

eCQM Title	Childhood Immunization Status		
eCQM Identifier (Measure Authoring Tool)	117	eCQM Version number	7.2.000
NQF Number	0038	GUID	b2802b7a-3580-4be8-9458-921aea62b78c
Measurement Period	January 1, 20XX through December 31, 20XX		
Measure Steward	National Committee for Quality Assurance		
Measure Developer	National Committee for Quality Assurance		
Endorsed By	National Quality Forum		
Description	Percentage of 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 (Hep B); one chicken pox (VZV); four pneumococcal conjugate (PCV); one hepatitis A (Hep A); two or three rotavirus (RV); and two influenza (flu) vaccines by their second birthday		
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Measure Scoring	Proportion		
Measure Type	Process		
Stratification	None		
Risk Adjustment	None		
Rate Aggregation	None		
Rationale	<p>Infants and toddlers are particularly vulnerable to infectious diseases because their immune systems have not built up the necessary defenses to fight infection (Centers for Disease Control and Prevention 2017a). Most childhood vaccines are between 90 and 99 percent effective in preventing diseases (HealthyChildren 2015). 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 (Zhou 2014).</p> <p>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 (Centers for Disease Control and Prevention 2017b). When the majority of the community is immunized against a disease, other members of the community are also protected because herd immunity shields them. (National Institute of Allergy and Infectious Diseases 2014).</p>		
Clinical Recommendation Statement	<p>Advisory Committee on Immunization Practices (ACIP) Recommended Immunization Schedule for Children and Adolescents Aged 18 Years or Younger, United States, 2017 (Centers for Disease Control and Prevention 2017c)</p> <p>Hepatitis B (HepB) "Minimum age: birth" "At birth: -- Administer monovalent HepB vaccine to all newborns within 24 hours of birth. -- For infants born to hepatitis B surface antigen (HBsAg)-positive mothers, administer HepB vaccine and 0.5 mL of hepatitis B immune globulin (HBIG) within 12 hours of birth. These infants should be tested for HBsAg and antibody to HBsAg (anti-HBs) at age 9 through 12 months (preferably at the next well-child visit) or 1 to 2 months after completion of the HepB series if the series was delayed. -- If mother's HBsAg status is unknown, within 12 hours of birth, administer HepB vaccine regardless of birth weight. For infants weighing less than 2,000 grams, administer HBIG in addition to HepB vaccine within 12 hours of birth. Determine mother's HBsAg status as soon as possible and, if mother is HBsAg-positive, also administer HBIG to infants weighing 2,000 grams or more as soon as possible, but no later than age 7 days. Doses following the birth dose: -- The second dose should be administered at age 1 or 2 months. Monovalent HepB vaccine should be used for doses administered before age 6 weeks. -- Infants who did not receive a birth dose should receive 3 doses of a HepB-containing vaccine on a schedule of 0, 1 to 2 months, and 6 months, starting as soon as feasible (see figure 2). -- Administer the second dose 1 to 2 months after the first dose (minimum interval of 4 weeks); administer the third dose at least 8 weeks after the second dose AND at least 16 weeks after the first dose. The final (third or fourth) dose in the HepB vaccine series should be administered no earlier than age 24 weeks. -- Administration of a total of 4 doses of HepB vaccine is permitted when a combination vaccine containing HepB is administered after the birth dose."</p> <p>Diphtheria, tetanus, acellular pertussis vaccinations (DTaP) "Minimum age: 6 weeks. Exception: DTaPIPv [Kinrix, Quadracel]: 4 years" "Routine vaccination: -- Administer a 5-dose series of DTaP vaccine at ages 2, 4, 6 15 through 18 months, and 4 through 6 years. The fourth dose may be administered as early as age 12 months, provided at least 6 months have elapsed since the third dose. -- Inadvertent administration of fourth DTaP dose early: If the fourth dose of DTaP was administered at least 4 months after the third dose of DTaP and the child was 12 months of age or older, it does not need to be repeated."</p> <p>Hib (Haemophilus influenzae type b) "Minimum age: 6 weeks for PRP-T [ActHIB, DTaP-IPV/Hib (Pentacel), Hiberix, and Hib-MenCY (MenHibrix)], PRPOMP [PedvaxHIB]" "Routine vaccination: -- Administer a 2- or 3-dose Hib vaccine primary series and a booster dose (dose 3 or 4, depending on vaccine used in primary series) at age 12 through 15 months to complete a full Hib vaccine series. -- The primary series with ActHIB, MenHibrix, Hiberix, or Pentacel consists of 3 doses and should be administered at ages 2, 4, and 6 months. The primary series with PedvaxHIB consists of 2 doses and should be administered at ages 2 and 4 months; a dose at age 6 months is not indicated. -- One booster dose (dose 3 or 4, depending on vaccine used in primary series) of any Hib vaccine should be administered at age 12 through 15 months."</p> <p>Polio (IPV) "Minimum age: 6 weeks" "Routine vaccination: -- Administer a 4-dose series of IPV at ages 2, 4, 6 through 18 months, and 4 through 6 years. The final dose in the series should be administered on or after the fourth birthday and at least 6 months after the previous dose."</p> <p>Measles, mumps, rubella (MMR) "Minimum age: 12 months for routine vaccination" "Routine vaccination: -- Administer a 2-dose series of MMR vaccine at ages 12 through 15 months and 4 through 6 years. The second dose may be administered before age 4 years, provided at least 4 weeks have elapsed since the first dose.</p>		

	<p>-- Administer 1 dose of MMR vaccine to infants aged 6 through 11 months before departure from the United States for international travel. These children should be revaccinated with 2 doses of MMR vaccine, the first at age 12 through 15 months (12 months if the child remains in an area where disease risk is high), and the second dose at least 4 weeks later.</p> <p>-- Administer 2 doses of MMR vaccine to children aged 12 months and older before departure from the United States for international travel. The first dose should be administered on or after age 12 months and the second dose at least 4 weeks later."</p> <p>Pneumococcal conjugate (PCV13) "Minimum age: 6 weeks for PCV13" "Routine vaccination with PCV13: -- Administer a 4-dose series of PCV13 at ages 2, 4, and 6 months and at age 12 through 15 months."</p> <p>Varicella (Var) "Minimum age: 12 months" "Routine vaccination: -- Administer a 2-dose series of VAR vaccine at ages 12 through 15 months and 4 through 6 years. The second dose may be administered before age 4 years, provided at least 3 months have elapsed since the first dose. If the second dose was administered at least 4 weeks after the first dose, it can be accepted as valid"</p> <p>Hepatitis A (HepA) "Minimum age: 12 months" "Routine vaccination: -- Initiate the 2-dose HepA vaccine series at ages 12 through 23 months; separate the 2 doses by 6 to 18 months. -- Children who have received 1 dose of HepA vaccine before age 24 months should receive a second dose 6 to 18 months after the first dose. -- For any person aged 2 years and older who has not already received the HepA vaccine series, 2 doses of HepA vaccine separated by 6 to 18 months may be administered if immunity against hepatitis A virus infection is desired."</p> <p>Rotavirus (RV) "Minimum age: 6 weeks for both RV1 [Rotarix] and RV5 [RotaTeq]" "Routine vaccination: -- Administer a series of RV vaccine to all infants as follows: 1. If Rotarix is used, administer a 2-dose series at ages 2 and 4 months. 2. If RotaTeq is used, administer a 3-dose series at ages 2, 4, and 6 months. 3. If any dose in the series was RotaTeq or vaccine product is unknown for any dose in the series, a total of 3 doses of RV vaccine should be administered."</p> <p>Influenza (inactivated influenza vaccine [IIV]) "Minimum age: 6 months for inactivated influenza vaccine [IIV]" "Routine vaccination: -- Administer influenza vaccine annually to all children beginning at age 6 months. For the 2016-17 season, use of live attenuated influenza vaccine (LAIV) is not recommended."</p>
Improvement Notation	Higher score equals better quality
Reference	Centers for Disease Control and Prevention. 2017a. "Infant Immunizations FAQs" https://www.cdc.gov/vaccines/parents/parent-questions.html
Reference	HealthyChildren. 2015. "Safety & Prevention: Why Immunize Your Child." https://www.healthychildren.org/english/safety-prevention/immunizations/Pages/Why-Immunize-Your-Child.aspxhttps
Reference	Zhou, F., A. Shefer, J. Wenger, et al. 2014. "Economic Evaluation of the Routine Childhood Immunization Program in the United States, 2009." <i>Pediatrics</i> "133(4). doi:10.1542/peds.2013-0698d.
Reference	National Institute of Allergy and Infectious Diseases. 2014. "Vaccine Benefits" https://www.niaid.nih.gov/research/vaccine-benefits
Reference	Centers for Disease Control and Prevention. 2017c. "Recommended Immunization Schedule for Children and Adolescents Aged 18 Years or Younger, United States, 2017." https://www.cdc.gov/vaccines/schedules/downloads/child/0-18yrs-child-combined-schedule.pdf
Reference	Centers for Disease Control and Prevention. 2017b. "Vaccines & Immunizations: Why Are Childhood Vaccines So Important?" https://www.cdc.gov/vaccines/vac-gen/howwpd.htm
Definition	Recommended vaccines: Vaccines and the schedule of vaccines as recommended by the Advisory Committee on Immunization Practices (ACIP) for children two years of age. The measure may differ slightly from the ACIP recommendations because the measure focuses on immunizations that are appropriate by age 2. Also, there may be small differences when there are shortages for a particular vaccine.
Guidance	<p>For the MMR, hepatitis B, VZV and hepatitis A vaccines, numerator inclusion criteria include: evidence of receipt of the recommended vaccine; documented history of the illness; or, a seropositive test result for the antigen. For the DTaP, IPV, Hib, pneumococcal conjugate, rotavirus, and influenza vaccines, numerator inclusion criteria include only evidence of receipt of the recommended vaccine.</p> <p>Patients may be included in the numerator for a particular antigen if they had an anaphylactic reaction to the vaccine. Patients may be included in the numerator for the DTaP vaccine if they have encephalopathy. Patients may be included in the numerator for the IPV vaccine if they have had an anaphylactic reaction to streptomycin, polymyxin B, or neomycin. Patients may be included in the numerator for the influenza, MMR, or VZV vaccines if they have cancer of lymphoreticular or histiocytic tissue, multiple myeloma, leukemia, have had an anaphylactic reaction to neomycin, have Immunodeficiency, or have HIV. Patients may be included in the numerator for the hepatitis B vaccine if they have had an anaphylactic reaction to common baker's yeast.</p> <p>The measure allows a grace period by measuring compliance with these recommendations between birth and age two.</p>
Transmission Format	TBD
Initial Population	Children who turn 2 years of age during the measurement period and who have a visit during the measurement period
Denominator	Equals Initial Population
Denominator Exclusions	Exclude patients whose hospice care overlaps the measurement period
Numerator	Children who have evidence showing they received recommended vaccines, had documented history of the illness, had a seropositive test result, or had an allergic reaction to the vaccine by their second birthday
Numerator Exclusions	Not Applicable
Denominator Exceptions	None
Supplemental Data Elements	For every patient evaluated by this measure also identify payer, race, ethnicity and sex

Table of Contents

- [Population Criteria](#)
- [Definitions](#)
- [Functions](#)
- [Terminology](#)
- [Data Criteria \(ODM Data Elements\)](#)
- [Supplemental Data Elements](#)
- [Risk Adjustment Variables](#)

Population Criteria

▲ Initial Population

```
exists ( ["Patient Characteristic Birthdate"] Birthdate
  where Global."CalendarAgeInYearsAt"(Birthdate.birthDatetime, start of "Measurement Period")>= 1
    and Global."CalendarAgeInYearsAt"(Birthdate.birthDatetime, end of "Measurement Period")= 2
)
and exists ( "Qualifying Encounter" )
```

▲ Denominator

"Initial Population"

Denominator Exclusions

Hospice."Has Hospice"

Numerator

```
( exists ( "Four DTaP Vaccinations" )
  or exists ( "DTaP Numerator Inclusion Conditions" )
)
and ( exists ( "Three Polio Vaccinations" )
  or exists ( "Polio Numerator Inclusion Conditions" )
)
and ( exists ( "One MMR Vaccination" )
  or exists ( "MMR Numerator Inclusion Conditions" )
  or ( exists ( "Measles Indicators" )
    and exists ( "Mumps Indicators" )
    and exists ( "Rubella Indicators" )
  )
)
and ( exists ( "Three Hib Vaccinations" )
  or exists ( "Hib Numerator Inclusion Conditions" )
)
and ( exists ( "Three Hepatitis B Vaccinations" )
  or exists ( "Hepatitis B Numerator Inclusion Conditions" )
)
and ( exists ( "One Chicken Pox Vaccination" )
  or exists ( "Varicella Zoster Numerator Inclusion Conditions" )
)
and ( exists ( "Four Pneumococcal Conjugate Vaccinations" )
  or exists ( "Pneumococcal Conjugate Numerator Inclusion Conditions" )
)
and ( exists ( "One Hepatitis A Vaccinations" )
  or exists ( "Hepatitis A Numerator Inclusion Conditions" )
)
and ( exists ( "Rotavirus 2 Dose Vaccinations" )
  or exists ( "Rotavirus Numerator Inclusion Conditions" )
  or exists ( "Rotavirus 2 or 3 Dose Vaccinations" )
  or exists ( "Rotavirus 3 Dose Vaccinations" )
)
and ( exists ( "Two Influenza Vaccinations" )
  or exists ( "Influenza Numerator Inclusion Conditions" )
)
```

Numerator Exclusions

None

Denominator Exceptions

None

Stratification

None

Definitions

Denominator

"Initial Population"

Denominator Exclusions

Hospice."Has Hospice"

DTaP Immunizations or Procedures

```
( ["Immunization, Administered": "DTaP Vaccine"]
  union ( ["Procedure, Performed": "DTaP Vaccine Administered"] DtapAdministration
    return "Immunization, Administered" { authorDatetime: start of DtapAdministration.relevantPeriod }
  )
) DTaPVaccination
with ["Patient Characteristic Birthdate"] BirthDate
such that ( Global."CalendarAgeInDaysAt"(BirthDate.birthDatetime, DTaPVaccination.authorDatetime)>= 42 )
and ( Global."CalendarAgeInDaysAt"(BirthDate.birthDatetime, DTaPVaccination.authorDatetime)<= 730 )
```

DTaP Numerator Inclusion Conditions

```
( ["Diagnosis": "Anaphylactic Reaction to DTaP Vaccine"]
  union ["Diagnosis": "Encephalopathy due to Childhood Vaccination"] ) DTaPConditions
with ["Patient Characteristic Birthdate"] BirthDate
such that ( Global."CalendarAgeInDaysAt"(BirthDate.birthDatetime, DTaPConditions.authorDatetime)<= 730 )
```

Four DTaP Vaccinations

```
from
"DTaP Immunizations or Procedures" DTaPVaccination1,
"DTaP Immunizations or Procedures" DTaPVaccination2,
"DTaP Immunizations or Procedures" DTaPVaccination3,
"DTaP Immunizations or Procedures" DTaPVaccination4
where DTaPVaccination2.authorDatetime 1 day or more after day of DTaPVaccination1.authorDatetime
and DTaPVaccination3.authorDatetime 1 day or more after day of DTaPVaccination2.authorDatetime
and DTaPVaccination4.authorDatetime 1 day or more after day of DTaPVaccination3.authorDatetime
return DTaPVaccination1
```

Four Pneumococcal Conjugate Vaccinations

```
from
"Pneumococcal Conjugate Immunizations or Procedures" PneumococcalVaccination1,
"Pneumococcal Conjugate Immunizations or Procedures" PneumococcalVaccination2,
"Pneumococcal Conjugate Immunizations or Procedures" PneumococcalVaccination3,
"Pneumococcal Conjugate Immunizations or Procedures" PneumococcalVaccination4
where PneumococcalVaccination2.authorDatetime 1 day or more after day of PneumococcalVaccination1.authorDatetime
and PneumococcalVaccination3.authorDatetime 1 day or more after day of PneumococcalVaccination2.authorDatetime
and PneumococcalVaccination4.authorDatetime 1 day or more after day of PneumococcalVaccination3.authorDatetime
return PneumococcalVaccination1
```

Hepatitis A Numerator Inclusion Conditions

```
(( ["Laboratory Test, Performed": "Anti Hepatitis A IgG Antigen Test"] HepatitisAAntigenTest
  where HepatitisAAntigenTest.result as Code in "Positive Finding"
)
union ( ["Diagnosis": "Anaphylactic Reaction to Hepatitis A Vaccine"] HepatitisAReaction
  return "Laboratory Test, Performed" { authorDatetime: start of HepatitisAReaction.prevalencePeriod }
)
union ( ["Diagnosis": "Hepatitis A"] HepatitisADiagnosis
  return "Laboratory Test, Performed" { authorDatetime: start of HepatitisADiagnosis.prevalencePeriod }
)
) HepatitisAConditions
with ["Patient Characteristic Birthdate"] BirthDate
such that ( Global."CalendarAgeInDaysAt"(BirthDate.birthDatetime, HepatitisAConditions.authorDatetime)<= 730 )
```

▲ Hepatitis B Immunizations or Procedures

```
(["Immunization, Administered": "Hepatitis B Vaccine"]
union (["Procedure, Performed": "Hepatitis B Vaccine Administered"] HepatitisBAdministration
return "Immunization, Administered" { authorDatetime: start of HepatitisBAdministration.relevantPeriod }
) ) HepatitisBVaccination
with ["Patient Characteristic Birthdate"] BirthDate
such that Global."CalendarAgeInDaysAt"(BirthDate.birthDatetime, HepatitisBVaccination.authorDatetime)<= 730
```

▲ Hepatitis B Numerator Inclusion Conditions

```
((["Laboratory Test, Performed": "Anti Hepatitis B Virus Surface Ab"] HepatitisBAntigenTest
where HepatitisBAntigenTest.result as Code in "Positive Finding"
)
union (["Diagnosis": "Anaphylaxis due to Hepatitis B vaccine (disorder)"] HepatitisBReaction
return "Laboratory Test, Performed" { authorDatetime: start of HepatitisBReaction.prevalencePeriod }
)
union (["Diagnosis": "Anaphylactic Reaction to Common Baker's Yeast"] YeastReaction
return "Laboratory Test, Performed" { authorDatetime: start of YeastReaction.prevalencePeriod }
)
union (["Diagnosis": "Hepatitis B"] HepatitisBDiagnosis
return "Laboratory Test, Performed" { authorDatetime: start of HepatitisBDiagnosis.prevalencePeriod }
) ) HepBConditions
with ["Patient Characteristic Birthdate"] BirthDate
such that ( Global."CalendarAgeInDaysAt"(BirthDate.birthDatetime, HepBConditions.authorDatetime)<= 730 )
```

▲ Hib Immunizations or Procedures

```
(["Immunization, Administered": "Haemophilus Influenzae Type B (Hib) Vaccine"]
union (["Procedure, Performed": "Haemophilus Influenzae Type B (Hib) Vaccine Administered"] HibAdministration
return "Immunization, Administered" { authorDatetime: start of HibAdministration.relevantPeriod }
) ) HibVaccination
with ["Patient Characteristic Birthdate"] BirthDate
such that ( Global."CalendarAgeInDaysAt"(BirthDate.birthDatetime, HibVaccination.authorDatetime)>= 42 )
and ( Global."CalendarAgeInDaysAt"(BirthDate.birthDatetime, HibVaccination.authorDatetime)<= 730 )
```

▲ Hib Numerator Inclusion Conditions

```
(["Diagnosis": "Anaphylaxis due to Haemophilus influenzae type b vaccine (disorder)"] HibReaction
with ["Patient Characteristic Birthdate"] BirthDate
such that Global."CalendarAgeInDaysAt"(BirthDate.birthDatetime, start of HibReaction.prevalencePeriod)<= 730
```

▲ Hospice.Has Hospice

```
exists ( ["Encounter, Performed": "Encounter Inpatient"] DischargeHospice
where ( DischargeHospice.dischargeDisposition as Code ~ "Discharge to home for hospice care (procedure)"
or DischargeHospice.dischargeDisposition as Code ~ "Discharge to healthcare facility for hospice care (procedure)"
)
and DischargeHospice.relevantPeriod ends during "Measurement Period"
)
or exists ( ["Intervention, Order": "Hospice care ambulatory"] HospiceOrder
where HospiceOrder.authorDatetime during "Measurement Period"
)
or exists ( ["Intervention, Performed": "Hospice care ambulatory"] HospicePerformed
where HospicePerformed.relevantPeriod overlaps "Measurement Period"
)
```

▲ Influenza Immunizations or Procedures

```
(["Immunization, Administered": "Influenza Vaccine"]
union (["Procedure, Performed": "Influenza Vaccine Administered"] InfluenzaAdministration
return "Immunization, Administered" { authorDatetime: start of InfluenzaAdministration.relevantPeriod }
) ) InfluenzaVaccination
with ["Patient Characteristic Birthdate"] BirthDate
such that ( Global."CalendarAgeInDaysAt"(BirthDate.birthDatetime, InfluenzaVaccination.authorDatetime)>= 180 )
and ( Global."CalendarAgeInDaysAt"(BirthDate.birthDatetime, InfluenzaVaccination.authorDatetime)<= 730 )
```

▲ Influenza Numerator Inclusion Conditions

```
(["Diagnosis": "Influenza virus vaccine adverse reaction (disorder)"]
union (["Diagnosis": "Malignant Neoplasm of Lymphatic and Hematopoietic Tissue"]
union (["Diagnosis": "Neomycin adverse reaction (disorder)"]
union (["Diagnosis": "HIV"]
union (["Diagnosis": "Disorders of the Immune System"] ) ) ) ) InfluenzaConditions
with ["Patient Characteristic Birthdate"] BirthDate
such that Global."CalendarAgeInDaysAt"(BirthDate.birthDatetime, start of InfluenzaConditions.prevalencePeriod)<= 730
```

▲ Initial Population

```
exists ( ["Patient Characteristic Birthdate"] Birthdate
where Global."CalendarAgeInYearsAt"(Birthdate.birthDatetime, start of "Measurement Period")>= 1
and Global."CalendarAgeInYearsAt"(Birthdate.birthDatetime, end of "Measurement Period")= 2
)
and exists ( "Qualifying Encounter" )
```

▲ Measles Indicators

```
((["Laboratory Test, Performed": "Measles Antibody Test (IgG Antibody Titer)"] MeaslesTiter
where MeaslesTiter.result >= 1.10
)
union (["Laboratory Test, Performed": "Measles Antibody Test (IgG Antibody presence)"] MeaslesIgGPresence
where MeaslesIgGPresence.result as Code in "Positive Finding"
)
union (["Diagnosis": "Measles"] MeaslesDiagnosis
return "Laboratory Test, Performed" { authorDatetime: start of MeaslesDiagnosis.prevalencePeriod }
) ) Measles
with ["Patient Characteristic Birthdate"] BirthDate
such that Global."CalendarAgeInDaysAt"(BirthDate.birthDatetime, Measles.authorDatetime)<= 730
```

▲ MMR Numerator Inclusion Conditions

```
(["Diagnosis": "Disorders of the Immune System"]
union (["Diagnosis": "HIV"]
union (["Diagnosis": "Malignant Neoplasm of Lymphatic and Hematopoietic Tissue"]
union (["Diagnosis": "Neomycin adverse reaction (disorder)"] ) ) ) MMRConditions
with ["Patient Characteristic Birthdate"] BirthDate
such that Global."CalendarAgeInDaysAt"(BirthDate.birthDatetime, start of MMRConditions.prevalencePeriod)<= 730
```

▲ Mumps Indicators

```
((["Laboratory Test, Performed": "Mumps Antibody Test (IgG Antibody Titer)"] MumpsTiter
where MumpsTiter.result >= 1.10
)
union (["Laboratory Test, Performed": "Mumps Antibody Test (IgG Antibody presence)"] MumpsIgGPresence
where MumpsIgGPresence.result as Code in "Positive Finding"
)
union (["Diagnosis": "Mumps"] MumpsDiagnosis
return "Laboratory Test, Performed" { authorDatetime: start of MumpsDiagnosis.prevalencePeriod }
) ) Mumps
with ["Patient Characteristic Birthdate"] BirthDate
such that Global."CalendarAgeInDaysAt"(BirthDate.birthDatetime, Mumps.authorDatetime)<= 730
```

▲ Numerator

```
( exists ( "Four DTaP Vaccinations" )
  or exists ( "DTaP Numerator Inclusion Conditions" )
)
and ( exists ( "Three Polio Vaccinations" )
  or exists ( "Polio Numerator Inclusion Conditions" )
)
and ( exists ( "One MMR Vaccination" )
  or exists ( "MMR Numerator Inclusion Conditions" )
  or ( exists ( "Measles Indicators" )
    and exists ( "Mumps Indicators" )
    and exists ( "Rubella Indicators" )
  )
)
and ( exists ( "Three Hib Vaccinations" )
  or exists ( "Hib Numerator Inclusion Conditions" )
)
and ( exists ( "Three Hepatitis B Vaccinations" )
  or exists ( "Hepatitis B Numerator Inclusion Conditions" )
)
and ( exists ( "One Chicken Pox Vaccination" )
  or exists ( "Varicella Zoster Numerator Inclusion Conditions" )
)
and ( exists ( "Four Pneumococcal Conjugate Vaccinations" )
  or exists ( "Pneumococcal Conjugate Numerator Inclusion Conditions" )
)
and ( exists ( "One Hepatitis A Vaccinations" )
  or exists ( "Hepatitis A Numerator Inclusion Conditions" )
)
and ( exists ( "Rotavirus 2 Dose Vaccinations" )
  or exists ( "Rotavirus Numerator Inclusion Conditions" )
  or exists ( "Rotavirus 2 or 3 Dose Vaccinations" )
  or exists ( "Rotavirus 3 Dose Vaccinations" )
)
and ( exists ( "Two Influenza Vaccinations" )
  or exists ( "Influenza Numerator Inclusion Conditions" )
)
)
```

▲ One Chicken Pox Vaccination

```
( ["Immunization, Administered": "Varicella Zoster Vaccine (VZV)"]
  union ( ["Procedure, Performed": "Varicella Zoster Vaccine (VZV) Administered"] ChickenPoxAdministration
    return "Immunization, Administered" { authorDatetime: start of ChickenPoxAdministration.relevantPeriod }
  )
) ChickenPoxVaccination
with ["Patient Characteristic Birthdate"] BirthDate
such that Global."CalendarAgeInDaysAt"(BirthDate.birthDatetime, ChickenPoxVaccination.authorDatetime)<= 730
```

▲ One Hepatitis A Vaccinations

```
( ["Immunization, Administered": "Hepatitis A Vaccine"]
  union ( ["Procedure, Performed": "Hepatitis A Vaccine Administered"] HepatitisAAAdministration
    return "Immunization, Administered" { authorDatetime: start of HepatitisAAAdministration.relevantPeriod }
  )
) HepatitisAVaccination
with ["Patient Characteristic Birthdate"] BirthDate
such that Global."CalendarAgeInDaysAt"(BirthDate.birthDatetime, HepatitisAVaccination.authorDatetime)<= 730
```

▲ One MMR Vaccination

```
( ["Immunization, Administered": "Measles, Mumps and Rubella (MMR) Vaccine"]
  union ( ["Procedure, Performed": "Measles, Mumps and Rubella (MMR) Vaccine Administered"] MMRAdministration
    return "Immunization, Administered" { authorDatetime: start of MMRAdministration.relevantPeriod }
  )
) MMRVaccination
with ["Patient Characteristic Birthdate"] BirthDate
such that Global."CalendarAgeInDaysAt"(BirthDate.birthDatetime, MMRVaccination.authorDatetime)<= 730
```

▲ Pneumococcal Conjugate Immunizations or Procedures

```
( ["Immunization, Administered": "Pneumococcal Conjugate Vaccine"]
  union ( ["Procedure, Performed": "Pneumococcal Conjugate Vaccine Administered"] PneumococcalAdministration
    return "Immunization, Administered" { authorDatetime: start of PneumococcalAdministration.relevantPeriod }
  )
) PneumococcalVaccination
with ["Patient Characteristic Birthdate"] BirthDate
such that ( Global."CalendarAgeInDaysAt"(BirthDate.birthDatetime, PneumococcalVaccination.authorDatetime)>= 42 )
and ( Global."CalendarAgeInDaysAt"(BirthDate.birthDatetime, PneumococcalVaccination.authorDatetime)<= 730 )
```

▲ Pneumococcal Conjugate Numerator Inclusion Conditions

```
["Diagnosis": "Pneumococcal vaccine adverse reaction (disorder)"] PneumococcalReaction
with ["Patient Characteristic Birthdate"] BirthDate
such that Global."CalendarAgeInDaysAt"(BirthDate.birthDatetime, start of PneumococcalReaction.prevalencePeriod)<= 730
```

▲ Polio Immunizations or Procedures

```
( ["Immunization, Administered": "Inactivated Polio Vaccine (IPV)"]
  union ( ["Procedure, Performed": "Inactivated Polio Vaccine (IPV) Administered"] PolioAdministration
    return "Immunization, Administered" { authorDatetime: start of PolioAdministration.relevantPeriod }
  )
) PolioVaccination
with ["Patient Characteristic Birthdate"] BirthDate
such that ( Global."CalendarAgeInDaysAt"(BirthDate.birthDatetime, PolioVaccination.authorDatetime)>= 42 )
and ( Global."CalendarAgeInDaysAt"(BirthDate.birthDatetime, PolioVaccination.authorDatetime)<= 730 )
```

▲ Polio Numerator Inclusion Conditions

```
( ["Diagnosis": "Poliomyelitis vaccine adverse reaction (disorder)"]
  union ( ["Diagnosis": "Streptomycin adverse reaction (disorder)"]
  union ( ["Diagnosis": "Polymyxin B adverse reaction (disorder)"]
  union ( ["Diagnosis": "Neomycin adverse reaction (disorder)"] ) ) PolioConditions
with ["Patient Characteristic Birthdate"] BirthDate
such that Global."CalendarAgeInDaysAt"(BirthDate.birthDatetime, start of PolioConditions.prevalencePeriod)<= 730
```

▲ Qualifying Encounter

```
( ["Encounter, Performed": "Office Visit"]
  union ( ["Encounter, Performed": "Home Healthcare Services"]
  union ( ["Encounter, Performed": "Preventive Care, Established Office Visit, 0 to 17"]
  union ( ["Encounter, Performed": "Preventive Care Services, Initial Office Visit, 0 to 17"] ) ) ValidEncounter
where ValidEncounter.relevantPeriod during "Measurement Period"
```

▲ Rotavirus 2 Dose Immunizations or Procedures

```
( ["Immunization, Administered": "rotavirus, live, monovalent vaccine"]
  union ( ["Procedure, Performed": "Rotavirus vaccine, human, attenuated (RV1), 2 dose schedule, live, for oral use"] Rotavirus2Administration
    return "Immunization, Administered" { authorDatetime: start of Rotavirus2Administration.relevantPeriod }
  )
) TwoDoseRotavirus
with ["Patient Characteristic Birthdate"] BirthDate
such that ( Global."CalendarAgeInDaysAt"(BirthDate.birthDatetime, TwoDoseRotavirus.authorDatetime)>= 42 )
and ( Global."CalendarAgeInDaysAt"(BirthDate.birthDatetime, TwoDoseRotavirus.authorDatetime)<= 730 )
```

▲ Rotavirus 2 Dose Vaccination Followed by Two Rotavirus 3 Dose Vaccinations

```

from
"Rotavirus 2 Dose Immunizations or Procedures" Rotavirus233Vaccination1,
"Rotavirus 3 Dose Immunizations or Procedures" Rotavirus233Vaccination2,
"Rotavirus 3 Dose Immunizations or Procedures" Rotavirus233Vaccination3
where Rotavirus233Vaccination2.authorDatetime 1 day or more after day of Rotavirus233Vaccination1.authorDatetime
and Rotavirus233Vaccination3.authorDatetime 1 day or more after day of Rotavirus233Vaccination2.authorDatetime
return Rotavirus233Vaccination1

```

▲ Rotavirus 2 Dose Vaccinations

```

from
"Rotavirus 2 Dose Immunizations or Procedures" Rotavirus2Vaccination1,
"Rotavirus 2 Dose Immunizations or Procedures" Rotavirus2Vaccination2
where Rotavirus2Vaccination2.authorDatetime 1 day or more after day of Rotavirus2Vaccination1.authorDatetime
return Rotavirus2Vaccination1

```

▲ Rotavirus 2 or 3 Dose Vaccinations

```

( ("Rotavirus 2 Dose Vaccination Followed by Two Rotavirus 3 Dose Vaccinations"
union "Rotavirus 3 Dose Vaccination Followed by A Rotavirus 2 Dose Vaccination and A Rotavirus 3 Dose Vaccination"
union "Rotavirus 3 Dose Vaccinations Followed by One Rotavirus 2 Dose Vaccination"
)
)

```

▲ Rotavirus 3 Dose Immunizations or Procedures

```

( ["Immunization, Administered": "Rotavirus Vaccine (3 dose schedule)"]
union ( ["Procedure, Performed": "Rotavirus vaccine, pentavalent (RV5), 3 dose schedule, live, for oral use"] Rotavirus3Administration
return "Immunization, Administered" { authorDatetime: start of Rotavirus3Administration.relevantPeriod }
) )
ThreeDoseRotavirus
with ["Patient Characteristic Birthdate"] BirthDate
such that ( Global."CalendarAgeInDaysAt"(BirthDate.birthDatetime, ThreeDoseRotavirus.authorDatetime)>= 42 )
and ( Global."CalendarAgeInDaysAt"(BirthDate.birthDatetime, ThreeDoseRotavirus.authorDatetime)<= 730 )

```

▲ Rotavirus 3 Dose Vaccination Followed by A Rotavirus 2 Dose Vaccination and A Rotavirus 3 Dose Vaccination

```

from
"Rotavirus 3 Dose Immunizations or Procedures" Rotavirus323Vaccination1,
"Rotavirus 2 Dose Immunizations or Procedures" Rotavirus323Vaccination2,
"Rotavirus 3 Dose Immunizations or Procedures" Rotavirus323Vaccination3
where Rotavirus323Vaccination2.authorDatetime 1 day or more after day of Rotavirus323Vaccination1.authorDatetime
and Rotavirus323Vaccination3.authorDatetime 1 day or more after day of Rotavirus323Vaccination2.authorDatetime
return Rotavirus323Vaccination1

```

▲ Rotavirus 3 Dose Vaccinations

```

from
"Rotavirus 3 Dose Immunizations or Procedures" Rotavirus3Vaccination1,
"Rotavirus 3 Dose Immunizations or Procedures" Rotavirus3Vaccination2,
"Rotavirus 3 Dose Immunizations or Procedures" Rotavirus3Vaccination3
where Rotavirus3Vaccination2.authorDatetime 1 day or more after day of Rotavirus3Vaccination1.authorDatetime
and Rotavirus3Vaccination3.authorDatetime 1 day or more after day of Rotavirus3Vaccination2.authorDatetime
return Rotavirus3Vaccination1

```

▲ Rotavirus 3 Dose Vaccinations Followed by One Rotavirus 2 Dose Vaccination

```

from
"Rotavirus 3 Dose Immunizations or Procedures" Rotavirus332Vaccination1,
"Rotavirus 3 Dose Immunizations or Procedures" Rotavirus332Vaccination2,
"Rotavirus 2 Dose Immunizations or Procedures" Rotavirus332Vaccination3
where Rotavirus332Vaccination2.authorDatetime 1 day or more after day of Rotavirus332Vaccination1.authorDatetime
and Rotavirus332Vaccination3.authorDatetime 1 day or more after day of Rotavirus332Vaccination2.authorDatetime
return Rotavirus332Vaccination1

```

▲ Rotavirus Numerator Inclusion Conditions

```

( ( ["Diagnosis": "Anaphylaxis due to rotavirus vaccine (disorder)"]
union ["Diagnosis": "Severe Combined Immunodeficiency"]
union ["Diagnosis": "Intussusception"] ) RotavirusConditions
with ["Patient Characteristic Birthdate"] BirthDate
such that Global."CalendarAgeInDaysAt"(BirthDate.birthDatetime, start of RotavirusConditions.prevalencePeriod)<= 730
)

```

▲ Rubella Indicators

```

( ( ["Laboratory Test, Performed": "Rubella Antibody Test (IgG Antibody Titer)"] RubellaTiter
where RubellaTiter.result >= 1.10
)
union ( ["Laboratory Test, Performed": "Rubella Antibody Test (IgG Antibody presence)"] RubellaIgGPresence
where RubellaIgGPresence.result as Code in "Positive Finding"
)
union ( ["Diagnosis": "Rubella"] RubellaDiagnosis
return "Laboratory Test, Performed" { authorDatetime: start of RubellaDiagnosis.prevalencePeriod }
) )
Rubella
with ["Patient Characteristic Birthdate"] BirthDate
such that Global."CalendarAgeInDaysAt"(BirthDate.birthDatetime, Rubella.authorDatetime)<= 730

```

▲ SDE Ethnicity

```

["Patient Characteristic Ethnicity": "Ethnicity"]

```

▲ SDE Payer

```

["Patient Characteristic Payer": "Payer"]

```

▲ SDE Race

```

["Patient Characteristic Race": "Race"]

```

▲ SDE Sex

```

["Patient Characteristic Sex": "ONC Administrative Sex"]

```

▲ Three Hepatitis B Vaccinations

```

from
"Hepatitis B Immunizations or Procedures" HepatitisBVaccination1,
"Hepatitis B Immunizations or Procedures" HepatitisBVaccination2,
"Hepatitis B Immunizations or Procedures" HepatitisBVaccination3
where HepatitisBVaccination2.authorDatetime 1 day or more after day of HepatitisBVaccination1.authorDatetime
and HepatitisBVaccination3.authorDatetime 1 day or more after day of HepatitisBVaccination2.authorDatetime
return HepatitisBVaccination1

```

▲ Three Hib Vaccinations

```

from
"Hib Immunizations or Procedures" HibVaccination1,
"Hib Immunizations or Procedures" HibVaccination2,
"Hib Immunizations or Procedures" HibVaccination3
where HibVaccination2.authorDatetime 1 day or more after day of HibVaccination1.authorDatetime

```


- valueset "Positive Finding" using "2.16.840.1.113883.3.464.1003.121.12.1016"
- valueset "Preventive Care Services, Initial Office Visit, 0 to 17" using "2.16.840.1.113883.3.464.1003.101.12.1022"
- valueset "Preventive Care, Established Office Visit, 0 to 17" using "2.16.840.1.113883.3.464.1003.101.12.1024"
- valueset "Race" using "2.16.840.1.114222.4.11.836"
- valueset "Rotavirus Vaccine (3 dose schedule)" using "2.16.840.1.113883.3.464.1003.196.12.1223"
- valueset "Rubella Antibody Test (IgG Antibody presence)" using "2.16.840.1.113883.3.464.1003.198.12.1064"
- valueset "Rubella Antibody Test (IgG Antibody Titer)" using "2.16.840.1.113883.3.464.1003.198.12.1063"
- valueset "Rubella" using "2.16.840.1.113883.3.464.1003.110.12.1037"
- valueset "Severe Combined Immunodeficiency" using "2.16.840.1.113883.3.464.1003.120.12.1007"
- valueset "Varicella Zoster Antibody Test (IgG Antibody Presence)" using "2.16.840.1.113883.3.464.1003.198.12.1067"
- valueset "Varicella Zoster Antibody Test (IgG Antibody Titer)" using "2.16.840.1.113883.3.464.1003.198.12.1066"
- valueset "Varicella Zoster Vaccine (VZV) Administered" using "2.16.840.1.113883.3.464.1003.110.12.1040"
- valueset "Varicella Zoster Vaccine (VZV)" using "2.16.840.1.113883.3.464.1003.196.12.1170"
- valueset "Varicella Zoster" using "2.16.840.1.113883.3.464.1003.110.12.1039"

Data Criteria (QDM Data Elements)

- "Diagnosis: Anaphylactic Reaction to Common Baker's Yeast" using "Anaphylactic Reaction to Common Baker's Yeast (2.16.840.1.113883.3.464.1003.199.12.1032)"
- "Diagnosis: Anaphylactic Reaction to DTaP Vaccine" using "Anaphylactic Reaction to DTaP Vaccine (2.16.840.1.113883.3.464.1003.199.12.1031)"
- "Diagnosis: Anaphylactic Reaction to Hepatitis A Vaccine" using "Anaphylactic Reaction to Hepatitis A Vaccine (2.16.840.1.113883.3.464.1003.199.12.1026)"
- "Diagnosis: Disorders of the Immune System" using "Disorders of the Immune System (2.16.840.1.113883.3.464.1003.120.12.1001)"
- "Diagnosis: Encephalopathy due to Childhood Vaccination" using "Encephalopathy due to Childhood Vaccination (2.16.840.1.113883.3.464.1003.114.12.1007)"
- "Diagnosis: Hepatitis A" using "Hepatitis A (2.16.840.1.113883.3.464.1003.110.12.1024)"
- "Diagnosis: Hepatitis B" using "Hepatitis B (2.16.840.1.113883.3.464.1003.110.12.1025)"
- "Diagnosis: HIV" using "HIV (2.16.840.1.113883.3.464.1003.120.12.1003)"
- "Diagnosis: Intussusception" using "Intussusception (2.16.840.1.113883.3.464.1003.199.12.1056)"
- "Diagnosis: Malignant Neoplasm of Lymphatic and Hematopoietic Tissue" using "Malignant Neoplasm of Lymphatic and Hematopoietic Tissue (2.16.840.1.113883.3.464.1003.108.12.1009)"
- "Diagnosis: Measles" using "Measles (2.16.840.1.113883.3.464.1003.110.12.1053)"
- "Diagnosis: Mumps" using "Mumps (2.16.840.1.113883.3.464.1003.110.12.1032)"
- "Diagnosis: Rubella" using "Rubella (2.16.840.1.113883.3.464.1003.110.12.1037)"
- "Diagnosis: Severe Combined Immunodeficiency" using "Severe Combined Immunodeficiency (2.16.840.1.113883.3.464.1003.120.12.1007)"
- "Diagnosis: Varicella Zoster" using "Varicella Zoster (2.16.840.1.113883.3.464.1003.110.12.1039)"
- "Encounter, Performed: Encounter Inpatient" using "Encounter Inpatient (2.16.840.1.113883.3.666.5.307)"
- "Encounter, Performed: Home Healthcare Services" using "Home Healthcare Services (2.16.840.1.113883.3.464.1003.101.12.1016)"
- "Encounter, Performed: Office Visit" using "Office Visit (2.16.840.1.113883.3.464.1003.101.12.1001)"
- "Encounter, Performed: Preventive Care Services, Initial Office Visit, 0 to 17" using "Preventive Care Services, Initial Office Visit, 0 to 17 (2.16.840.1.113883.3.464.1003.101.12.1022)"
- "Encounter, Performed: Preventive Care, Established Office Visit, 0 to 17" using "Preventive Care, Established Office Visit, 0 to 17 (2.16.840.1.113883.3.464.1003.101.12.1024)"
- "Immunization, Administered: DTaP Vaccine" using "DTaP Vaccine (2.16.840.1.113883.3.464.1003.196.12.1214)"
- "Immunization, Administered: Haemophilus Influenzae Type B (HiB) Vaccine" using "Haemophilus Influenzae Type B (HiB) Vaccine (2.16.840.1.113883.3.464.1003.196.12.1217)"
- "Immunization, Administered: Hepatitis A Vaccine" using "Hepatitis A Vaccine (2.16.840.1.113883.3.464.1003.196.12.1215)"
- "Immunization, Administered: Hepatitis B Vaccine" using "Hepatitis B Vaccine (2.16.840.1.113883.3.464.1003.196.12.1216)"
- "Immunization, Administered: Inactivated Polio Vaccine (IPV)" using "Inactivated Polio Vaccine (IPV) (2.16.840.1.113883.3.464.1003.196.12.1219)"
- "Immunization, Administered: Influenza Vaccine" using "Influenza Vaccine (2.16.840.1.113883.3.464.1003.196.12.1218)"
- "Immunization, Administered: Measles, Mumps and Rubella (MMR) Vaccine" using "Measles, Mumps and Rubella (MMR) Vaccine (2.16.840.1.113883.3.464.1003.196.12.1224)"
- "Immunization, Administered: Pneumococcal Conjugate Vaccine" using "Pneumococcal Conjugate Vaccine (2.16.840.1.113883.3.464.1003.196.12.1221)"
- "Immunization, Administered: Rotavirus Vaccine (3 dose schedule)" using "Rotavirus Vaccine (3 dose schedule) (2.16.840.1.113883.3.464.1003.196.12.1223)"
- "Immunization, Administered: Varicella Zoster Vaccine (VZV)" using "Varicella Zoster Vaccine (VZV) (2.16.840.1.113883.3.464.1003.196.12.1170)"
- "Intervention, Order: Hospice care ambulatory" using "Hospice care ambulatory (2.16.840.1.113762.1.4.1108.15)"
- "Intervention, Performed: Hospice care ambulatory" using "Hospice care ambulatory (2.16.840.1.113762.1.4.1108.15)"
- "Laboratory Test, Performed: Anti Hepatitis A IgG Antigen Test" using "Anti Hepatitis A IgG Antigen Test (2.16.840.1.113883.3.464.1003.198.12.1033)"
- "Laboratory Test, Performed: Anti Hepatitis B Virus Surface Ab" using "Anti Hepatitis B Virus Surface Ab (2.16.840.1.113883.3.464.1003.198.12.1073)"
- "Laboratory Test, Performed: Measles Antibody Test (IgG Antibody presence)" using "Measles Antibody Test (IgG Antibody presence) (2.16.840.1.113883.3.464.1003.198.12.1060)"
- "Laboratory Test, Performed: Measles Antibody Test (IgG Antibody Titer)" using "Measles Antibody Test (IgG Antibody Titer) (2.16.840.1.113883.3.464.1003.198.12.1059)"
- "Laboratory Test, Performed: Mumps Antibody Test (IgG Antibody presence)" using "Mumps Antibody Test (IgG Antibody presence) (2.16.840.1.113883.3.464.1003.198.12.1062)"
- "Laboratory Test, Performed: Mumps Antibody Test (IgG Antibody Titer)" using "Mumps Antibody Test (IgG Antibody Titer) (2.16.840.1.113883.3.464.1003.198.12.1061)"
- "Laboratory Test, Performed: Rubella Antibody Test (IgG Antibody presence)" using "Rubella Antibody Test (IgG Antibody presence) (2.16.840.1.113883.3.464.1003.198.12.1064)"
- "Laboratory Test, Performed: Rubella Antibody Test (IgG Antibody Titer)" using "Rubella Antibody Test (IgG Antibody Titer) (2.16.840.1.113883.3.464.1003.198.12.1063)"
- "Laboratory Test, Performed: Varicella Zoster Antibody Test (IgG Antibody Presence)" using "Varicella Zoster Antibody Test (IgG Antibody Presence) (2.16.840.1.113883.3.464.1003.198.12.1067)"
- "Laboratory Test, Performed: Varicella Zoster Antibody Test (IgG Antibody Titer)" using "Varicella Zoster Antibody Test (IgG Antibody Titer) (2.16.840.1.113883.3.464.1003.198.12.1066)"
- "Patient Characteristic Ethnicity: Ethnicity" using "Ethnicity (2.16.840.1.114222.4.11.837)"
- "Patient Characteristic Payer: Payer" using "Payer (2.16.840.1.114222.4.11.3591)"
- "Patient Characteristic Race: Race" using "Race (2.16.840.1.114222.4.11.836)"
- "Patient Characteristic Sex: ONC Administrative Sex" using "ONC Administrative Sex (2.16.840.1.113762.1.4.1)"
- "Procedure, Performed: DTaP Vaccine Administered" using "DTaP Vaccine Administered (2.16.840.1.113883.3.464.1003.110.12.1022)"
- "Procedure, Performed: Haemophilus Influenzae Type B (HiB) Vaccine Administered" using "Haemophilus Influenzae Type B (HiB) Vaccine Administered (2.16.840.1.113883.3.464.1003.110.12.1043)"
- "Procedure, Performed: Hepatitis A Vaccine Administered" using "Hepatitis A Vaccine Administered (2.16.840.1.113883.3.464.1003.110.12.1041)"
- "Procedure, Performed: Hepatitis B Vaccine Administered" using "Hepatitis B Vaccine Administered (2.16.840.1.113883.3.464.1003.110.12.1042)"
- "Procedure, Performed: Inactivated Polio Vaccine (IPV) Administered" using "Inactivated Polio Vaccine (IPV) Administered (2.16.840.1.113883.3.464.1003.110.12.1045)"
- "Procedure, Performed: Influenza Vaccine Administered" using "Influenza Vaccine Administered (2.16.840.1.113883.3.464.1003.110.12.1044)"
- "Procedure, Performed: Measles, Mumps and Rubella (MMR) Vaccine Administered" using "Measles, Mumps and Rubella (MMR) Vaccine Administered (2.16.840.1.113883.3.464.1003.110.12.1031)"
- "Procedure, Performed: Pneumococcal Conjugate Vaccine Administered" using "Pneumococcal Conjugate Vaccine Administered (2.16.840.1.113883.3.464.1003.110.12.1046)"
- "Procedure, Performed: Varicella Zoster Vaccine (VZV) Administered" using "Varicella Zoster Vaccine (VZV) Administered (2.16.840.1.113883.3.464.1003.110.12.1040)"
- "Diagnosis: Anaphylaxis due to Haemophilus influenzae type b vaccine (disorder)" using "Anaphylaxis due to Haemophilus influenzae type b vaccine (disorder) (SNOMEDCT version 2017-09 Code 433621000124101)"
- "Diagnosis: Anaphylaxis due to Hepatitis B vaccine (disorder)" using "Anaphylaxis due to Hepatitis B vaccine (disorder) (SNOMEDCT version 2017-09 Code 428321000124101)"
- "Diagnosis: Anaphylaxis due to rotavirus vaccine (disorder)" using "Anaphylaxis due to rotavirus vaccine (disorder) (SNOMEDCT version 2017-09 Code 428331000124103)"
- "Diagnosis: Influenza virus vaccine adverse reaction (disorder)" using "Influenza virus vaccine adverse reaction (disorder) (SNOMEDCT version 2017-09 Code 420113004)"
- "Diagnosis: Neomycin adverse reaction (disorder)" using "Neomycin adverse reaction (disorder) (SNOMEDCT version 2017-09 Code 292927007)"
- "Diagnosis: Pneumococcal vaccine adverse reaction (disorder)" using "Pneumococcal vaccine adverse reaction (disorder) (SNOMEDCT version 2017-09 Code 293116002)"
- "Diagnosis: Poliomyelitis vaccine adverse reaction (disorder)" using "Poliomyelitis vaccine adverse reaction (disorder) (SNOMEDCT version 2017-09 Code 293117006)"
- "Diagnosis: Polymyxin B adverse reaction (disorder)" using "Polymyxin B adverse reaction (disorder) (SNOMEDCT version 2017-09 Code 292992006)"
- "Diagnosis: Streptomycin adverse reaction (disorder)" using "Streptomycin adverse reaction (disorder) (SNOMEDCT version 2017-09 Code 292925004)"
- "Immunization, Administered: rotavirus, live, monovalent vaccine" using "rotavirus, live, monovalent vaccine (CVX version 2017-11 Code 119)"
- "Procedure, Performed: Rotavirus vaccine, human, attenuated (RV1), 2 dose schedule, live, for oral use" using "Rotavirus vaccine, human, attenuated (RV1), 2 dose schedule, live, for oral use (CPT version 2018 Code 90681)"
- "Procedure, Performed: Rotavirus vaccine, pentavalent (RV5), 3 dose schedule, live, for oral use" using "Rotavirus vaccine, pentavalent (RV5), 3 dose schedule, live, for oral use (CPT version 2018 Code 90680)"

Supplemental Data Elements

▲ SDE Ethnicity

["Patient Characteristic Ethnicity": "Ethnicity"]

▲ SDE Payer

["Patient Characteristic Payer": "Payer"]

▲ SDE Race

["Patient Characteristic Race": "Race"]

▲ SDE Sex

["Patient Characteristic Sex": "ONC Administrative Sex"]

Risk Adjustment Variables

None

Measure Set	None
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