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.

NQF #: 0038 NQF Project: Population Health: Prevention Project

(for Endorsement Maintenance Review)
Original Endorsement Date: Aug 10, 2009 Most Recent Endorsement Date: Aug 10, 2009

BRIEF MEASURE INFORMATION

De.1 Measure Title: Childhood Immunization Status

Co.1.1 Measure Steward: National Committee for Quality Assurance

De.2 Brief Description of Measure: Percentage of children 2 years of age who had four diphtheria, tetanus and acellular pertussis (DtaP); three polio (IPV); one measles, mumps and rubella (MMR); three H influenza type B(HiB); three hepatitis B (HepB); one chicken pox (VZV); four pneumococcal conjugate (PCV); two hepatitis A (HepA); two or three rotavirus (RV); and two influenza (flu) vaccines by their second birthday. The measure calculates a rate for each vaccine and nine separate combination rates.

2a1.1 Numerator Statement: Children who have evidence showing they received recommended vaccines during the measurement year.

2a1.4 Denominator Statement: Children who turn 2 years of age during the measurement year are eligible for inclusion.

2a1.8 Denominator Exclusions: Children who had a contraindication for a specific vaccine may be excluded from the denominator for all antigen rates and the combination rates. The denominator for all rates must be the same. An organization that excludes contraindicated children may do so only if the administrative data do not indicate that the contraindicated immunization was rendered. The exclusion must have occurred by the second birthday. Organizations should look for exclusions as far back as possible in the member's history.

Individuals diagnosed with HIV. Look for evidence of HIV diagnosis as far back as possible in the member´s history through December 31 of the measurement year.
Individuals who have a diagnosis of pregnancy during the measurement year.

1.1 Measure Type: Process
2a1. 25-26 Data Source: Administrative claims, Electronic Clinical Data : Registry, Paper Records
2a1.33 Level of Analysis: Clinician : Group/Practice, Clinician : Individual, Clinician : Team, Facility, Health Plan, Integrated Delivery System

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:

Is the measure untested? Yes☐ No☐ If untested, explain how it meets criteria for consideration for time-limited endorsement:

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, OPPORTUITY, 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, Patient/societal consequences of poor quality

1a.2 If "Other," please describe:

1a.3 Summary of Evidence of High Impact *(Provide epidemiologic or resource use data)*:
Infants and toddlers are particularly vulnerable to infectious diseases because their immune systems have not built up the necessary defenses to fight infection (1,2). Most childhood vaccines are between 90 and 99 percent effective in preventing diseases (3) . Immunization is a critical aspect of preventive care for children. Lack of proper immunization leads to an increase in illness, doctor visits and hospitalizations, all of which translate into higher costs. (4) Vaccination of each U.S. birth cohort with the current childhood immunization schedule prevents approximately 42,000 deaths and 20 million cases of disease, and saves nearly $14 billion in direct costs and $69 billion in societal costs each year (5,6).
Studies have shown that routine varicella (chickenpox) immunization has led to substantial health care and societal cost savings, yet is now the most commonly parent-refused childhood vaccine. Prior to universal immunization, the varicella illness was responsible for more than $330 million in health care costs and more than $1.5 billion in societal costs annually. Since licensure of the 2-dose varicella vaccine, varicella-associated health care costs reduced by 97 percent and societal costs by 98 percent (7).

Immunizing a child not only protects that child's health but also the health of the community, especially for those who are not immunized or are unable to be immunized due to other health complications (8). When the majority of the community is immunized against a disease, other members of the community are also protected because there is little opportunity for an outbreak through herd immunity (9).

1a.4 Citations for Evidence of High Impact cited in 1a.3:
1. Centers for Disease Control and Prevention. 2011. Vaccines & Immunizations: Infants and Toddlers. http://www.cdc.gov/vaccines/spec-grps/infants-toddlers.htm (June 1, 2011)
2. Centers for Disease Control and Prevention. 2010. Vaccines & Immunizations: 10 Things You Need to Know About Immunizations. http://www.cdc.gov/vaccines/vac-gen/10-shouldknow.htm (June 6, 2011).
3. HealthyChildren. American Academy of Pediatrics. 2011. Safety & Prevention: Why Immunize Your Child. http://www.healthychildren.org/english/safety-prevention/immunizations/Pages/Why-Immunize-Your-Child.aspx?nfstatus=401&nftoken=00000000-0000-0000-0000-000000000000&nfstatusdescription=ERROR%3a+No+local+token (June 1, 2011)
4. Batelle Medical Technology Assessment and Policy Research Program, Centers for Public Health Research and Evaluation. A cost benefit analysis of the measles-mumps-rubella (MMR) vaccine. Arlington, Virginia: Batelle, 1994b.

5. Zhou F. Updated economic evaluation of the routine childhood immunization schedule in the United States. Presented at the 45th National Immunization Conference. Washington, DC; March 28-31, 2011.
6. Centers for Disease Control and Prevention. 2011. Ten Great Public Health Achievements --- United States, 2001—2010. MMWR Morbidity and Mortality Weekly Report May 20, 2011. 60(19):619-623.
7. Glanz JM, McClure DL, Magid DJ, Daley MF, France EK, Hambidge SJ. Parental Refusal of Varicella Vaccination and the

Associated Risk of Varicella Infection in Children. Arch Pediatr Adolesc Med. 2010;164(1):66-70.

8. Centers for Disease Control and Prevention. 2009. Vaccines & Immunizations: How Vaccines Prevent Disease. http://www.cdc.gov/vaccines/vac-gen/howvpd.htm (June 1, 2011)
9. National Institute of Allergy and Infectious Diseases. 2010. Community Immunity ("Herd" Immunity). http://www.niaid.nih.gov/topics/pages/communityimmunity.aspx (June 6, 2011)

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:
Vaccines are a cost-effective way to foster both child health and population health. By encouraging care providers to vaccinate children, the measure protects these most vulnerable individuals while building important herd immunity and reducing medical costs.

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.*]
Commercial

NAME_ Year1 Year2 Year3

CIS - DTaP - Rate
Data Element; 2009; 2008; 2007
N; 235; 117; 385
MEAN; 85.4; 86.4; 87.2
STDEV; 8.5; 8.82; 6.99
STDERR; 0.55; 0.82; 0.36
MIN;13.3; 28.2; 16.2
MAX; 98; 98.3; 97.6
P10; 79.9; 80.5; 81.1
P25; 83.7; 84.1; 85.3
P50; 86.7; 87.9; 88.4
P75; 89.5; 91.1; 90.8
P90; 92.1; 93.9; 93.4

CIS - MMR Rate
Data Element; 2009; 2008; 2007
N; 235;117; 385
MEAN; 90.6; 92.8; 93.7
STDEV; 4.13; 4.07; 3.92
STDERR; 0.27; 0.38; 0.2
MIN; 63.3; 63.8; 41.9
MAX; 97.9; 97.6; 100
P10; 86.1; 89.3; 90.1
P25; 89.1; 91.6; 92.2
P50; 91.1; 93.9; 94
P75; 93.2; 95.1; 95.9
P90; 94.9; 96.2; 97.3

CIS - IPV - Rate
Data Element; 2009; 2008; 2007
N; 235; 117; 385
MEAN; 91.1; 91.7; 91.9
STDEV; 7.68; 7.15; 6.16

STDERR; 0.5; 0.66; 0.31
MIN; 26.7; 47.2; 27.5
MAX; 98.6; 98.6; 98.9
P10; 86.6; 86.8; 87.4
P25; 90; 90.9; 90
P50; 92.6; 93.3; 93.1
P75; 94.6; 95.5; 95.1
P90; 96.1; 97.1; 97.1

CIS - HIB Rate
Data Element; 2009; 2008; 2007
N; 235; 117; 385
MEAN; 94.8; 95.6; 93.4
STDEV; 6.3; 4.95; 5.72
STDERR; 0.41; 0.46; 0.29
MIN; 38.7; 60.1; 31.1
MAX; 100; 99.5; 100
P10; 91.6 ; 92.9; 89.5
P25; 94.3; 95.1; 92.2
P50; 96.2; 96.6; 94.3
P75; 97.3; 98.1; 96.4
P90; 98; 98.5; 97.6

CIS - Hepatitis B Rate
Data Element; 2009; 2008; 2007
N; 235; 117; 385
STDEV; 10.8; 10.8; 7.77
STDERR; 0.7; 1; 0.4
MIN; 8; 18.4; 22.2
MAX; 100; 98.6; 100
P10; 84.2; 84.1; 86.2
P25; 88.7; 90.2; 90
P50; 92.5; 93.9; 93.7
P75; 94.6; 95.5; 95.6
P90; 96.1; 96.6; 97.1

CIS - VZV Rate
Data Element; 2009; 2008; 2007
N; 235; 117; 385
MEAN; 90.6; 91.2; 92.2
STDEV; 4.18; 4.32; 4.44
STDERR; 0.27; 0.4; 0.23
MIN; 57.3; 62.6; 38.3
MAX; 97.7; 98.3; 100
P10; 86.9; 87; 88.4
P25; 89.2; 89.8; 90.5
P50; 91.2; 91.7; 92.9
P75; 92.9; 93.8; 94.6
P90; 94.1; 94.9; 96.2

CIS - Combo 2 Rate
Data Element; 2009; 2008; 2007
N; 235; 117; 385
MEAN; 77.4; 79.9; 81.1

STDEV; 10.6; 11.3; 8.98
STDERR; 0.69;1.04; 0.46
MIN; 6.67; 13.5; 8.38
MAX; 95.3; 95; 97.6
P10; 69.1; 72.6; 73.5
P25;75.2; 78; 78
P50; 79.1; 82.6; 82.7
P75; 83.2 ; 85.6; 85.6
P90; 86; 88.4; 89.1

CIS - Combo 3 Rate
Data Element; 2009; 2008; 2007
N; 235; 117; 384
MEAN; 73.1; 75.9; 75.7
STDEV; 12.1; 12.1; 9.64
STDERR; 0.79; 1.11; 0.49
MIN; 5.33; 9.2; 3.59
MAX; 89.8; 92; 91
P10; 63.3; 60.8; 66.4
P25; 70.4; 73.2; 71.9
P50; 74.8; 79.5; 76.7
P75; 80.1; 82; 81.5
P90; 83.2; 87; 85.6

CIS - Pneumococcal Conjugate Rate
Data Element; 2009; 2008; 2007
N; 235; 117; 384
MEAN; 84.6; 85; 83.9
STDEV; 8.63; 9.45; 8.32
STDERR; 0.56; 0.87; 0.42
MIN; 15.3; 29.4; 10.2
MAX; 100; 98.3; 96.4
P10; 78.4; 75.6; 75.8
P25; 82.6; 83.2; 80.6
P50; 86; 87.1; 84.7
P75; 89.3; 90.3; 89.3
P90; 91.4; 92.9; 92.9

CIS - Combo 4 Rate
Data Element; 2009
N; 235
MEAN; 29.5
STDEV; 12.3
STDERR; 0.8
MIN; 4
MAX; 84.9
P10; 14.8
P25; 21.8
P50; 28.2
P75; 35.2
P90; 45.7

CIS - Combo 5 Rate
Data Element; 2009

N; 235
MEAN; 49.6
STDEV; 12.9
STDERR; 0.84
MIN; 2.67
MAX; 76.4
P10; 32.4
P25; 43.8
P50; 52.4
P75; 58.1
P90; 63.3

CIS - Combo 6 Rate
Data Element; 2009
N; 235
MEAN; 46.2
STDEV; 12.2
STDERR; 0.8
MIN; 0
MAX; 70.3
P10; 29.2
P25; 41.4
P50; 47.2
P75; 55
P90; 59.7

CIS - Combo 7 Rate
Data Element; 2009
N; 235
MEAN; 22.6
STDEV; 10.7
STDERR; 0.7
MIN; 2.67
MAX; 74.2
P10; 10.9
P25; 15.1
P50; 21.4
P75; 27.1
P90; 35.4

CIS - Combo 8 Rate
Data Element; 2009
N; 235
MEAN; 20.3
STDEV; 9.67
STDERR; 0.63
MIN; 0
MAX; 55.3
P10; 9.74
P25; 13.5
P50; 18.3
P75; 25.5
P90; 33.1

CIS - Combo 9 Rate
Data Element; 2009
N; 235
MEAN; 34
STDEV; 11.1
STDERR; 0.72
MIN; 0
MAX; 62
P10; 17.8
P25; 27.7
P50; 35.1
P75; 41.1
P90; 47.4

CIS - Combo 10 Rate
Data Element; 2009
N; 235
MEAN; 16.3
STDEV; 8.56
STDERR; 0.56
MIN; 0
MAX; 52.2
P10; 7.32
P25; 10.5
P50; 14.9
P75; 20
P90; 27.5

CIS - Hepatitis A - Rate
Data Element; 2009
N; 235
MEAN; 33.6
STDEV; 12.3
STDERR; 0.8
MIN; 9.91
MAX; 89.5
P10; 19
P25; 25.8
P50; 32.3
P75; 39.7
P90; 49.4

CIS - Rotavirus - Rate
Data Element; 2009
N; 235
MEAN; 58.9
STDEV; 12.3
STDERR; 0.8
MIN; 4
MAX; 81.9
P10; 42.5
P25; 52.6
P50; 61.3
P75; 67.6

P90; 72.3

CIS - Influenza - Rate
Data Element; 2009
N; 235
MEAN; 55.2
STDEV; 11.6
STDERR; 0.76
MIN; 3.33
MAX; 79.3
P10; 39.3
P25; 48.9
P50; 56.7
P75; 63.3
P90; 68.6

Medicaid
NAME ; Year1; Year2; Year3
CIS - DTaP - Rate
Data Element; 2009; 2008; 2007
N; 154; 129; 181
MEAN; 79.6; 77.8; 78.5
STDEV; 8.88; 11.8; 10.2
STDERR; 0.72; 1.04; 0.76
MIN; 42.5; 28.2; 18.1
MAX; 92.2; 94.7; 94.2
P10; 68.8; 61.6; 66.6
P25; 75.5; 74.3; 75.6
P50; 81.8; 81.3; 81.1
P75; 85.2; 84.9; 85.1
P90; 88.5; 87.5; 87.2

CIS - MMR Rate
Data Element; 2009; 2008; 2007
N; 154; 129; 181
MEAN; 91.2; 90.5; 90.7
STDEV; 4.33; 7.3; 5.79
STDERR; 0.35; 0.64; 0.43
MIN; 65.4; 41; 46.9
MAX; 98.3; 99; 97.7
P10; 86.3; 84; 85
P25; 89.4; 87.8; 88.9
P50; 91.7; 92.5; 92.3
P75; 93.9 ; 94.7; 94.2
P90; 95.8; 96.1; 95.6

CIS - IPV - Rate
Data Element; 2009; 2008; 2007
N; 154; 129; 181
MEAN; 89; 87.2; 87.9
STDEV; 8.18; 11.7; 9.29
STDERR ; 0.66; 1.03; 0.69
MIN; 41.7; 21.8; 24.3
MAX; 97.6; 97.1; 97.7

P10; 83.8; 74.8; 77.3
P25; 87.1; 86.1; 86.4
P50; 90.7; 90.7; 90.3
P75; 93.7; 93.2; 93.2
P90; 95.6; 95.2; 95.6

CIS - HIB Rate
Data Element; 2009; 2008; 2007
N; 154; 129; 181
MEAN; 93.7; 93.5; 88.2
STDEV; 5.25; 6.84; 9.79
STDERR; 0.42; 0.6; 0.73
MIN; 59.6; 56.4; 22.2
MAX; 99.3; 99.3; 97.6
P10; 88.3; 87.3; 77.4
P25; 92.6; 92.8; 87.1
P50; 95.4; 96; 91
P75; 96.6; 97.1; 93.2
P90; 97.8; 98.3; 95.3

CIS - Hepatitis B Rate
Data Element; 2009; 2008; 2007
N; 154; 129; 181
MEAN; 89.1; 87.6; 87.8
STDEV; 10.1; 12.9; 10.8
STDERR; 0.81; 1.14; 0.8
MIN; 33.8; 16.9; 24.7
MAX; 98.5; 99; 98.5
P10; 82.6; 75.9; 76.8
P25; 87; 86.8; 86.5
P50; 91.8; 91.3; 90.8
P75; 94.3; 94.2; 93.9
P90; 96.4; 96.2; 96

CIS - VZV Rate
Data Element; 2009; 2008; 2007
N; 154;129;181
MEAN; 90.6; 89.3; 89.1
STDEV; 4.66; 7.37; 6.19
STDERR; 0.38; 0.65; 0.46
MIN; 63.2; 43.6; 41.7
MAX; 98.3; 99.3; 96.9
P10;84.5; 81; 82.5
P25; 88.3; 86.7; 86.9
P50; 91.3; 91.3; 90.2
P75; 93.9; 93.8; 92.9
P90; 95.4; 96.1; 94.4

CIS - Combo 2 Rate
Data Element; 2009; 2008; 2007
N; 148; 129; 181
MEAN; 74.3; 72.7; 73
STDEV; 11; 14; 12.5
STDERR; 0.9; 1.23; 0.93

MIN; 25.2; 12.5; 13.2
MAX; 89.8; 92.4; 92.7
P10; 61.8; 55.9; 58.6
P25; 68.8; 67.4; 68.6
P50; 76.6; 76.6; 75.7
P75; 81.6; 81.7; 80.8
P90; 85.6; 85; 85

CIS - Combo 3 Rate
Data Element; 2009; 2008; 2007
N; 154; 129; 181
MEAN; 69.4; 66.7; 66.3
STDEV; 11.6; 15.1; 12.7
STDERR; 0.93; 1.33; 0.94
MIN; 20.8; 11.2; 10.8
MAX; 87.3; 90.3; 90.7
P10; 56; 48.4; 51.8
P25; 63.5; 60.4; 61.6
P50; 71; 70.1; 69
P75; 76.6; 76.4; 74.3
P90; 82; 80.6; 78.2

CIS - Pneumococcal Conjugate Rate
Data Element; 2009; 2008; 2007
N; 154; 129; 181
MEAN; 77.6; 75; 74.6
STDEV; 9.5; 13.6; 10.8
STDERR; 0.77; 1.19; 0.8
MIN; 39.5; 15.4; 17.7
MAX; 93.4; 93.3; 92.8
P10; 65.9; 56.2; 60.8
P25; 72.3; 70.4; 69.8
P50; 79.3; 79.3; 76.6
P75; 84; 83.1; 81.5
P90; 87.8; 86.9; 85

CIS - Combo 4 Rate
Data Element; 2009
N; 140
MEAN; 30.4
STDEV; 10.1
STDERR; 0.86
MIN; 7.64
MAX; 65.9
P10; 17.1
P25; 24.3
P50; 29.5
P75; 37.1
P90; 42.5

CIS - Combo 5 Rate
Data Element; 2009
N; 140
MEAN; 41.6

STDEV; 12.3
STDERR; 1.04
MIN; 7.87
MAX; 75.2
P10; 26.9
P25; 33.8
P50; 42
P75; 49.1
P90 ; 57

CIS - Combo 6 Rate
Data Element; 2009
N; 140
MEAN; 33.8
STDEV; 13.3
STDERR; 1.12
MIN; 3.16
MAX; 76.9
P10; 17.3
P25; 25.4
P50; 32.9
P75; 41
P90; 50.7

CIS - Combo 7 Rate
Data Element; 2009
N; 140
MEAN; 20.6
STDEV; 8.77
STDERR; 0.74
MIN; 3.24
MAX; 53.6
P10; 9.73
P25; 15
P50; 19.7
P75; 25.6
P90; 31

CIS - Combo 8 Rate
Data Element; 2009
N; 140
MEAN; 17.2
STDEV; 8.68
STDERR; 0.73
MIN; 1.46
MAX; 50.2
P10; 7.79
P25; 11.6
P50; 16
P75; 21.4
P90; 27.1

CIS - Combo 9 Rate
Data Element; 2009

N; 140
MEAN; 23.2
STDEV; 11.1
STDERR; 0.93
MIN; 1.46
MAX; 58.6
P10; 9.61
P25; 15.7
P50; 21.1
P75; 30.3
P90; 37.2

CIS - Combo 10 Rate
Data Element; 2009
N; 140
MEAN; 12.6
STDEV; 7.32
STDERR; 0.62
MIN; 0.73
MAX; 46
P10; 4.63
P25; 7.73
P50; 11.7
P75; 15.9
P90; 20.9

CIS - Hepatitis A - Rate
Data Element; 2009
N;143
MEAN; 35.5
STDEV; 10.7
STDERR; 0.9
MIN; 11.1
MAX; 70
P10; 22.2
P25; 28.2
P50; 34.8
P75; 42.8
P90; 48.4

CIS - Rotavirus - Rate
Data Element; 2009
N; 143
MEAN; 49.8
STDEV; 12.7
STDERR; 1.06
MIN; 15.8
MAX; 80
P10; 31.7
P25; 42.6
P50; 49.9
P75; 59
P90; 64.7

CIS - Influenza - Rate
Data Element; 2009
N; 143
MEAN; 40.6
STDEV; 13.9
STDERR; 1.16
MIN; 3.65
MAX; 80.8
P10; 23.4
P25; 31.7
P50; 40
P75; 49.5
P90; 57.2

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. Some rates and measures are new, therefore data might only be available for one or two years. The data in section 1b.2 include percentiles, mean, min, max, standard deviation and standard error. There were (Number from below) submissions for this measure/rate.

Rate	Frequency	Percent
CIS - DTaP - Rate	1279	4.03
CIS - MMR Rate	1279	4.03
CIS - IPV - Rate	1279	4.03
CIS - HIB Rate	1279	4.03
CIS - Hepatitis B Rate	1279	4.03
CIS - VZV Rate	1279	4.03
CIS - Combo 2 Rate	1279	4.03
CIS - Combo 3 Rate	1279	4.03
CIS - Pneumococcal Conjugate Rate	1279	4.03
CIS - Combo 4 Rate	417	1.31
CIS - Combo 5 Rate	417	1.31
CIS - Combo 6 Rate	417	1.31
CIS - Combo 7 Rate	417	1.31
CIS - Combo 8 Rate	417	1.31
CIS - Combo 9 Rate	417	1.31
CIS - Combo 10 Rate	417	1.31
CIS - Hepatitis A - Rate	417	1.31
CIS - Rotavirus - Rate	417	1.31
CIS - Influenza - Rate	417	1.31

1b.4 Summary of Data on Disparities by Population Group: [*For Maintenance –Descriptive statistics for performance results for this measure by population group*]
Variations in immunization coverage exist among some populations. Children of lower socioeconomic status are slightly less likely to be fully immunized. According to data from the Center for Disease Control and Prevention's National Immunization Survey, white, non-Hispanic children are more likely to be fully immunized by 35 months of age than children of other race categories are. This difference in immunization rates, however, is small (0-9%) and the gap is narrowing. Data show that in 2005 children living below the poverty level have lower immunization coverage rates as well.

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.

Quantity: H☐ M☐ L☐ I☐ Quality: H☐ M☐ L☐ I☐ Consistency: H☐ M☐ L☐ I☐

Quantity	Quality	Consistency	Does the measure pass subcriterion1c?
M-H	M-H	M-H	Yes☐
L	M-H	M	Yes☐ IF additional research unlikely to change conclusion that benefits to patients outweigh harms: otherwise No☐
M-H	L	M-H	Yes☐ IF potential benefits to patients clearly outweigh potential harms: otherwise No☐
L-M-H	L-M-H	L	No ☐

Health outcome – rationale supports relationship to at least one healthcare structure, process, intervention, or service	Does the measure pass subcriterion1c? Yes☐ IF rationale supports relationship

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; process- health outcome; intermediate clinical outcome-health outcome)*:
Vaccination protects children from potentially life-threatening diseases.

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)*:
Hepatitis B
Hepatitis B is a disease caused by infection with the hepatitis B virus (HBV). Chronic (lifelong) infection with HBV can lead to liver cirrhosis, liver failure, and liver cancer. Stanford School of Medicine Of the over 2 billion people worldwide who have ever been infected with the hepatitis b virus, 350 million are lifelong carriers and have the ability to transmit the virus to others. Annually, one million of these people die of liver disease and liver cancer. National Studies indicate that approximately 12.5 million American have been infected with the virus at some point in their lifetime. Of the 1.25 million Americans who have lifelong hepatitis B virus infection, approximately 20-30 percent acquired their infection in childhood (CDC, 2007). Young children who become infected with hepatitis b virus are the most likely to develop chronic infections. About 90 percent of infants infected during the first year of life develop chronic infections; 30 to 50 percent of children infected between one to four years of age develop chronic infections. About 25 percent of adults who become chronically infected during childhood die from HBV-related liver cancer or cirrhosis. (WHO 2008). Each year about 4,000-5,000 people die from related liver disease resulting in over $700 million of medical and work-loss costs. In 2007, there were 4,519 new cases of hepatitis B. (NCHS, 2010). The greatest declines infection has occurred among children and adolescents due to routine hepatitis B vaccination (CDC, 2007).

Influenza
Influenza, also called the flu, is a contagious respiratory illness caused by influenza viruses. It can cause mild to severe illness, and at times can lead to death.(CDC, 2006) Children are especially vulnerable to influenza infection. Studies have shown that children less than 2 years old—even healthy children—are more likely than older children to end up in the hospital with serious complications (e.g., pneumonia, dehydration, etc.) due to infection with influenza, which in some cases can lead to death. There are an estimated >20,000 children less than 5 years of age who are hospitalized due to the flu each year in the U.S.(CDC MMWR Influenza, 2006) The rates of infection for influenza viruses, which cause disease among all age groups, are highest among children, with rates of serious illness and death being highest among children aged <2 years. The Influenza vaccination is the primary method for preventing influenza and its severe complications (Grijalva CG, Craig AS, Dupont WD, Bridges CB et al, 2006).. In 2008, 28.5 percent of children received an influenza vaccination; this indicates the increased opportunity to increase influenza vaccination rates.

Rotavirus
Rotavirus is the most common cause of gastroenteritis in infants and young children worldwide. Rotavirus gastroenteritis causes

few deaths in the United States but nearly every child in the United States is infected with rotavirus by age 5 years, and the majority will have gastroenteritis, resulting in: approximately 410,000 physician visits, 205,000-272,000 emergency department visits, and 55,000-70,000 hospitalizations annually with direct and indirect costs of approximately $1 billion (CDC MMWR Rotavirus, 2006). The rotavirus vaccine will not prevent all subsequent disease, but should prevent most cases for severe rotavirus disease or conditions resulting from the rotavirus such as dehydration, physician visits, hospitalizations and deaths (CDC MMWR Rotavirus, 2006). Due to the introduction of the rotavirus vaccine, there was a marked decline in the mean percentage of positive rotavirus test results in 2007-2009 compared to the 2000-2006 season.

Hepatitis A
From 1980 – 1995 there were approximately 22,000 – 36,000 cases of hepatitis A reported annually in the United States, which correlated to an estimated 271,000 infections per year when including asymptomatic infections (CDC MMWR Hepatitis A, 2006). Each year in the United States, an estimated 100 persons died as a result of acute liver failure attributed to hepatitis A. Costs attributed to hepatitis A are substantial, surveillance data indicating that 11 – 22 percent of people infected with hepatitis A are hospitalized, and the annual direct and indirect costs associated with hepatitis A in the United States range from $300 million to $488.8 million in 1997. A more recent economic analysis estimated that economic costs of $133.5 million during the lifetime of children born in 2005 with no hepatitis A vaccine (CDC MMWR Hepatitis A, 2006). The introduction of the Hepatitis A vaccine has provided for the opportunity to reduce hepatitis A incidence substantially and potentially eliminate indigenous transmission of hepatitis A virus (CDC MMWR Hepatitis A, 2006).

Measles, Mumps, Rubella (MMR)
One of the world's most infectious diseases, measles frequently imported into the U.S. Most measles cases from 1997-2000 were associated with international visitors or U.S. residents who were exposed to the measles virus while traveling abroad. More than 90 percent of people who are not immune will get measles if they are exposed to the virus. (CDC 2007) Globally, measles remains one of the leading causes of death among young children. (WHO 2009)
In the U.S., approximately 20 percent of measles infections leads to hospitalizations. 17 percent of measles cases have had one or more complications, such as ear infections, pneumonia, or diarrhea. (CDC 2007)
In the U.S., widespread use of measles vaccine has led to a greater than 99 percent reduction in measles compared with the pre-vaccine era.
The incidence of mumps has declined since 1989; 266 cases were reported in 2001. This recent decrease is probably due to the fact that children have received a second dose of mumps vaccine as part of the MMR vaccination schedule. (CDC, 2007) Despite this decrease, mumps remains a highly infectious and communicable disease.

Haemophilus Influenzae Type b (Hib) Meningitis
Since the introduction of the conjugate Hib vaccine in 1987, the incidence of Hib has declined by 98 percent. Fewer than 10 fatal cases of invasive Hib disease were reported each year from 1994-1998. (CDC, 2007) Continued immunization against this infection ensures that high pre-vaccination incidence rates will not return.

American Academy of Pediatrics Committee on Infectious Diseases. Recommended immunization schedules for children and adolescents--United States, 2007. Pediatrics 2007 Jan;119(1):207-8, 3 p following 208.

Center for Disease Control and Prevention. What would happen if we stopped vaccinations? Updated June 12, 2007. http://www.cdc.gov/vaccines/vac-gen/whatifstop.htm

Centers for Disease Control and Prevention (CDC). Achievements in Public Health, 1900-1999 Impact of Vaccines Universally Recommended for Children -- United States, 1990-1998. MMWR 1999; 48(12);243-248. http://www.cdc.gov/mmwr/preview/mmwrhtml/00056803.htm.

Centers for Disease Control and Prevention (CDC). Fact Sheet - Key Facts about Influenza and the Influenza Vaccine. 2006. http://www.cdc.gov/flu/keyfacts.htm

Centers for Disease Control and Prevention (CDC). Prevention and Control of Influenza - Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 2006; 55(RR10);1-42. http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5510a1.htm

Center for Disease Conrtol and Prevention/National Center for Health Statistics. FastStats. Influenza. Updated January 18, 2010. http://www.cdc.gov/nchs/fastats/flu.htm

Centers for Disease Control and Prevention (CDC). Prevention of Rotavirus Gastroenteritis Among Infants and Children - Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 2006; 55(RR7); 1-13.

Center for Disease Control and Prevention. Reduction in Rotavirus After Vaccine Introduction – united States, 2000-2009. MMWR October 23, 2009; 58(41);1146–9.

Centers for Disease Control and Prevention (CDC). Prevention of Hepatitis A Through Active or Passive Immunization - Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 2006; 55(RR10); 1-23.

CDC. General Recommendations on Immunization: Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 2006; 55(RR15);1-48
http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5515a1.htm

CDC. National Immunization Survey 2005. http://www.cdc.gov/nip/coverage/default.htm#chart

Centers for Disease Control and Prevention (CDC). Prevention of Rotavirus Gastroenteritis Among Infants and Children - Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 2006; 55(RR7); 1-13.

Centers for Disease Control and Prevention (CDC). Prevention of Hepatitis A Through Active or Passive Immunization - Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 2006; 55(RR10); 1-23.

Center for Disease Control and Prevention (CDC). Influenza Vaccination Coverage Among Children Aged 6 – 58 Months – Six Immunization Information Systems Sentinel Sites, United States, 2006-07 Influenza Season. MMWR Weekly, September 21, 2007; 56(37); 963-965

Centers for Disease Control and Prevention. Recommended immunization schedules for persons aged 0-18 years - United States, 2007. MMWR Recomm Rep 2007 Jan 5;55(51-52):Q1-4.

Center for Disease Control and Prevention. Recommended Immunization Schedules for Persons Aged 0 through 18 years – United States, 2009. MMWR 2009 Jan 2;57 (51):Q1-4

Centers for Disease Control and Prevention (CDC). Prevention of Rotavirus Gastroenteritis Among Infants and Children - Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 2006; 55(RR7); 1-13.

Grijalva CG, Craig AS, Dupont WD, Bridges CB, Schrag SJ, Iwane MK, Schaffner W, Edwards KM, Griffin MR. Estimating influenza hospitalizations among children. Emerg Infect Dis. 2006 Jan;12(1):103-9

JAMA. Impact of Vaccines Universally Recommended for Children-United States, 1900-1998. 1999;281(16):1482-1483

Kane M, Lasher H. The Case for Childhood Immunization. Children's Vaccine Program at PATH. Occasional Paper #5, 2002.

U.S. Department of Health and Human Services. Healthy People 2010: Conference Edition. http://www.health.gov/healthypeople/Document/default.htm. January 2000.

National Center for Health Statistics. Health, United States, 2009: With Special Feature on Medical Technology. Hyattsville, MD. 2010.

National Immunization Program (NIP), Priorities, 2003, Page 7.

World Health Organization. Hepatitis B. Last Revised August 2008. http://www.who.int/mediacentre/factsheets/fs204/en/index.html

World Health Organization. Measles. Last Revised December 2009.
http://www.who.int/mediacentre/factsheets/fs286/en/index.html

1c.5 Quantity of Studies in the Body of Evidence *(Total number of studies, not articles)*: Refer to ACIP and CDC: http://www.cdc.gov/vaccines/recs/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*): Refer to ACIP and CDC: http://www.cdc.gov/vaccines/recs/acip/

1c.7 Consistency of Results across Studies *(Summarize the consistency of the magnitude and direction of the effect):* Refer to ACIP and CDC: http://www.cdc.gov/vaccines/recs/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 and CDC: http://www.cdc.gov/vaccines/recs/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: The perception among some parents that vaccines are unsafe for their children has been heightened in recent years by several factors, including the number of vaccines in the recommended childhood immunization schedule, the presence of conflicting vaccine-safety information and misinformation online and elsewhere, and scientifically refuted yet widely publicized theories that link vaccines to chronic health problems or developmental disabilities such as autism (Kennedy, 2011).

1c.15 Citations for Evidence other than Guidelines*(Guidelines addressed below)*:
1. Kennedy, A., Basket, M., Sheedy, K. 2011. Identifying and Addressing Vaccine-Safety Concerns Among Parents: Vaccine Attitudes, Concerns, and Information Sources Reported by Parents of Young Children: Results From the 2009 HealthStyles Survey. Pediatrics 2011; 127 (Suppl 1):S92-S99.

1c.16 Quote verbatim, the specific guideline recommendation *(Including guideline # and/or page #)*:
Immunization Schedule for infants and toddlers (by 24 months) (CDC, 2010):

Hepatitis B series (3 doses)
- Administer to all newborns before hospital discharge
- The HepB series should be completed: the second dose should be administered at age 1 – 2 months. The final dose should be administered at 24 weeks.

DTaP vaccinations (4 doses)
- Minimum age for vaccine to be administered is 6 weeks.
- The fourth dose may be administered as early as 12 months, provided 6 months have elapsed since the third dose.
- Administer final dose in the series at age 4 through 6 years

Hib vaccinations (2 doses)
- Minimum age for vaccine to be administered is 6 weeks
- Administered at age 2 and 4 months, a dose at 6 months is not required.
- The combination DTap/Hib should not be used for primary immunization but can be used as boosters following any Hib vaccine in children aged greater than 12 months.

IPV vaccinations (3 doses)
- Minimum age for vaccine is 6 weeks.
- First dose administered at 2 months, second dose at 4 months and third dose between 6 months and 18 months.

MMR vaccination (1 dose)
- Minimum age for vaccine is 12 months.

Pneumococcal conjugate vaccinations (4 doses)
- Minimum age for vaccine 6 weeks for pneumococcal conjugate vaccine
- Administer at ages 2 mos., 4 mos, 6 mos., 12-15 mos.
- Administer at ages 24 – 59 months in certain high risk groups.

Varicella vaccination (1 dose)
- Minimum age is 12 months. First does should be administered between 12 and 15 months.

Hepatitis A vaccinations (2 doses)
- Minimum age is 12 months. Recommended for all children between 12 – 23 months. The second dose in the series should be administered at least 6 months after the first.

Rotavirus vaccinations (3 doses)
- Minimum age of 6 weeks. Administer the first dose at age 6 – 14 weeks. Do not start the series later than age 15 weeks. Administer the final dose in the series by age 32 weeks. Do not administer a dose later than age 32 weeks. Intervals between doses may be as short as 4 weeks.

Influenza (flu) vaccinations
- Vaccinate all children 6 mos and older
- Give 2 doses to first-time vaccines age 6 mos through 8 years, spaced 4 weeks apart
- For TIV, give 0.25 mL dose to children 6-35 mos

The HEDIS specifications allow a grace period by measuring compliance with these recommendations between birth and age two.

1c.17 Clinical Practice Guideline Citation: Centers for Disease Control and Prevention. Recommended Immunization Schedule for Person Aged 0 Through 6 years - United States. 2011 http://www.cdc.gov/vaccines/recs/schedules/downloads/child/0-6yrs-schedule-pr.pdf

1c.18 National Guideline Clearinghouse or other URL: http://www.cdc.gov/vaccines/recs/schedules/downloads/child/0-6yrs-schedule-pr.pdf

1c.19 Grading of Strength of Guideline Recommendation. Has the recommendation been graded? No

1c.20 If guideline recommendation graded, identify the entity that graded the evidence including balance of representation and any disclosures regarding bias:

1c.21 System Used for Grading the Strength of Guideline Recommendation: Other

1c.22 If other, identify and describe the grading scale with definitions: The Recommended Immunization Schedule for Persons Aged 0-6 years in the United States (2010) is approved by the Advisory Committee on Immunization Practices.

1c.23 Grade Assigned to the Recommendation:

1c.24 Rationale for Using this Guideline Over Others: Gold standard guideline in the US.

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?
1c.25 Quantity: High 1c.26 Quality: High1c.27 Consistency: High

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)*:
Children who have evidence showing they received recommended vaccines during the measurement year.

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

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*:
Children with evidence of the following.

For MMR, hepatitis B, VZV and hepatitis A , count any of the following:
•evidence of the antigen or combination vaccine, or
•documented history of the illness, or
•a seropositive test result for each antigen
For DtaP, IPV, HiB, pneumococcal conjugate, rotavirus and influenza, count only:
• Evidence of the antigen or combination vaccine.
For combination vaccinations that require more than one antigen (i.e., DTaP and MMR), find evidence of all of the antigens.
• DTaP: at least four DTaP vaccinations, with different dates of service on or before the child's second birthday. Do not count a vaccination administered prior to 42 days after birth.
• IPV: at least three IPV vaccinations, with different dates of service on or before the child's second birthday. IPV administered prior to 42 days after birth cannot be counted.
• MMR: at least one MMR vaccination, with different dates of service on or before the child's second birthday.

• HiB: at least three HiB vaccinations, with different dates of service on or before the child's second birthday. IPV administered prior to 42 days after birth cannot be counted.
• Hepatitis B: at least three hepatitis B vaccinations, with different dates of service on or before the child's second birthday.
• VZV: at least one VZV vaccination, with a date of service falling on or before the child's second birthday.
• Pneumoncoccal conjugate: At least four pneumococcal conjugate vaccinations, with different dates of service on or before the child's second birthday. Do not count a vaccination administered prior to 42 days after birth.
• Hepatitis A: two hepatitis A vaccinations, with different dates of service on or before the child's second birthday.
• Rotavirus: the child must receive the required number of rotavirus vaccinations on different dates or service on or before the second birthday. Do not count a vaccination administered prior to 42 days after birth. The following vaccine combinations are compliant: two doses of the two-dose vaccine; one dose of the two-dose vaccine and two doses of the three-dose vaccine; or three doses of the three-dose vaccine.
• Influenza: two influenza vaccinations, with different dates of service on or before the child's second birthday. Do not count a vaccination administered prior to six months after birth.

For immunization information obtained from the medical record, count patients where there is evidence that the antigen was rendered from:
•a note indicating the name of the specific antigen and the date of the immunization, or
•a certificate of immunization prepared by an authorized health care provider or agency including the specific dates and types of immunizations administered.

For documented history of illness or a seropositive test result, find a note indicating the date of the event. The event must have occurred by the patient's second birthday.

Notes in the medical record indicating that the patient received the immunization "at delivery" or "in the hospital" may be counted toward the numerator. This applies only to immunizations that do not have minimum age restrictions (e.g., prior to 42 days after birth). A note that the "patient is up-to-date" with all immunizations that does not list the dates of all immunizations and the names of the immunization agents does not constitute sufficient evidence of immunization for this measure.

Immunizations documented using a generic header or "DTaP/DTP/DT" can be counted as evidence of DTaP. The burden on organizations to substantite the DTaP antigen is excessive compared to a risk associated with data integrity.

For rotavirus, if documentation does not indicate whether the two-dose schedule or three-dose schedule was used, assume a three-dose schedule and find evidence that three doses were administered.

DTaP
CPT: 90698, 90700, 90721, 90723
ICD-9-CM Procedure: 99.39

IPV
CPT: 90698, 90713, 90723
ICD-9-CM Procedure: 99.41

MMR
CPT: 90707, 90710
ICD-9-CM Procedure: 99.48

Measles and rubella
CPT: 90708

Measles:
CPT: 90705
ICD-9-CM Diagnosis: 055
ICD-9-CM Procedure: 99.45

Mumps
CPT: 90704
ICD-9-CM Diagnosis: 072
ICD-9-CM Procedure: 99.46

Rubella
CPT: 90706
ICD-9-CM Diagnosis: 056
ICD-9-CM Procedure: 99.47

HiB
CPT: 90645-90648, 90698, 90721, 90748

Hepatitis B
CPT: 90723, 90740, 90744, 90747, 90748
HCPCS: G0010
ICD-9-CM Diagnosis: 070.2, 070.3, V02.61

VZV
CPT: 90710, 90716
ICD-9-CM Diagnosis: 052, 053

Pneumococcal conjugate
CPT: 90669, 90670
HCPCS: G0009

Hepatitis A
CPT: 90633
ICD-9-CM Diagnosis: 070.0, 070.1

RotaVirus (two dose schedule)
CPT: 90681

RotaVirus (three dose schedule)
CPT: 90680

Influenza:
CPT: 90655, 90657, 90661, 90662
HCPCS: G0008
ICD-9-CM Procedure: 99.52

2a1.4 Denominator Statement *(Brief, narrative description of the target population being measured)*:
Children who turn 2 years of age during the measurement year are eligible for inclusion.

2a1.5 Target Population Category *(Check all the populations for which the measure is specified and tested if any)*: Children's Health

2a1.6 Denominator Time Window *(The time period in which cases are eligible for inclusion)*:
2 years

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)*:
Children who turn 2 years of age during the measurement year who are enrolled in a health plan 12 months prior to the child's second birthday.

The child must be continuously enrolled in a health plan for 12 months prior to the child's second birthday. Allowable gap: No more than one gap in enrollment of up to 45 days during the 12 months prior to the child's second birthday. To determine continuous enrollment for a Medicaid beneficiary for whom enrollment is verified monthly, the member may not have more than a 1-month gap in coverage (i.e., a member whose coverage lapses for 2 months [60 days] is not continuously enrolled).

2a1.8 Denominator Exclusions *(Brief narrative description of exclusions from the target population)*:
Children who had a contraindication for a specific vaccine may be excluded from the denominator for all antigen rates and the combination rates. The denominator for all rates must be the same. An organization that excludes contraindicated children may do so only if the administrative data do not indicate that the contraindicated immunization was rendered. The exclusion must have occurred by the second birthday. Organizations should look for exclusions as far back as possible in the member's history.

Individuals diagnosed with HIV. Look for evidence of HIV diagnosis as far back as possible in the member´s history through December 31 of the measurement year.
Individuals who have a diagnosis of pregnancy during the measurement year.

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)*:
Any particular vaccine: Anaphylactic reaction to the vaccination (ICD-9-CM, 999.4)

DTaP: Emsephalopathy (ICD-9-CM 323.51 with E948.4 or E948.5 or E948.6); Progressive neurologic disorder, including infantile spasm, uncontrolled epilepsy.

IPV: amaphylactic reaction to streptomycin, polymyxin B or neomycin

MMR, VZV and influenza: immunodeficiency, including genetic (congenital) immuno-deficiency syndromes (ICD-9-CM 279); HIV disease or asymptomatic HIV (ICD-9-CM 042, V08); Cancer of lymphoreticular or histiocytic tissue (ICD-9-CM 200-202); Multiple myeloma (ICD-9-CM 203); Leukemia (ICD-9-CM 204-208); anaphylactic reaction to neomycin

Hepatitis B: anaphylactic reaction to common baker's yeast

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)*:
Reported by Commercial and Medicaid plans.

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 *(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

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.)*:
Step 1. Determine the eligible population. The eligible population is all members who satisfy all specified criteria, including any age, continuous enrollment, benefit, event, or anchor date enrollement requirement.
Step 2. Search administrative systems to identify numerator events for all members in the eligible population.
Step 3. If applicable, for members for whom administrative data do not show a positive numerator event, search administrative data for an exclusion to the service/procedure being measured. Note: This step applies only to measures for which optional exclusions are specified and for which the organization has chosen to search for exclusions. The organization is not required to search for optional exclusions.
Step 4. Exclude from the eligible population members from step 3 for whom administrative system data identified an exclusion to the service/procedure being measured.
Step 5. Calculate the rate.

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):

2a1.25 Data Source *(Check all the sources for which the measure is specified and tested*). If other, please describe:
Administrative claims, Electronic Clinical Data : Registry, Paper Records

2a1.26 Data Source/Data Collection Instrument (*Identify the specific data source/data collection instrument, e.g. name of database, clinical registry, collection instrument, etc.*): Healthcare Effectiveness Data and Information Set (HEDIS)

2a1.27-29 Data Source/data Collection Instrument Reference Web Page URL or Attachment:

2a1.30-32 Data Dictionary/Code Table Web Page URL or Attachment:

2a1.33 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

2a1.34-35 Care Setting *(Check all the settings for which the measure is specified and tested)*: Ambulatory Care : Clinician Office

2a2. Reliability Testing. (*Reliability testing was conducted with appropriate method, scope, and adequate demonstration of reliability*.)

2a2.1 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)*:
HEDIS Performance Measurement Data 2010.

2a2.2 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.

2a2.3 Testing Results *(Reliability statistics, assessment of adequacy in the context of norms for the test conducted)*:

1. Commercial 2010:
    - 1.a. Combo 4 rate 0.975545
    - 1.b. Combo 5 rate 0.974637
    - 1.c. Hepatitis A rate 0.97634
    - 1.d. Combo 6 rate 0.972873
    - 1.e. Hepatitis B rate 0.972174
    - 1.f. Combo 3 rate 0.971458
    - 1.g. Combo 7 rate 0.971357
    - 1.h. Rotavirus rate 0.971174
    - 1.i. Combo 9 rate 0.970864
    - 1.j. Influenza 0.967552
    - 1.k. Combo 8 rate 0.967247
    - 1.l. Combo 2 rate 0.964511
    - 1.m. Combo 10 rate 0.964040
    - 1.n. Pneumococcal Conjugate rate 0.952791
    - 1.o. DTaP rate 0.948385
    - 1.p. IPV rate 0.947311
    - 1.q. HIB rate 0.933710
    - 1.r. Flu rolling average 0.908015
    - 1.s. MMR rate 0.852951
    - 1.t. VZV rate 0.842176

2. Medicaid 2010:
    - 1.a. Combo 4 rate 0.959590
    - 1.b. Combo 5 rate 0.969673
    - 1.c. Hepatitis A rate 0.960588
    - 1.d. Combo 6 rate 0.976054
    - 1.e. Hepatitis B rate 0.967987
    - 1.f. Combo 3 rate 0.966011
    - 1.g. Combo 7 rate 0.958267
    - 1.h. Rotavirus rate 0.969288
    - 1.i. Combo 9 rate 0.971833
    - 1.j. Influenza 0.976022
    - 1.k. Combo 8 rate 0.960253
    - 1.l. Combo 2 rate 0.964197
    - 1.m. Combo 10 rate 0.955572
    - 1.n. Pneumococcal Conjugate rate 0.956012
    - 1.o. DTaP rate 0.950982
    - 1.p. IPV rate 0.955572
    - 1.q. HIB rate 0.932872
    - 1.r. Flu rolling average
    - 1.s. MMR rate 0.893735
    - 1.t. VZV rate 0.907518

3. Medicare 2010: N/A

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:

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)*:
Data are from the HEDIS reporting program

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 child health care. This panel included representatives from key stakeholder groups, including pediatricians, family physicians, health plans, state Medicaid agencies and researchers. Experts reviewed the results of the field test and 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)*:
This measure was deemed valid by the expert panel.

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)*:
The measure is not risk adjusted.

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

2b4.3 Testing Results *(Statistical risk model: Provide quantitative assessment of relative contribution of model risk factors; risk 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 is a population health measure which does not call for risk adjustment.

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)*:
Data analysis demonstrates that methods for scoring and analysis of the specified measure allow for identification of statistically significant and practically/clinically differences in performance.

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; if sample size is >400, we would use an analysis of variance

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)*:

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)*:

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)*: The measure is not stratified to detect disparities

2c.2 If disparities have been reported/identified (e.g., in 1b), but measure is not specified to detect disparities, please explain:
NCQA has participated with IOM and others in attempting to include information on disparities in measure data collection. However, at the present time, this data, at all levels (claims data, paper chart review, and electronic records), is not coded in a standard manner, and is incompletely captured. There are no consistent standards for what entity (physician, group, plan, employer) should capture and report this data. While "requiring" reporting of the data could push the field forward, it has been our position that doing so would create substantial burden with inability to use the data because of its inconsistency. At the present time, we agree with the IOM report that disparities are best considered by the use of zip code analysis which has limited applicability in most reporting situations. At the health plan level, for HEDIS health plan data collection, NCQA does have extensive data related to our use of stratification by insurance status (Medicare, Medicaid and private-commercial) and would strongly recommend this process where the data base supporting the measurement includes this information. However, we believe that the measure specifications should NOT require this since the measure is still useful where the data needed to determine disparities cannot be ascertained from the data available.

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)*: Payment Program, Public Health/Disease Surveillance, Public Reporting, Quality Improvement (Internal to the specific organization), Quality Improvement with Benchmarking (external benchmarking to multiple organizations), Regulatory and Accreditation Programs

3.1 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), Quality Improvement (Internal to the specific organization)

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.*]
Healthcare Effectiveness Data and Information Set (HEDIS) - Health Plans and Physician Measurement

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 public reporting by NCQA in the annual State of Health Care Quality Report, Quality Compass database, and other mediums.

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): Widely used in public and private incentive programs.

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*].
Quality Compass: http://www.ncqa.org/tabid/177/Default.aspx
America´s Best Health Plans: http://www.ncqa.org/tabid/506/Default.aspx

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:
Long used measures whose results are employed by health plans and physicians in internal QI.

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.1-2 How are the data elements needed to compute measure scores generated? *(Check all that apply).*
Data used in the measure are:
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)

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)*: Some data elements are in 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:
Susceptibility to inaccuracies, errors, or unintended consequences and the ability to audit the data items to detect such problems are identified.

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/implementation issues *(e.g., fees for use of proprietary measures)*:
Field test and HEDIS results show that these data elements are available in administrative data sources and in medical records.

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:

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?

5a.2 If the measure specifications are not completely harmonized, identify the differences, rationale, and impact on

interpretability and data collection burden:

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.1 Measure Steward (Intellectual Property Owner): National Committee for Quality Assurance, 1100 13th Street NW, Suite 1000, Washington, District Of Columbia, 20005

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-, National Committee for Quality Assurance

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.

Provide a list of workgroup or panel member names and organizations.

Anthony Fiore, Centers for Disease Control and Prevention

Maureen Kolasa, Centers for Disease Control and Prevention

Abigail Shefer, Centers for Disease Control and Prevention

Shannon Stokley, Centers for Disease Control and Prevention

Raymond Strikas, Centers for Disease Control and Prevention

Jean Moody Williams, Centers for Medicare & Medicaid Services

Describe the group´s role in measure development.

The NCQA Childhood Immunization Status Measurement Advisory Panel 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 pediatric care. 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: 1994 Ad.4 Month and Year of most recent revision: 2007 Ad.5 What is your frequency for review/update of this measure? The measures is reviewed and updated every three years. Ad.6 When is the next scheduled review/update for this measure?
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