



Client	HEALTH BENCHMARKS, INC. STANDARD ALGORITHM <i>Implemented for Blue Cross Blue Shield of Illinois</i>
Measure Title	CHILDHOOD IMMUNIZATION: VARICELLA-ZOSTER VIRUS (VZV)
Disease State	Childhood Immunizations Indicator Classification¹ Prevention
Strength of Recommendation²	A
Clinical Intent	To ensure that all eligible children receive their VZV vaccination at the clinically appropriate timeframe.
Physician Specialties	Family Practice, General Practice, Mixed Specialty, Pediatrics

Clinical Rationale

Disease Burden

- Childhood vaccination efforts in the past century have led to dramatic declines in many life-threatening diseases, but approximately 300 children per year in the U.S. still die from vaccine-preventable diseases.[1]
- Prior to the introduction of the varicella vaccine in 1995, the Centers for Disease Control and Prevention (CDC) estimated the yearly incidence of chickenpox in the United States at approximately 3.7 million cases with nearly 11,000 admissions and 100 deaths.[2]
- At least 90% of the cases occurred in children less than 15 years of age.[3]

Reason for Indicated Intervention or Treatment

- Despite recommendations starting in 1995 by the American Academy of Pediatrics and 1996 by the Advisory Committee on Immunization Practices to use the varicella vaccination, underutilization of the vaccine is still leading to hospitalizations, serious complications, and death.[4]
- In an average household, a child with varicella-zoster virus (VZV) misses 8 or 9 days of school, and adult caretakers lose up to 2 days of work.[5] Infection in high-risk children can lead to serious complications and death.[3, 6-8]
- When breakthrough infections occur, patients who have been vaccinated have milder disease than those with natural disease.[9-11]
- The incidence of chickenpox between 1999 and 2001 in four states with consistent reporting of the disease was 0.3 to 1.0 per 1000 people, compared to 1.1 to 3.8 per 1000 people from 1990 -1994. The reductions were associated with steadily increasing vaccination rates in those states.[2]

Evidence supporting Intervention or Treatment

- A randomized, double-blind, placebo-controlled trial demonstrated that the live attenuated varicella-zoster vaccination was 98% effective in preventing chickenpox in healthy children between the ages of 1 and 14 over two varicella seasons, and 95% effective after 7 years.[9, 10] At 10 years post-vaccination, the vaccine efficacy for patients who received one varicella injection was 94.4%.[11] The varicella cases that did occur were considerably milder than the natural disease.[9-11]
- The varicella-zoster vaccination has also been shown to be effective

during outbreaks (i.e. characterized by intense exposure). In a retrospective cohort study conducted at a child care center in Georgia, the frequency of varicella was significantly reduced (14% vs. 88%) in children who had received the vaccine versus unvaccinated children. When the disease did occur in the vaccinated children it was much less severe and resulted in fewer days of absence from the child care center.[12]

- Other non-randomized studies estimated the varicella vaccine efficacy at 86-98% [13-17], with breakthrough infections resulting in milder disease than natural varicella.[18, 19]

Clinical Recommendations

- American Academy of Pediatrics (AAP), the Advisory Committee on Immunization Practices (ACIP) of the Centers for Disease Control and Prevention, and the American Academy of Family Physicians all recommend that susceptible children (those without a reliable history of chickenpox) between the ages of 12 months and 12 years receive one dose of the varicella vaccine.[20, 21]
- Healthy People 2010 set a target varicella vaccination coverage rate of 90% for children between 19-35 months of age, and more than 95% for children at school entry.[22]

Source	Adapted from the HEDIS 2007 specification. HBI uses an 11-24 month vaccination period and the same period requirement for continuous enrollment. HEDIS allows the vaccination to occur anytime on or before the child's second birthday.
Denominator	Continuously enrolled children whose second birthday fell during the measurement year.
Denominator Exclusion	Members with contraindications for VZV at any time on or before their 2 nd birthday.
Numerator	Members with at least one VZV vaccination from 11 months of age through 24 months of age. Alternatively, members with a history of the disease diagnosis for varicella any time on or before the member's 2nd birthday.
Interpretation of Score	High score implies better performance
Physician Attribution	If the member meets numerator criteria, score all physicians that saw the member between ages 11 – 24 months. Likewise, if member does not meet numerator criteria, score all physicians that saw the member between ages 12 – 24 months.
References	<ol style="list-style-type: none"> 1. <i>Nation's Immunization Program Must Be Revitalized</i>. The National Academies, 2000. 2. <i>Decline in annual incidence of varicella--selected states, 1990-2001</i>. MMWR Morb Mortal Wkly Rep, 2003. 52(37): p. 884-5. 3. Preblud, S.R., <i>Varicella: complications and costs</i>. Pediatrics, 1986. 78(4 Pt 2): p. 728-35. 4. <i>Varicella: The Chickenpox Vaccine</i>. . American Academy of Pediatrics, 2000. 5. Jackson, M.A., V.F. Burry, and L.C. Olson, <i>Complications of varicella requiring hospitalization in previously healthy children</i>. Pediatr Infect Dis J, 1992. 11(6): p. 441-5.

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¹ **Indicator Classification** (Adapted from Health Plan Employer Data Information Set (HEDIS®) technical specifications)

Diagnosis	Measures applicable to patients receiving diagnostic workups for a symptom or condition that delineate appropriate laboratory or radiological testing to be performed (e.g. evaluation of thyroid nodule; pregnancy test in patients with vaginal bleeding or abdominal pain)
Effectiveness of Care	
Prevention	Measures applicable to asymptomatic individuals that are designed to prevent the onset of the targeted condition (e.g. immunizations).
Screening	Measures applicable to asymptomatic patients who have risk factors or pre-clinical disease, but in whom the condition has not become clinically apparent (e.g. pap smears; screening for elevated blood pressure).
Disease Management	Measures applicable to individuals diagnosed with a condition that are part of the treatment or management of the condition (e.g. cholesterol reduction in patients with diabetes; radiation therapy following breast conserving surgery; appropriate follow-up after acute event).
Medication Monitoring	Measures applicable to patients taking medications with narrow therapeutic windows and / or potential preventable significant side effects or adverse reactions (e.g. thyroid stimulating hormone (TSH) testing after levothyroxine dose change; hepatic enzyme monitoring for patients using antimycotic pharmacotherapy)
Medication Adherence	Measures applicable to patients taking medications for chronic conditions that are designed to assess patient adherence to medication (e.g. adherence to lipid lowering medication).
Utilization	Measures applicable to patients receiving treatment for a symptom or condition that advocate appropriate utilization of laboratory and pharmaceutical resources (e.g. conservative use of imaging for low back pain; inappropriate use of antibiotics for viral upper respiratory infection).

² Strength of Recommendation

Strength of Recommendation Based on a Body of Evidence

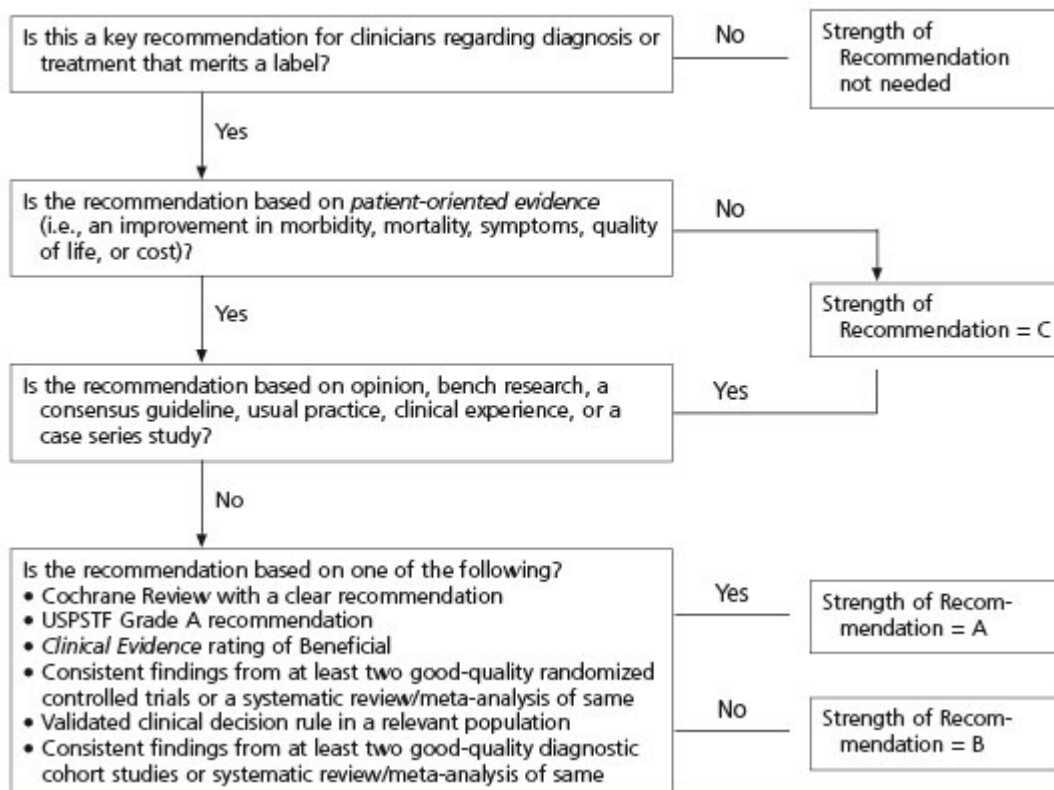


FIGURE 2. Algorithm for determining the strength of a recommendation based on a body of evidence (applies to clinical recommendations regarding diagnosis, treatment, prevention, or screening). While this algorithm provides a general guideline, authors and editors may adjust the strength of recommendation based on the benefits, harms, and costs of the intervention being recommended. (USPSTF = U.S. Preventive Services Task Force)