comparability issues since the Medicare CAHPS survey is standardized.

2b6.2 Analytic Method (Describe methods and rationale for testing comparability of scores produced by the different data sources specified in the measure):

2b6.3 Testing Results (Provide statistical results, e.g., correlation statistics, comparison of rankings; assessment of adequacy in the context of norms for the test conducted):

2c. Disparities in Care: H M L I NA (If applicable, the measure specifications allow identification of disparities.)

2c.1 If measure is stratified for disparities, provide stratified results (Scores by stratified categories/cohorts):

2c.2 If disparities have been reported/identified (e.g., in 1b), but measure is not specified to detect disparities, please explain:
Only plan level data is made available to NCQA from CMS selected vendors.

2.1-2.3 Supplemental Testing Methodology Information:

Steering Committee: Overall, was the criterion, Scientific Acceptability of Measure Properties, met? (Reliability and Validity must be rated moderate or high) Yes No
Provide rationale based on specific subcriteria:

If the Committee votes No, STOP
### 3. USABILITY

Extent to which intended audiences (e.g., consumers, purchasers, providers, policy makers) can understand the results of the measure and are likely to find them useful for decision making. *(evaluation criteria)*

#### C.1 Intended Purpose/Use *(Check all the purposes and/or uses for which the measure is intended):*  
- Public Reporting, Quality Improvement (Internal to the specific organization), Quality Improvement with Benchmarking (external benchmarking to multiple organizations), Regulatory and Accreditation Programs

#### C.1.1 Current Use *(Check all that apply; for any that are checked, provide the specific program information in the following questions)*:  
- Public Reporting, Payment Program, Public Health/Disease Surveillance, Regulatory and Accreditation Programs, Quality Improvement with Benchmarking (external benchmarking to multiple organizations)

#### 3a. Usefulness for Public Reporting: H □ M □ L □ I □    
*(The measure is meaningful, understandable and useful for public reporting.)*

- **3a.1. Use in Public Reporting - disclosure of performance results to the public at large *(If used in a public reporting program, provide name of program(s), locations, Web page URL(s)).*  
> If not publicly reported in a national or community program, state the reason AND plans to achieve public reporting, potential reporting programs or commitments, and timeline, e.g., within 3 years of endorsement:  
> **[For Maintenance – if not publicly reported, describe progress made toward achieving disclosure of performance results to the public at large and expected date for public reporting; provide rationale why continued endorsement should be considered.]**

  The Medicare CAHPS surveys produce comparable data on the patient’s experience of care that allow objective and meaningful comparisons between MA and PDP contracts on domains that are important to consumers. The survey data are publicly reported by contract. The results from the Medicare CAHPS surveys are published in the Medicare & You handbook and on the Medicare Options Compare Web site (www.medicare.gov). Public reporting of the survey results is designed to create incentives for contracts to improve their quality of care and also serves to enhance public accountability in health care by increasing the transparency of the quality of care provided by Medicare contracts. The measures derived from the surveys are used by beneficiaries to help choose a MA or PDP contract, help contracts identify areas for quality improvement, and allow the public and research community to assess Medicare program performance. Medicare administrators and policymakers also rely on the measures to manage the program; devise, implement, and monitor quality improvement efforts; and make policy decisions.

- **3a.2. Provide a rationale for why the measure performance results are meaningful, understandable, and useful for public reporting.**  
  If usefulness was demonstrated (e.g., focus group, cognitive testing), describe the data, method, and results:  
  Longstanding reporting by NCQA on its website, the annual State of Healthcare Quality Report, and Quality Compass database.

#### 3.2 Use for other Accountability Functions *(payment, certification, accreditation).*  
- **If used in a public accountability program, provide name of program(s), locations, Web page URL(s):**  
  Not Applicable. NCQA reports on performance of health plans and providers nationally. Our results are not part of an internal NCQA QI program.

#### 3b. Usefulness for Quality Improvement: H □ M □ L □ I □    
*(The measure is meaningful, understandable and useful for quality improvement.)*

- **3b.1. Use in QI.**  
  If used in quality improvement program, provide name of program(s), locations, Web page URL(s):  
  **[For Maintenance – if not used for QI, indicate the reasons and describe progress toward using performance results for improvement].**

  This measure is in the Healthcare Effectiveness Data and Information Set (HEDIS) and is used in NCQA’s Health Plan Accreditation program, and in a broad range of state, regional and Federal QI and accountability programs.

- **3b.2. Provide rationale for why the measure performance results are meaningful, understandable, and useful for quality improvement.**  
  If usefulness was demonstrated (e.g., QI initiative), describe the data, method and results:  
  Not Applicable. NCQA reports on performance of health plans and providers nationally. Our results are not part of an internal NCQA QI program.

**Overall, to what extent was the criterion, Usability, met? H □ M □ L □ I □**  
Provide rationale based on specific subcriteria:
4. FEASIBILITY

Extent to which the required data are readily available, retrievable without undue burden, and can be implemented for performance measurement. (evaluation criteria)

4a. Data Generated as a Byproduct of Care Processes: H □ M □ L □ I □

4a.1 How are the data elements needed to compute measure scores generated? (Check all that apply).

Data used in the measure are:

Other

This measure is collected by CMS using the Medicare CAHPS Survey.

4b. Electronic Sources: H □ M □ L □ I □

4b.1 Are the data elements needed for the measure as specified available electronically (Elements that are needed to compute measure scores are in defined, computer-readable fields): ALL data elements are in a combination of electronic sources

4b.2 If ALL data elements are not from electronic sources, specify a credible, near-term path to electronic capture, OR provide a rationale for using other than electronic sources:

4c. Susceptibility to Inaccuracies, Errors, or Unintended Consequences: H □ M □ L □ I □

4c.1 Identify susceptibility to inaccuracies, errors, or unintended consequences of the measurement identified during testing and/or operational use and strategies to prevent, minimize, or detect. If audited, provide results:

This measure has detailed, precise specifications that clearly define the numerator, denominator, data sources, allowable values, methods of measurement and method of reporting. All measures that are used in NCQA programs are audited.

Data Collection Strategy (Measure evaluation criterion 4e)

4e.1. Describe what you have learned/modified as a result of testing and/or operational use of the measure regarding data collection, availability of data/missing data, timing and frequency of data collection, patient confidentiality, time and cost of data collection, and other feasibility or implementation issues

This is a survey measure and found to be logistically feasible as administered through Medicare CAHPS. This measure does not pose a threat to confidentiality. The eligibility criteria are based solely on age. The usual methods employed to protect confidentiality of data are expected to be appropriate for this measure. Information about individual members cannot be identified by public reporting.

4d. Data Collection Strategy/Implementation: H □ M □ L □ I □

A.2 Please check if either of the following apply (regarding proprietary measures): Proprietary measure

4d.1 Describe what you have learned/modified as a result of testing and/or operational use of the measure regarding data collection, availability of data, missing data, timing and frequency of data collection, sampling, patient confidentiality, time and cost of data collection, other feasibility/implemention issues (e.g., fees for use of proprietary measures):

This measure appears in HEDIS and is subject to HEDIS survey administration and related costs. This is a survey measure and found to be logistically feasible as administered through Medicare CAHPS.

Overall, to what extent was the criterion, Feasibility, met? H □ M □ L □ I □

Provide rationale based on specific subcriteria:

OVERALL SUITABILITY FOR ENDORSEMENT

Does the measure meet all the NQF criteria for endorsement? Yes □ No □

Rationale:

If the Committee votes No, STOP.
If the Committee votes Yes, the final recommendation is contingent on comparison to related and competing measures.

5. COMPARISON TO RELATED AND COMPETING MEASURES
If a measure meets the above criteria and there are endorsed or new related measures (either the same measure focus or the same target population) or competing measures (both the same measure focus and the same target population), the measures are compared to address harmonization and/or selection of the best measure before a final recommendation is made.

5.1 If there are related measures *(either same measure focus or target population)* or competing measures *(both the same measure focus and same target population)*, list the NQF # and title of all related and/or competing measures:

- 0044: Pneumonia Vaccination
- 0150: Pneumococcal vaccination

### 5a. Harmonization

5a.1 If this measure has EITHER the same measure focus OR the same target population as NQF-endorsed measure(s):

Are the measure specifications completely harmonized? No

5a.2 If the measure specifications are not completely harmonized, identify the differences, rationale, and impact on interpretability and data collection burden:

This measure is collected via a survey, rather than through administrative data or medical records.

### 5b. Competing Measure(s)

5b.1 If this measure has both the same measure focus and the same target population as NQF-endorsed measure(s):

Describe why this measure is superior to competing measures *(e.g., a more valid or efficient way to measure quality)*; OR provide a rationale for the additive value of endorsing an additional measure. *(Provide analyses when possible):

### CONTACT INFORMATION


Co.2 Point of Contact: Bob, Rehm, Assistant Vice President, Performance Measurement, Rehm@ncqa.org, 202-955-1728-

Co.3 Measure Developer if different from Measure Steward: National Committee for Quality Assurance, 1100 13th Street NW, Suite 1000, Washington, District Of Columbia, 20005

Co.4 Point of Contact: Bob, Rehm, Assistant Vice President, Performance Measurement, Rehm@ncqa.org, 202-955-1728-

Co.5 Submitter: Dawn, Alayon, MPH, CPH, Senior Health Care Analyst, alayon@ncqa.org, 202-955-3533-, National Committee for Quality Assurance

Co.6 Additional organizations that sponsored/participated in measure development:

Co.7 Public Contact: Bob, Rehm, Assistant Vice President, Performance Measurement, Rehm@ncqa.org, 202-955-1728-

### ADDITIONAL INFORMATION

Workgroup/Expert Panel involved in measure development

Ad.1 Provide a list of sponsoring organizations and workgroup/panel members’ names and organizations. Describe the members’ role in measure development.

Geriatric Measurement Advisory Panel

The NCQA Geriatric Measurement Advisory Group advised NCQA during measure development. They evaluated the way staff specified measures, assessed the content validity of measures, and reviewed field test results. As you can see from the list, the MAP consisted of a balanced group of experts, including representatives from health plans, government agencies, universities and health care delivery organizations. Note that, in addition to the MAP, we also vetted these measures with a host of other...
stakeholders, as is our process. Thus, our measures are the result of consensus from a broad and diverse group of stakeholders, in addition to the MAP.

GMAP Members
Wade Aubry, BCBS Association
Arlene Bierman, University of Toronto and St. Michael's Hospital
Joyce Dubow, AARP
Peter Hollmann, BCBS of Rhode Island
Jerry Johnson, University of Pennsylvania
David Martin, Ovations
Steven Phillips, Sierra Health Services, Inc.
Scott Sarran, BCBS of Illinois
Eric G Tangalos, Mayo Clinic
Joan Weiss, Health Resources and Services Administration
Neil Wenger, UCLA Division of General Internal Medicine and RAND

CMS/AHRQ Liaisons
Marsha Davenport
Jeffrey Kelman
Elizabeth Goldstein
Morgot Blige Holloway
Rosemary Lee
Alice Lee Martin
Chris Haffer
Sonya Bowen
Mary B. Barton

Describe the group’s role in measure development.
The NCQA Geriatric Measurement Advisory Group advised NCQA during measure development. They evaluated the way staff specified measures, assessed the content validity of measures, and reviewed field test results. As you can see from the list, the MAP consisted of a balanced group of experts, including representatives from medical research and education, health plans, the federal Medicare program, and older adult associations. Note that, in addition to the MAP, we also vetted these measures with a host of other stakeholders, as is our process. Thus, our measures are the result of consensus from a broad and diverse group of stakeholders, in addition to the MAP.

Ad.2 If adapted, provide title of original measure, NQF # if endorsed, and measure steward. Briefly describe the reasons for adapting the original measure and any work with the original measure steward:

Measure Developer/Steward Updates and Ongoing Maintenance
Ad.3 Year the measure was first released: 1999
Ad.4 Month and Year of most recent revision: 07, 2011
Ad.5 What is your frequency for review/update of this measure? Approximately every 3 years, sooner if the clinical guidelines have changed significantly.
Ad.6 When is the next scheduled review/update for this measure? 07, 2013

Ad.7 Copyright statement: © June 29, 2011 by the National Committee for Quality Assurance
1100 13th Street, NW, Suite 1000
Washington, DC 20005

Ad.8 Disclaimers:

Ad.9 Additional Information/Comments:

Date of Submission (MM/DD/YY): 07/12/2011