



Measure Information

This document contains the information submitted by measure developers/stewards, but is organized according to NQF's measure evaluation criteria and process. The item numbers refer to those in the submission form but may be in a slightly different order here. In general, the item numbers also reference the related criteria (e.g., item 1b.1 relates to subcriterion 1b).

Brief Measure Information

NQF #: 1653

Corresponding Measures:

De.2. Measure Title: [Pneumococcal Immunization](#)

Co.1.1. Measure Steward: [Centers for Medicare & Medicaid Services](#)

De.3. Brief Description of Measure: Inpatients age 65 years and older and 5-64 years of age who have a high risk condition who are screened for Pneumococcal Vaccine status and vaccinated prior to discharge if indicated.

1b.1. Developer Rationale: A population-based surveillance study by Pilishvili et al. demonstrated that the expanded use of pneumococcal vaccine was associated with the reduction in invasive pneumococcal disease in a ten-year time period, 1998-2007. The overall incidence of invasive pneumococcal disease declined by 45%, from 24.4 to 13.5 cases per 100,000 population (Pilishvili). Johnstone et al. found that among patients hospitalized for pneumonia, history of prior pneumococcal vaccination was associated with lower mortality or ICU admission compared to patients who were not vaccinated (Johnstone). Dominguez et al. also demonstrated the effectiveness of pneumococcal vaccination for the elderly in case-control study in Catalonia, Spain (Dominguez).

[Pilishvili T, Lexau C, Farley M, et al. Sustained Reductions in Invasive Pneumococcal Disease in the Era of Conjugate Vaccine. Clin Infect Dis 2010;201:32-41.](#)

[Johnstone J, Marrie TJ, Eurich DT, Majumdar SR. Effects of pneumococcal vaccination in hospitalized adults with community-acquired pneumonia. Arch Intern Med. 2007;167\(18\):1938-1943.](#)

[Dominguez A, Salleras L, Fedson DS, Isquierdo C, Ruiz L, Ciruela P, Fenoll A, and Casal J. Effectiveness of Pneumococcal Vaccination for Elderly People in Catalonia, Spain: A Case-Control Study. Clin Infect Dis 2005; 40:1250-1257.](#)

S.4. Numerator Statement: Inpatient discharges who were screened for pneumococcal vaccine status and received pneumococcal vaccine prior to discharge if indicated.

S.7. Denominator Statement: Inpatient discharges 65 years of age and older and 5-64 years of age who have a high risk condition.

S.10. Denominator Exclusions: Excluded patients consist of the following; Patients who expire prior to hospital discharge, patients with an organ transplant during the current hospitalization, pregnant women, patients who have a length of stay greater than 120 days, patients who are transferred or discharged to another acute care hospital and patients who leave against medical advice (AMA). See attachments of the ICD-9 and ICD-10 tables for transplants and pregnancy.

De.1. Measure Type: [Process](#)

S.23. Data Source: [Claims, Paper Medical Records](#)

S.26. Level of Analysis: [Facility, Other, Population : Regional and State](#)

IF Endorsement Maintenance – Original Endorsement Date: [May 02, 2012](#) **Most Recent Endorsement Date:** [May 02, 2012](#)

IF this measure is included in a composite, NQF Composite#/title:

IF this measure is paired/grouped, NQF#/title:

De.4. IF PAIRED/GROUPED, what is the reason this measure must be reported with other measures to appropriately interpret results? [N/A](#)

1. Evidence, Performance Gap, Priority – Importance to Measure and Report

Extent to which the specific measure focus is evidence-based, important to making significant gains in healthcare quality, and improving health outcomes for a specific high-priority (high-impact) aspect of healthcare where there is variation in or overall less-than-optimal performance. **Measures must be judged to meet all subcriteria to pass this criterion and be evaluated against the remaining criteria.**

1a. Evidence to Support the Measure Focus – See attached Evidence Submission Form

[1653_Evidence_MSF5.0_Data.doc](#)

1b. Performance Gap

Demonstration of quality problems and opportunity for improvement, i.e., data demonstrating:

- considerable variation, or overall less-than-optimal performance, in the quality of care across providers; and/or
- disparities in care across population groups.

1b.1. Briefly explain the rationale for this measure (e.g., the benefits or improvements in quality envisioned by use of this measure)

A population-based surveillance study by Pilishvili et al. demonstrated that the expanded use of pneumococcal vaccine was associated with the reduction in invasive pneumococcal disease in a ten-year time period, 1998-2007. The overall incidence of invasive pneumococcal disease declined by 45%, from 24.4 to 13.5 cases per 100,000 population (Pilishvili). Johnstone et al. found that among patients hospitalized for pneumonia, history of prior pneumococcal vaccination was associated with lower mortality or ICU admission compared to patients who were not vaccinated (Johnstone). Dominguez et al. also demonstrated the effectiveness of pneumococcal vaccination for the elderly in case-control study in Catalonia, Spain (Dominguez).

Pilishvili T, Lexau C, Farley M, et al. Sustained Reductions in Invasive Pneumococcal Disease in the Era of Conjugate Vaccine. Clin Infect Dis 2010;201:32-41.

Johnstone J, Marrie TJ, Eurich DT, Majumdar SR. Effects of pneumococcal vaccination in hospitalized adults with community-acquired pneumonia. Arch Intern Med. 2007;167(18):1938-1943.

Dominguez A, Salleras L, Fedson DS, Isquierdo C, Ruiz L, Ciruela P, Fenoll A, and Casal J. Effectiveness of Pneumococcal Vaccination for Elderly People in Catalonia, Spain: A Case-Control Study. Clin Infect Dis 2005; 40:1250-1257.

1b.2. Provide performance scores on the measure as specified (current and over time) at the specified level of analysis. (This is required for endorsement maintenance. Include mean, std dev, min, max, interquartile range, scores by decile. Describe the data source including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included). This information also will be used to address the subcriterion on improvement (4b.1) under Usability and Use.

It has long been demonstrated that pneumococcal vaccination is underutilized even among hospitalized. In a 2000 commentary article Fedson et al. emphasized the importance of pneumococcal and influenza vaccination among hospitalized patients (Fedson). Using a large national sample of 107,311 Medicare patients discharged in 1998 and 1999, Bratzler et al. found that these patients were poorly screened for pneumococcal and influenza vaccination. Among patients who were unvaccinated prior to admission, less than one percent received pneumococcal vaccine before hospital discharge (Bratzler). The rates of pneumococcal vaccination screening among hospitalized patients have progressively improved since those early observations. However, as shown on data posted on CMS Hospital Compare website, there is still a sizable number of providers whose rate of pneumococcal vaccination rates are less than optimal (Hausmann). The most recent national CMS rate is 93.3 (3Q2010).

Fedson DS, Houck PM, Bratzler DW. Hospital-based influenza and pneumococcal vaccination: Sutton's Law applied to prevention. Infect Control Hosp Epi. 2002;21:692-699.

Bratzler DW, Houck PM, Jiang H, et al. Failure to vaccinate Medicare inpatients: a missed opportunity. Arch Intern Med 2002;162:2349-2356.

Hausmann LR, Ibrahim SA, Mehrotra A, Nsa W, Bratzler DW, Mor MK, Fine MJ. Racial and ethnic disparities in pneumonia treatment and mortality. Med Care 2009; 47:1009-1017.

1b.3. If no or limited performance data on the measure as specified is reported in 1b2, then provide a summary of data from the literature that indicates opportunity for improvement or overall less than optimal performance on the specific focus of

measurement.

Fedson DS, Houck PM, Bratzler DW. Hospital-based influenza and pneumococcal vaccination: Sutton's Law applied to prevention. *Infect Control Hosp Epi.* 2002;21:692-699.

Bratzler DW, Houck PM, Jiang H, et al. Failure to vaccinate Medicare inpatients: a missed opportunity. *Arch Intern Med* 2002;162:2349-2356.

Hausmann LR, Ibrahim SA, Mehrotra A, Nsa W, Bratzler DW, Mor MK, Fine MJ. Racial and ethnic disparities in pneumonia treatment and mortality. *Med Care* 2009; 47:1009-1017.

1b.4. Provide disparities data from the measure as specified (current and over time) by population group, e.g., by race/ethnicity, gender, age, insurance status, socioeconomic status, and/or disability. *(This is required for endorsement maintenance. Describe the data source including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities include.) This information also will be used to address the subcriterion on improvement (4b.1) under Usability and Use.*

Using a large national sample of over one million patients discharged with a diagnosis of pneumonia, Hausmann et al. identified disparities across racial/ethnic groups in a number of performance measures (Hausmann). Pneumococcal vaccination/screening rate among white patients was clearly much larger (67.7%) than among African-American (53.8%) and Hispanic (52.9%). Ref #19. These differences remained statistically significant even after adjusting for many other factors through multivariate and multi-level analysis (Hausmann).

Hausmann LR, Ibrahim SA, Mehrotra A, Nsa W, Bratzler DW, Mor MK, Fine MJ. Racial and ethnic disparities in pneumonia treatment and mortality. *Med Care* 2009; 47:1009-1017.

1b.5. If no or limited data on disparities from the measure as specified is reported in 1b4, then provide a summary of data from the literature that addresses disparities in care on the specific focus of measurement. Include citations.

Hausmann LR, Ibrahim SA, Mehrotra A, Nsa W, Bratzler DW, Mor MK, Fine MJ. Racial and ethnic disparities in pneumonia treatment and mortality. *Med Care* 2009; 47:1009-1017.

1c. High Priority (previously referred to as High Impact)

The measure addresses:

- a specific national health goal/priority identified by DHHS or the National Priorities Partnership convened by NQF; OR
- a demonstrated high-priority (high-impact) aspect of healthcare (e.g., affects large numbers of patients and/or has a substantial impact for a smaller population; leading cause of morbidity/mortality; high resource use (current and/or future); severity of illness; and severity of patient/societal consequences of poor quality).

1c.1. Demonstrated high priority aspect of healthcare

Affects large numbers, A leading cause of morbidity/mortality

1c.2. If Other:

1c.3. Provide epidemiologic or resource use data that demonstrates the measure addresses a high priority aspect of healthcare.

List citations in 1c.4.

Streptococcus pneumoniae (SP) remains a major cause of serious invasive illness such as pneumonia, meningitis, and bacteremia, with an estimated 44,000 cases and 5,000 deaths in 2009 among people of all ages in the US (ref #5). The same bacteria is also among the leading causes of relatively less serious and non-invasive illness such as acute otitis media and sinusitis (ref #5). Using various data sources in 2004-2005 and experts' opinion, and based on an analytic model, Huang et al. estimated that approximately 3.9 million cases of SP disease (invasive or non-invasive) occur annually, resulting in 4.9 million outpatient visits, 760,000 emergency department visits, and 2.4 million hospital days, for a total cost of \$4.9 billion a year (ref #11). Severe forms of SP disease usually occur in the elderly (>65 years), who also account for a disproportionately higher share of the cost. People with chronic pulmonary disease such as COPD and emphysema, asthma, sickle cell disease, diabetes mellitus, functional or anatomic asplenia, HIV infection or immunocompromising disease, chronic heart disease, and cigarette smokers, are at a higher risk of invasive SP infections.

Huang, S A, Johnson K M, Ray G T, Wroe P, Lieu T, Moore M, Zell E, Linder J, Grijalva C, Metlay J, Finkelstein J A. Burden and cost of US pneumococcal disease 2004 [abstract]. In: IDSA 47th Annual Meeting; 2009 Oct 29- Nov 1; Philadelphia, PA: Session 105-Community Acquired Bacterial Infections including STD's and Mycobacteria on October 31, 2009.

1c.4. Citations for data demonstrating high priority provided in 1a.3

Centers for Disease Control [Internet]. Active Bacterial Core Surveillance (ABCS) Report emerging infectious program network Streptococcus pneumonia, 2009; [updated October 2010; cited 2010 Feb 8]. Available from <http://www.cdc.gov/abcs/repots-findings/survreports/spneu09.pdf>

Pilishvili T, Lexau C, Farley M, et al. Sustained Reductions in Invasive Pneumococcal Disease in the Era of Conjugate Vaccine. Clin Infect Dis 2010;201:32-41.

1c.5. If a PRO-PM (e.g. HRQoL/functional status, symptom/burden, experience with care, health-related behaviors), provide evidence that the target population values the measured PRO and finds it meaningful. (Describe how and from whom their input was obtained.)

2. Reliability and 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. **Measures must be judged to meet the subcriteria for both reliability and validity to pass this criterion and be evaluated against the remaining criteria.**

2a.1. Specifications The measure is well defined and precisely specified so it can be implemented consistently within and across organizations and allows for comparability. eMeasures should be specified in the Health Quality Measures Format (HQMF) and the Quality Data Model (QDM).

De.5. Subject/Topic Area (check all the areas that apply):

De.6. Non-Condition Specific (check all the areas that apply):

[Primary Prevention](#)

S.1. Measure-specific Web Page (Provide a URL link to a web page specific for this measure that contains current detailed specifications including code lists, risk model details, and supplemental materials. Do not enter a URL linking to a home page or to general information.)

<http://www.qualitynet.org/dcs/ContentServer?c=Page&pagename=QnetPublic%2FPage%2FQnetTier2&cid=1141662756099>

S.2a. If this is an eMeasure, HQMF specifications must be attached. Attach the zipped output from the eMeasure authoring tool (MAT) - if the MAT was not used, contact staff. (Use the specification fields in this online form for the plain-language description of the specifications)

[This is not an eMeasure](#) **Attachment:**

S.2b. Data Dictionary, Code Table, or Value Sets (and risk model codes and coefficients when applicable) must be attached. (Excel or csv file in the suggested format preferred - if not, contact staff)

Attachment Attachment: [NQF_IMM_1_Annual_Update_7_2014.xlsx](#)

S.3. For endorsement maintenance, please briefly describe any changes to the measure specifications since last endorsement date and explain the reasons.

S.4. Numerator Statement (Brief, narrative description of the measure focus or what is being measured about the target population, i.e., cases from the target population with the target process, condition, event, or outcome)
IF an OUTCOME MEASURE, state the outcome being measured. Calculation of the risk-adjusted outcome should be described in the calculation algorithm.

[Inpatient discharges who were screened for pneumococcal vaccine status and received pneumococcal vaccine prior to discharge if indicated.](#)

S.5. Time Period for Data (What is the time period in which data will be aggregated for the measure, e.g., 12 mo, 3 years, look back

to August for flu vaccination? Note if there are different time periods for the numerator and denominator.)

The time period included in this measure is the arrival time through discharge from the hospital during the same stay.

S.6. 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, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b)
IF an OUTCOME MEASURE, describe how the observed outcome is identified/counted. Calculation of the risk-adjusted outcome should be described in the calculation algorithm.

The following patients are included in the numerator; Patients who received pneumococcal vaccine during this hospitalization, Patients who receive pneumococcal vaccine anytime in the past, Patients who were offered and declined the pneumococcal vaccine during this hospitalization and Patients who have an allergy/sensitivity to the vaccine or the vaccine is not likely to be effective due to the following; hypersensitivity to component(s) of the vaccine, bone marrow transplants within the past 12 months, receipt of chemotherapy or radiation during this hospitalization or less than 2 weeks prior to this hospitalization or received the shingles vaccine (Zostavax) within the last 4 weeks prior to this hospitalization.

S.7. Denominator Statement (Brief, narrative description of the target population being measured)

Inpatient discharges 65 years of age and older and 5-64 years of age who have a high risk condition.

S.8. Target Population Category (Check all the populations for which the measure is specified and tested if any):

Elderly, Populations at Risk

S.9. Denominator Details (All information required to identify and calculate the target population/denominator such as definitions, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b)

All patients 65 years of age and older and 5-64 years of age who have a high risk condition (diabetes, nephrotic syndrome, ESRD, CHF, COPD, HIV or asplenia, (see below for codes) are included in the denominator except the following; patients less than 5 years of age, patients who expire prior to hospital discharge, patients who are pregnant and patients with an organ transplant during the current hospitalization. See attachments of the ICD-9 and ICD-10 tables for the high risk conditions.

The following data elements are needed for the denominator; Admission Date, Birthdate, Discharge Disposition, ICD-9-CM Other Diagnosis Codes, ICD-9-CM Principal Diagnosis Codes (or ICD-10-CM Principal or Other depending).

S.10. Denominator Exclusions (Brief narrative description of exclusions from the target population)

Excluded patients consist of the following; Patients who expire prior to hospital discharge, patients with an organ transplant during the current hospitalization, pregnant women, patients who have a length of stay greater than 120 days, patients who are transferred or discharged to another acute care hospital and patients who leave against medical advice (AMA). See attachments of the ICD-9 and ICD-10 tables for transplants and pregnancy.

S.11. Denominator Exclusion Details (All information required to identify and calculate exclusions from the denominator such as definitions, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b)

Excluded patients consist of the following; Patients who expire prior to hospital discharge, patients with an organ transplant during the current hospitalization, patients less than 19 with asthma and that have no other high risk condition, pregnant women, patients who have a length of stay greater than 120 days, patients who are transferred or discharged to another acute care hospital and patients who leave against medical advice (AMA). See attachments of the ICD-9 and ICD-10 tables for Transplants.

S.12. Stratification Details/Variables (All information required to stratify the measure results including the stratification variables, definitions, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format with at S.2b)

IMM-1 is stratified into the following;

IMM-1a (overall rate) Pneumococcal Immunization for Patients 65 years of age and older, and 5-64 years of age who have a high risk condition.

IMM-1b Pneumococcal Immunization 65 years of age and older

IMM-1c Pneumococcal Immunization 5-64 years of age who have a high risk condition

Each of these strata are further stratified via the allowable values which are as follows;

1. Patients who received pneumococcal vaccine during this hospitalization = PASS
2. Patients who receive pneumococcal vaccine anytime in the past = PASS
3. Patients who were offered and declined the pneumococcal vaccine during this hospitalization = PASS
4. Patients who have an allergy/sensitivity to the vaccine or the vaccine is not likely to be effective due to the following; hypersensitivity to component(s) of the vaccine, bone marrow transplants within the past 12 months, receipt of chemotherapy or radiation during this hospitalization or less than 2 weeks prior to this hospitalization or received the shingles vaccine (Zostavax) within the last 4 weeks prior to this hospitalization. = PASS
5. None of the above/Not documented/UTD = FAILURE

S.13. Risk Adjustment Type (Select type. Provide specifications for risk stratification in S.12 and for statistical model in S.14-15)

No risk adjustment or risk stratification

If other:

S.14. Identify the statistical risk model method and variables (Name the statistical method - e.g., logistic regression and list all the risk factor variables. Note - risk model development and testing should be addressed with measure testing under Scientific Acceptability)

N/A

S.15. Detailed risk model specifications (must be in attached data dictionary/code list Excel or csv file. Also indicate if available at measure-specific URL identified in S.1.)

Note: Risk model details (including coefficients, equations, codes with descriptors, definitions), should be provided on a separate worksheet in the suggested format in the Excel or csv file with data dictionary/code lists at S.2b.

S.15a. Detailed risk model specifications (if not provided in excel or csv file at S.2b)

S.16. Type of score:

Rate/proportion

If other:

S.17. Interpretation of Score (Classifies 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

S.18. 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.)

IMM-1a: Pneumococcal Immunization 65 years of age and older, and 5-64 years of age who have a high risk condition—overall rate

IMM-1b: Pneumococcal Immunization for Patients 65 years of age and older

IMM-1c: Pneumococcal Immunization for Patients 5 to 64 years of age with High Risk Conditions

Numerator: Inpatient discharges who were screened for pneumococcal vaccine status and received pneumococcal vaccine prior to discharge, if indicated.

Denominator: Inpatient discharges 65 years of age and older, and 5-64 years of age who have a high risk condition.

Variable Key: Patient Age

Stratification Table:

Measure ID Stratified Measure Name Patient Age

IMM-1a Pneumococcal Immunization-Overall Rate

IMM-1b Pneumococcal Immunization for patients 65 years and older = 65 years

IMM-1c Pneumococcal Immunization for patient 5-64 years with high risk condition = 5 and < 65

1. Start processing. Run cases that are included in the Global Initial Patient Population and pass the edits defined in the Transmission Data Processing Flow: Clinical through this measure.
2. Calculate Patient Age. Patient Age, in years, is equal to the Admission Date minus the Birthdate. Use the month and day portion of Admission Date and Birthdate to yield the most accurate age. Only cases with valid Admission Date and Birthdate will pass the critical feedback messages into the measure specific algorithms.
3. Check Patient Age
 - a. If the Patient Age is less than 5 years old, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Assign the Measure Category to B for IMM-1a and proceed to step 13.
 - b. If the Patient Age is greater than or equal to 5 years old, continue processing and proceed to ICD-9-CM Principal or Other Diagnosis Codes.
4. Check ICD-9-CM Principal or Other Diagnosis Codes
 - a. If at least one of ICD-9-CM Principal or Other Diagnosis Codes is on Table 12.3, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Assign the Measure Category to B for IMM-1a and proceed to step 13.
 - b. If none of the ICD-9-CM Principal or Other Diagnosis Codes is on Table 12.3, continue processing and proceed to check ICD-9-CM Principal or Other Procedure Codes.
5. Check ICD-9-CM Principal or Other Procedure Codes
 - a. If at least one of ICD-9-CM Principal or Other Procedure Codes is on Table 12.10, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Assign the Measure Category to B for IMM-1a and proceed to step 13.
 - b. If all missing or none of the ICD-9-CM Principal or Other Procedure Codes is on Table 12.10, continue processing and check Discharge Disposition.
6. Check Discharge Disposition
 - a. If Discharge Disposition is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. For CMS, stop processing. For The Joint Commission, assign the Measure Category to X for IMM-1a and proceed to step 13.
 - b. If Discharge Disposition equals 4, 6 or 7 the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Assign the Measure Category to B for IMM-1a and proceed to step 13.
 - c. If Discharge Disposition equals 1, 2, 3, 5 or 8, proceed to recheck Patient Age.
7. Recheck Patient Age
 - a. If the Patient Age is greater than or equal to 65 years, proceed to step 11 and check Pneumococcal Vaccination Status.
 - b. If the Patient Age is greater than or equal to 5 years and less than 65 years, proceed to recheck ICD-9-CM Principal or Other Diagnosis Codes.
8. Recheck ICD-9-CM Principal or Other Diagnosis Codes
 - a. If at least one of ICD-9-CM Principal or Other Diagnosis Codes is on Table 12.1, 12.2, 12.5, 12.6, 12.7, 12.8, or 2.1, proceed to step 11 and check Pneumococcal Vaccination Status.
 - b. If none of the ICD-9-CM Principal or Other Diagnosis Codes is on Table 12.1, 12.2, 12.5, 12.6, 12.7, 12.8, or 2.1, proceed to recheck Patient Age.
9. Recheck Patient Age
 - a. If the Patient Age is less than 19 years, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Assign the Measure Category to B for IMM-1a and proceed to step 13.
 - b. If the Patient Age is greater than or equal to 19 years old, proceed to recheck ICD-9-CM Principal or Other Diagnosis Codes.
10. Recheck ICD-9-CM Principal or Other Diagnosis Codes
 - a. If none of the ICD-9-CM Principal or Other Diagnosis Codes is on Table 12.4, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Assign the Measure Category to B for IMM-1a and proceed to step 13.
 - b. If at least one of ICD-9-CM Principal or Other Diagnosis Codes is on Table 12.4, proceed to check Pneumococcal Vaccination Status.
11. Check Pneumococcal Vaccination Status
 - a. If Pneumococcal Vaccination Status is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. For CMS, stop processing. For The Joint Commission, assign the Measure Category to X for IMM-1a and proceed to step 13.
 - b. If Pneumococcal Vaccination Status equals 5, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Assign the Measure Category to D for IMM-1a and proceed to step 12.

c. If Pneumococcal Vaccination Status equals 1, 2, 3, or 4, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Assign the Measure Category to E for IMM-1a and proceed to step 12.

12. Initialize the Measure Category Assignment for measures (IMM-1b and IMM-1c) to a Measure Category Assignment of B and proceed to step 14 and Recheck Patient Age.

13. Initialize the Measure Category Assignment measures (IMM-1b and IMM-1c) to a Measure Category Assignment of B. Stop Processing.

14. Recheck Patient Age

a. If the Patient Age is greater than or equal to 65 years, proceed to check Pneumococcal Vaccination Status.

1. If Pneumococcal Vaccination Status equals 5, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population for IMM-1b. Stop Processing.

2. If Pneumococcal Vaccination Status equals 1, 2, 3, or 4, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population for IMM-1b. Stop processing.

S.19. Calculation Algorithm/Measure Logic Diagram URL or Attachment (You also may provide a diagram of the Calculation Algorithm/Measure Logic described above at measure-specific Web page URL identified in S.1 OR in attached appendix at A.1)

S.20. Sampling (If measure is based on a sample, provide instructions for obtaining the sample and guidance on minimum sample size.)

IF a PRO-PM, identify whether (and how) proxy responses are allowed.

Sampling vs Not Sampling

Hospitals whose Initial Patient Population size is less than the minimum number of cases per quarter/month for the measure cannot sample.

Population and Sampling

An "Initial Patient Population" refers to all patients (Medicare and non-Medicare) who share a common set of specified, administratively derived data elements, with a length of stay less than or equal to 120 days (Admission Date minus Discharge Date less than or equal to 120 days). Hospitals that choose to sample have the option of sampling quarterly or sampling monthly. The sample size requirements for each of these options are described in turn. Hospitals need to use the next highest whole number when determining their required sample size.

Hospitals can use either the simple random sampling or systematic random sampling methods and the sampling techniques need to be applied consistently within a quarter.

- Simple random sampling - selecting a sample size (n) from a population of size (N) in such a way that every case has the same chance of being selected.

- Systematic random sampling - selecting every kth record from a population of size N in such a way that a sample size of n is obtained, where k is less than or equal to N/n. The first sample record (i.e., the starting point) must be randomly selected before taking every kth record. This is a two-step process:

1. Randomly select the starting point by choosing a number between one and k using a table of random numbers or a computer-generated random number; and

2. Then select every kth record thereafter until the selection of the sample size is completed.

Sample Size Requirements

Quarterly Sample Size

Hospital's Measure Average Quarterly

Initial Patient Population "N" Minimum Required

Sample Size

"n"

> 1551 311

391 - 1550 20% of the Initial Patient Population

78 - 390 78

6 - 77 No sampling; 100% of the Initial Patient Population is required

0 - 5 Submission of patient level data is encouraged but not required:

CMS: if submission occurs, 1 – 5 cases of the Initial Patient Population may be submitted

The Joint Commission: if submission occurs, 100% Initial Patient Population required

Monthly Sample Size
Hospital's Measure Average Monthly

Initial Patient Population

"N" Minimum Required

Sample Size

"n"

>516 104

131-515 20% of the Initial Patient Population

26-130 26

< 26 No sampling; 100% of the Initial Patient Population is required

S.21. Survey/Patient-reported data (If measure is based on a survey, provide instructions for conducting the survey and guidance on minimum response rate.)

IF a PRO-PM, specify calculation of response rates to be reported with performance measure results.

S.22. Missing data (specify how missing data are handled, e.g., imputation, delete case.)

Required for Composites and PRO-PMs.

S.23. Data Source (Check ONLY the sources for which the measure is SPECIFIED AND TESTED).

If other, please describe in S.24.

Claims, Paper Medical Records

S.24. Data Source or Collection Instrument (Identify the specific data source/data collection instrument e.g. name of database, clinical registry, collection instrument, etc.)

IF a PRO-PM, identify the specific PROM(s); and standard methods, modes, and languages of administration.

Patient medical record can be collected using the CMS Abstraction & Reporting Tool (CART).

S.25. Data Source or Collection Instrument (available at measure-specific Web page URL identified in S.1 OR in attached appendix at A.1)

URL

S.26. Level of Analysis (Check ONLY the levels of analysis for which the measure is SPECIFIED AND TESTED)

Facility, Other, Population : Regional and State

S.27. Care Setting (Check ONLY the settings for which the measure is SPECIFIED AND TESTED)

Inpatient/Hospital

If other:

S.28. COMPOSITE Performance Measure - Additional Specifications (Use this section as needed for aggregation and weighting rules, or calculation of individual performance measures if not individually endorsed.)

2a. Reliability – See attached Measure Testing Submission Form

2b. Validity – See attached Measure Testing Submission Form

1653_MeasureTesting_MS5.0_Data.doc

3. Feasibility

Extent to which the specifications including measure logic, require data that are readily available or could be captured without undue burden and can be implemented for performance measurement.

3a. Byproduct of Care Processes

For clinical measures, the required data elements are routinely generated and used during care delivery (e.g., blood pressure, lab test, diagnosis, medication order).

3a.1. Data Elements Generated as Byproduct of Care Processes.

Coded by someone other than person obtaining original information (e.g., DRG, ICD-9 codes on claims), Abstracted from a record by someone other than person obtaining original information (e.g., chart abstraction for quality measure or registry)

If other:

3b. Electronic Sources

The required data elements are available in electronic health records or other electronic sources. If the required data are not in electronic health records or existing electronic sources, a credible, near-term path to electronic collection is specified.

3b.1. To what extent are the specified data elements available electronically in defined fields? (*i.e., data elements that are needed to compute the performance measure score are in defined, computer-readable fields*)

Some data elements are in defined fields in electronic sources

3b.2. If ALL the data elements needed to compute the performance measure score are not from electronic sources, specify a credible, near-term path to electronic capture, OR provide a rationale for using other than electronic sources.

Currently, this measure is a chart abstracted measure. Some of the data elements can be found in EHR fields but some are not and can only be found using chart abstraction at this time.

3b.3. If this is an eMeasure, provide a summary of the feasibility assessment in an attached file or make available at a measure-specific URL.

Attachment:

3c. Data Collection Strategy

Demonstration that the data collection strategy (e.g., source, timing, frequency, sampling, patient confidentiality, costs associated with fees/licensing of proprietary measures) can be implemented (e.g., already in operational use, or testing demonstrates that it is ready to put into operational use). For eMeasures, a feasibility assessment addresses the data elements and measure logic and demonstrates the eMeasure can be implemented or feasibility concerns can be adequately addressed.

3c.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/implementation issues.

IF a PRO-PM, consider implications for both individuals providing PROM data (patients, service recipients, respondents) and those whose performance is being measured.

Specifications (including codes and data elements) are modified every 6 months according to feedback received from clinicians and hospital staff collecting data for PN-2. Data is available in the medical record and there are no feasibility or implementation issues identified.

In the past we learned that missing data was an issue regarding the integrity of our data results. The algorithms were altered to address this issue. If a case is submitted to the CMS Clinical Data Warehouse that has any data elements missing, they are rejected, i.e., sent back to the submitter to give them the opportunity to complete the missing element.

3c.2. Describe any fees, licensing, or other requirements to use any aspect of the measure as specified (*e.g., value/code set, risk model, programming code, algorithm*).

4. Usability and Use

Extent to which potential audiences (e.g., consumers, purchasers, providers, policy makers) are using or could use performance results for both accountability and performance improvement to achieve the goal of high-quality, efficient healthcare for individuals or populations.

4a. Accountability and Transparency

Performance results are used in at least one accountability application within three years after initial endorsement and are

publicly reported within six years after initial endorsement (or the data on performance results are available). If not in use at the time of initial endorsement, then a credible plan for implementation within the specified timeframes is provided.

4.1. Current and Planned Use

NQF-endorsed measures are expected to be used in at least one accountability application within 3 years and publicly reported within 6 years of initial endorsement in addition to performance improvement.

Planned	Current Use (for current use provide URL)
Public Reporting	
Payment Program	
Regulatory and Accreditation Programs	
Quality Improvement (Internal to the specific organization)	

4a.1. For each CURRENT use, checked above, provide:

- Name of program and sponsor
- Purpose
- Geographic area and number and percentage of accountable entities and patients included

4a.2. If not currently publicly reported OR used in at least one other accountability application (e.g., payment program, certification, licensing) what are the reasons? (e.g., Do policies or actions of the developer/steward or accountable entities restrict access to performance results or impede implementation?)

4a.3. If not currently publicly reported OR used in at least one other accountability application, provide a credible plan for implementation within the expected timeframes -- any accountability application within 3 years and publicly reported within 6 years of initial endorsement. (Credible plan includes the specific program, purpose, intended audience, and timeline for implementing the measure within the specified timeframes. A plan for accountability applications addresses mechanisms for data aggregation and reporting.)

4b. Improvement

Progress toward achieving the goal of high-quality, efficient healthcare for individuals or populations is demonstrated. If not in use for performance improvement at the time of initial endorsement, then a credible rationale describes how the performance results could be used to further the goal of high-quality, efficient healthcare for individuals or populations.

4b.1. Progress on Improvement. (Not required for initial endorsement unless available.)

Performance results on this measure (current and over time) should be provided in 1b.2 and 1b.4. Discuss:

- Progress (trends in performance results, number and percentage of people receiving high-quality healthcare)
- Geographic area and number and percentage of accountable entities and patients included

4b.2. If no improvement was demonstrated, what are the reasons? If not in use for performance improvement at the time of initial endorsement, provide a credible rationale that describes how the performance results could be used to further the goal of high-quality, efficient healthcare for individuals or populations.

4c. Unintended Consequences

The benefits of the performance measure in facilitating progress toward achieving high-quality, efficient healthcare for individuals or populations outweigh evidence of unintended negative consequences to individuals or populations (if such evidence exists).

4c.1. Were any unintended negative consequences to individuals or populations identified during testing; OR has evidence of unintended negative consequences to individuals or populations been reported since implementation? If so, identify the negative unintended consequences and describe how benefits outweigh them or actions taken to mitigate them.

Since the instructions for obtaining the data are written by the measure developers, interpretation of data elements will always be a factor, as they are interpreted by over 4,000 hospitals across the nation. However, since basically the same data element has been used by PN-2 since 1999, we feel the data element at this point in time is in very good shape.

No unintended consequences have been identified for PN-2 or this new measure.

5. Comparison to Related or 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.

5. Relation to Other NQF-endorsed Measures

Are there related measures (conceptually, either same measure focus or target population) or competing measures (conceptually both the same measure focus and same target population)? If yes, list the NQF # and title of all related and/or competing measures.

5.1a. List of related or competing measures (selected from NQF-endorsed measures)

5.1b. If related or competing measures are not NQF endorsed please indicate measure title and steward.

5a. Harmonization

The measure specifications are harmonized with related measures;

OR

The differences in specifications are justified

5a.1. If this measure conceptually addresses 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.

There are some differences in Exclusions and Inclusions specific to the facility, i.e., Nursing Home/Skilled Nursing Facility vs. Acute Care Hospital such as age, pregnancy, organ transplant during hospitalization. There are also some age differences, as there our measure follows the latest ACIP recommendations and some of the others have not yet updated their measures.

5b. Competing Measures

The measure is superior to competing measures (e.g., is a more valid or efficient way to measure);

OR

Multiple measures are justified.

5b.1. If this measure conceptually addresses 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.)

The current measure, PN-2, that this measure is expanding upon is the only inpatient measure that looks at pneumococcal vaccination status.

Most of the other measures focus only on patients 65 and older and do not look at patients under 65 with high risk conditions.

Appendix
<p>A.1 Supplemental materials may be provided in an appendix. All supplemental materials (such as data collection instrument or methodology reports) should be organized in one file with a table of contents or bookmarks. If material pertains to a specific submission form number, that should be indicated. Requested information should be provided in the submission form and required attachments. There is no guarantee that supplemental materials will be reviewed.</p> <p>Attachment:</p>
Contact Information
<p>Co.1 Measure Steward (Intellectual Property Owner): Centers for Medicare & Medicaid Services</p> <p>Co.2 Point of Contact: Helen, Dollar-Maples, Helen.Dollar-Maples@cms.hhs.gov, 410-786-7214-</p> <p>Co.3 Measure Developer if different from Measure Steward: Centers for Medicare and Medicaid Services</p> <p>Co.4 Point of Contact: Kristie, Baus, kristie.baus@cms.hhs.gov, 410-786-8161-</p>
Additional Information
<p>Ad.1 Workgroup/Expert Panel involved in measure development Provide a list of sponsoring organizations and workgroup/panel members' names and organizations. Describe the members' role in measure development.</p> <p>Carolyn Bridges, MD, MPH Associate Director of Adult Immunizations, Immunization Services Division, National Center for Immunization and Respiratory Diseases, Centers for Disease Control and Prevention Atlanta, GA Ph 404-639-8689</p> <p>Matthew Moore, MD, MPH Captain, USPHS Centers for Disease Control and Prevention 1600 Clifton Road, MS C-23 Atlanta, GA 30333 Ph 404-639-4887 Fax 404-639-3970</p> <p>Faruque Ahmed, MD Lead Epidemiologist, National Center for Immunization and Respiratory Diseases, Centers for Disease Control and Prevention Atlanta, GA 30329 Ph 404-639-8827 Fax 404-639-8614</p> <p>Debra Blog, MD, MPH Director, Bureau of Immunizations New York State Department of Health Empire State Plaza, Corning Tower – Rm 649 Albany, NY 12237 Ph. 518-473-4437 Fax 518-474-1495</p> <p>After the measures were expanded outside of patients with a diagnosis of pneumonia the Technical Expert Panel (TEP) was formed. The TEP provided guidance and approval for the measure drafts as well as the product submitted today.</p>
<p>Measure Developer/Steward Updates and Ongoing Maintenance</p> <p>Ad.2 Year the measure was first released: 2011</p> <p>Ad.3 Month and Year of most recent revision:</p>

Ad.4 What is your frequency for review/update of this measure? Every 6 months Ad.5 When is the next scheduled review/update for this measure? 09, 2011
Ad.6 Copyright statement: Ad.7 Disclaimers:
Ad.8 Additional Information/Comments: