

|                       |   |                               |
|-----------------------|---|-------------------------------|
| <b>Section 7:</b>     | <b>Biological Product Information</b>                 | <b>Standard #: 07.350</b>     |
| <b>Created by:</b>    | Provincial Immunization Program Standards and Quality |                               |
| <b>Approved by:</b>   | Provincial Immunization Program Standards and Quality |                               |
| <b>Approval Date:</b> | August 1, 2012  | <b>Revised:</b> April 8, 2024 |

|  | Varilrix®  | Varivax® III      |
|--|--|-------------------|
| <b>Manufacturer</b>                                | GlaxoSmithKline Inc.   | Merck Canada Inc. |
| <b>Biological Classification</b>                   | Live; attenuated   |                   |
| <b>Indications for Provincially Funded Vaccine</b> | <p><b>Pre-exposure:</b></p> <ul style="list-style-type: none"> <li>• <b>Infants 6 months of age up to and including 11 months of age</b> who are candidates for a solid organ transplant. Refer to <i>Standard for Immunization of Transplant Candidates and Recipients</i> for indications and scheduling information.</li> </ul> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>○ Any dose of varicella vaccine given before 12 months of age should be repeated at 12 months of age or older.</li> </ul> <ul style="list-style-type: none"> <li>• <b>Children 12 months up to and including 6 years of age.</b></li> </ul> <p><b>Notes:</b></p> <ul style="list-style-type: none"> <li>○ Verbal history of disease in the varicella vaccine era is not a reliable indicator of immunity.</li> <li>○ Children with a verbal history of chicken pox disease should be offered varicella vaccine.</li> <li>○ Children with a history of chickenpox disease occurring prior to 12 months of age should be offered varicella vaccine.</li> <li>○ Children with a lab-confirmed (varicella PCR/NAT swab results) history of varicella disease after the age of 12 months do not require varicella vaccine.</li> <li>○ When both MMR vaccine and varicella vaccine are indicated for children 12 months up to and including 6 years of age, measles, mumps, rubella and varicella combined vaccine should be considered.</li> <li>○ Individuals who received their first dose of varicella-containing vaccine and at any point subsequently developed laboratory-confirmed (varicella PCR/NAT swab results) vaccine modified varicella disease do not require a second dose of varicella-containing vaccine.</li> </ul> <ul style="list-style-type: none"> <li>• <b>Children 7 years up to and including 12 years of age.</b></li> <li>○ Children born August 1, 2012 or later with a verbal history of chicken pox disease are eligible to receive varicella vaccine.</li> <li>○ Children born prior to August 1, 2012 who have a verbal history of chicken pox disease occurring at 12 months of age and older will not be offered varicella vaccine at this time.</li> </ul> <p><b>Notes:</b></p> <ul style="list-style-type: none"> <li>○ Verbal history of disease after 12 months of age may be assessed as follows: <ul style="list-style-type: none"> <li>▪ “pox” scars,</li> <li>▪ recollection of disease in individual (or from parental recollection),</li> <li>▪ if others in the household had disease, and parent/sibling did not get disease.</li> </ul> </li> </ul> |                   |

|  | Varilrix®  | Varivax® III |
|--|--|--------------|
|  | <ul style="list-style-type: none"> <li>○ Children with a lab-confirmed history of varicella disease (varicella PCR/NAT swab results) at 12 months of age and older do not require varicella vaccine.</li> <li>○ Children with no documentation of age-appropriate varicella vaccines and who have lab confirmation of immunity (varicella IgG positive) results at 12 months of age and older, do not require varicella vaccine.</li> <li>○ Children with a history of physician diagnosed (confirmed by physician office) varicella or herpes zoster (shingles) do not require varicella vaccine.</li> <li>○ When both MMR vaccine and varicella vaccine are indicated for children 7 years up to and including 12 years of age, measles, mumps rubella and varicella combined vaccine should be considered.</li> </ul> <ul style="list-style-type: none"> <li>● <b>Individuals 13 years of age and older.</b> <p><b>Notes:</b></p> <ul style="list-style-type: none"> <li>○ Individuals with unknown/uncertain or no history of chickenpox disease and negative serology – refer to Serology Section.</li> <li>○ Individuals 13 years of age and older who have a history of chickenpox disease occurring at one year of age and older will not be offered varicella vaccine at this time. <b>See exceptions related to pregnant females and health care workers below.</b> <ul style="list-style-type: none"> <li>● history of disease after 12 months of age may be assessed as follows: <ul style="list-style-type: none"> <li>▪ “pox” scars,</li> <li>▪ recollection of disease in individual (or from parental recollection),</li> <li>▪ if others in the household had disease, and parent/sibling did not get disease,</li> <li>▪ history of laboratory confirmed (varicella PCR/NAT swab results) varicella disease,</li> <li>▪ history of physician diagnosed (confirmed by physician office) varicella or herpes zoster (shingles).</li> </ul> </li> <li>○ Serology to determine susceptibility is required for individuals 13 years of age and older with unknown/uncertain or no history of chickenpox disease except for students in the school immunization program (grades 1 to 9) and Ukrainian evacuees. <ul style="list-style-type: none"> <li>● Susceptibility of students in the school immunization program will be based on history of disease or documented varicella immunization. Serological testing for this cohort will not be required.</li> </ul> </li> </ul> <p><b>Exceptions: Pregnant Females and Health care workers (HCWs):</b></p> <ul style="list-style-type: none"> <li>○ Pregnant Females - Women identified through routine prenatal screening with negative serology should be offered up to a maximum of two doses of varicella containing vaccine as they present post-partum regardless of disease history unless presenting with laboratory confirmation of immunity (varicella IgG positive).</li> <li>○ HCWs and Post-secondary HCW Students without evidence of immunity should be offered two doses of varicella vaccine as they present. <ul style="list-style-type: none"> <li>● Those presenting with documentation of one dose of varicella vaccine should be offered a second dose of varicella vaccine.</li> <li>● Shingrix doses cannot be counted in a varicella vaccine series.</li> </ul> </li> <li>○ Evidence of immunity for non-pregnant HCWs and post-secondary HCW students includes any of the following: <ul style="list-style-type: none"> <li>● Documentation of two valid doses of varicella containing vaccine</li> <li>● Laboratory evidence of immunity (varicella IgG positive)</li> <li>● Laboratory confirmation of varicella disease (varicella PCR/NAT swab results)</li> </ul> </li> </ul> </li> </ul> </li> </ul> |              |

|  | Varilrix®  | Varivax® III |  |  |  |  |                     |  |                                 |  |                                       |   |
|--|--|--------------|--|--|--|--|---------------------|--|---------------------------------|--|---------------------------------------|---|
|  | <ul style="list-style-type: none"> <li>• Physician diagnosed shingles disease (confirmed by physician office)</li> <li>• Self-reported history or physician diagnosed varicella disease in Canada prior to a routine immunization program: <ul style="list-style-type: none"> <li>▪ In Alberta, prior to January 2001.</li> <li>▪ For start dates of other Canadian jurisdictions see the <a href="#">NACI Varicella Proof of Immunity - 2015 Update</a></li> </ul> </li> <li>○ Individuals who received their first dose of varicella-containing vaccine and at any point subsequently developed laboratory confirmed (varicella PCR/NAT swab results) vaccine modified varicella disease do not require a second dose of varicella-containing vaccine.</li> </ul> <p><b>Considerations for Immunocompromised individuals</b> (refer to Serology Section for definition of susceptible individual):</p> <table border="1" data-bbox="475 632 1443 1934"> <tr> <td colspan="2" data-bbox="475 632 1443 898"> <ul style="list-style-type: none"> <li>• Varicella vaccine can be used with caution for select groups of immunocompromised persons as listed below.</li> <li>• Although the use of VARIVAX®III is off license for children with acute lymphocytic leukemia (ALL) and for individuals receiving other immunosuppressive treatment, either VARILRIX® or VARIVAX®III can be offered.</li> </ul> <p><b>Medical consultation with the individual's physician(s) should be sought before immunizing immunocompromised persons.</b></p> </td> </tr> <tr> <td data-bbox="475 898 781 1157"><b>Children with acute lymphocytic leukemia (ALL):</b></td> <td data-bbox="781 898 1443 1157"> <ul style="list-style-type: none"> <li>• Must be in remission for 12 months or longer AND</li> <li>• Total lymphocyte count of <math>1.2 \times 10^9/L</math> or greater AND</li> <li>• Not be receiving radiation therapy AND</li> <li>• Maintenance chemotherapy can be withheld for at least 1 week before to 1 week after immunization.</li> </ul> <p><b>Note:</b> Two doses of vaccine are recommended for all children that meet the above conditions for ALL.</p> </td> </tr> <tr> <td data-bbox="475 1157 781 1255"><b>Cured of ALL</b></td> <td data-bbox="781 1157 1443 1255"> <ul style="list-style-type: none"> <li>• Susceptible persons who have been cured of ALL may be immunized with up to 2 doses starting at least 1 week after completing chemotherapy.</li> </ul> </td> </tr> <tr> <td data-bbox="475 1255 781 1745"><b>HIV infected individuals</b></td> <td data-bbox="781 1255 1443 1745"> <ul style="list-style-type: none"> <li>• Children 12 months of age and older who are varicella non-immune and with CDC clinical category N, A or B and immunologic category 1 or 2 (i.e., CD4 counts greater than or equal to 15%) may be immunized with 2 doses of univalent vaccine with a 3 – 6 month interval between doses.</li> <li>• Susceptible adolescents and adults (no previous history of varicella illness or previous varicella immunization and a negative varicella antibody test) with CD4 cell count greater or equal to <math>200 \times 10^6/L</math> and greater or equal to 15 % may be considered for varicella immunization.</li> </ul> <p><b>Note:</b> It is essential to ascertain with the specialist that the individual conforms to the appropriate clinical and immunologic categories before making the decision to immunize with varicella vaccine.</p> </td> </tr> <tr> <td data-bbox="475 1745 781 1934"><b>Planned solid organ transplant</b></td> <td data-bbox="781 1745 1443 1934"> <ul style="list-style-type: none"> <li>• Persons with planned solid organ transplant, at least 4 weeks prior to the initiation of immunosuppressant treatment and/or transplant and only following consultation with the attending transplant physician.</li> <li>• In addition, solid organ transplant candidates may be provided a third dose of varicella vaccine if VZ</li> </ul> </td> </tr> </table> |              | <ul style="list-style-type: none"> <li>• Varicella vaccine can be used with caution for select groups of immunocompromised persons as listed below.</li> <li>• Although the use of VARIVAX®III is off license for children with acute lymphocytic leukemia (ALL) and for individuals receiving other immunosuppressive treatment, either VARILRIX® or VARIVAX®III can be offered.</li> </ul> <p><b>Medical consultation with the individual's physician(s) should be sought before immunizing immunocompromised persons.</b></p> |  | <b>Children with acute lymphocytic leukemia (ALL):</b> | <ul style="list-style-type: none"> <li>• Must be in remission for 12 months or longer AND</li> <li>• Total lymphocyte count of <math>1.2 \times 10^9/L</math> or greater AND</li> <li>• Not be receiving radiation therapy AND</li> <li>• Maintenance chemotherapy can be withheld for at least 1 week before to 1 week after immunization.</li> </ul> <p><b>Note:</b> Two doses of vaccine are recommended for all children that meet the above conditions for ALL.</p> | <b>Cured of ALL</b> | <ul style="list-style-type: none"> <li>• Susceptible persons who have been cured of ALL may be immunized with up to 2 doses starting at least 1 week after completing chemotherapy.</li> </ul> | <b>HIV infected individuals</b> | <ul style="list-style-type: none"> <li>• Children 12 months of age and older who are varicella non-immune and with CDC clinical category N, A or B and immunologic category 1 or 2 (i.e., CD4 counts greater than or equal to 15%) may be immunized with 2 doses of univalent vaccine with a 3 – 6 month interval between doses.</li> <li>• Susceptible adolescents and adults (no previous history of varicella illness or previous varicella immunization and a negative varicella antibody test) with CD4 cell count greater or equal to <math>200 \times 10^6/L</math> and greater or equal to 15 % may be considered for varicella immunization.</li> </ul> <p><b>Note:</b> It is essential to ascertain with the specialist that the individual conforms to the appropriate clinical and immunologic categories before making the decision to immunize with varicella vaccine.</p> | <b>Planned solid organ transplant</b> | <ul style="list-style-type: none"> <li>• Persons with planned solid organ transplant, at least 4 weeks prior to the initiation of immunosuppressant treatment and/or transplant and only following consultation with the attending transplant physician.</li> <li>• In addition, solid organ transplant candidates may be provided a third dose of varicella vaccine if VZ</li> </ul> |
| <ul style="list-style-type: none"> <li>• Varicella vaccine can be used with caution for select groups of immunocompromised persons as listed below.</li> <li>• Although the use of VARIVAX®III is off license for children with acute lymphocytic leukemia (ALL) and for individuals receiving other immunosuppressive treatment, either VARILRIX® or VARIVAX®III can be offered.</li> </ul> <p><b>Medical consultation with the individual's physician(s) should be sought before immunizing immunocompromised persons.</b></p> |  |              |  |  |  |  |                     |  |                                 |  |                                       |   |
| <b>Children with acute lymphocytic leukemia (ALL):</b>   | <ul style="list-style-type: none"> <li>• Must be in remission for 12 months or longer AND</li> <li>• Total lymphocyte count of <math>1.2 \times 10^9/L</math> or greater AND</li> <li>• Not be receiving radiation therapy AND</li> <li>• Maintenance chemotherapy can be withheld for at least 1 week before to 1 week after immunization.</li> </ul> <p><b>Note:</b> Two doses of vaccine are recommended for all children that meet the above conditions for ALL.</p>   |              |  |  |  |  |                     |  |                                 |  |                                       |   |
| <b>Cured of ALL</b>  | <ul style="list-style-type: none"> <li>• Susceptible persons who have been cured of ALL may be immunized with up to 2 doses starting at least 1 week after completing chemotherapy.</li> </ul>   |              |  |  |  |  |                     |  |                                 |  |                                       |   |
| <b>HIV infected individuals</b>  | <ul style="list-style-type: none"> <li>• Children 12 months of age and older who are varicella non-immune and with CDC clinical category N, A or B and immunologic category 1 or 2 (i.e., CD4 counts greater than or equal to 15%) may be immunized with 2 doses of univalent vaccine with a 3 – 6 month interval between doses.</li> <li>• Susceptible adolescents and adults (no previous history of varicella illness or previous varicella immunization and a negative varicella antibody test) with CD4 cell count greater or equal to <math>200 \times 10^6/L</math> and greater or equal to 15 % may be considered for varicella immunization.</li> </ul> <p><b>Note:</b> It is essential to ascertain with the specialist that the individual conforms to the appropriate clinical and immunologic categories before making the decision to immunize with varicella vaccine.</p>   |              |  |  |  |  |                     |  |                                 |  |                                       |   |
| <b>Planned solid organ transplant</b>  | <ul style="list-style-type: none"> <li>• Persons with planned solid organ transplant, at least 4 weeks prior to the initiation of immunosuppressant treatment and/or transplant and only following consultation with the attending transplant physician.</li> <li>• In addition, solid organ transplant candidates may be provided a third dose of varicella vaccine if VZ</li> </ul>  |              |  |  |  |  |                     |  |                                 |  |                                       |   |

|                 | Varilrix®   | Varivax® III   |
|-----------------|---|--|
|                 |   | <p>IgG is negative after the second dose and it is requested by the transplant physician</p> <p>See:</p> <ul style="list-style-type: none"> <li>▪ <a href="#">Adult SOT</a></li> <li>▪ <a href="#">Child SOT Before 18 Months</a></li> <li>▪ <a href="#">Child SOT After 18 Months</a></li> </ul>  |
|                 | <b>Hematopoietic stem cell transplants (HSCT)</b>   | <ul style="list-style-type: none"> <li>• Child and adult recipients of hematopoietic stem cell transplants (HSCT) if there is no graft versus host disease. Consultation with the attending transplant physician is recommended. See: <ul style="list-style-type: none"> <li>▪ <a href="#">Adult HSCT</a></li> <li>▪ <a href="#">Child HSCT</a></li> </ul> </li> </ul> <p><b>Note:</b> Varicella immunization is not indicated for persons awaiting HSCT.</p>  |
|                 | <b>Isolated immune-deficiency diseases</b>  | <ul style="list-style-type: none"> <li>• People with <b>isolated immunodeficiency diseases</b> and known intact T-cell systems may be immunized using the same age-appropriate schedule for healthy persons. <ul style="list-style-type: none"> <li>▪ B cell deficiencies: Isolated humoral (immunoglobulin) deficiency diseases.</li> <li>▪ Phagocytic and neutrophil deficiency disorders.</li> <li>▪ Complement deficiency diseases.</li> </ul> </li> </ul> |
|                 | <b>Cured of malignancies</b> other than ALL   | <ul style="list-style-type: none"> <li>• Susceptible persons cured of malignancies other than ALL may be immunized 3 months or more after completion of immunosuppressive therapy.</li> </ul>  |
|                 | <b>Low-dose steroid therapy</b>   | <ul style="list-style-type: none"> <li>• Susceptible children and adults on low-dose steroid therapy (less than 2 mg prednisone/kg daily or less than 20 mg/day if weight is greater than 10 kg for less than 2 weeks) or who are taking inhaled or topical steroids may be safely immunized using the age-appropriate schedule for healthy persons.</li> </ul>  |
|                 | <b>Other immunosuppressive treatment</b>  | <ul style="list-style-type: none"> <li>• Persons receiving immunosuppressive treatment (e.g., high-dose steroids or treatment for renal failure or auto-immune diseases causing immunosuppression) may be considered for varicella immunization if the total lymphocyte count is at least 1,200 per mm<sup>3</sup> (1.2 x 10<sup>9</sup>/L) or there is no other evidence of lack of cellular immune competence.</li> </ul>                                    |
|                 | <ul style="list-style-type: none"> <li>• <b>Post-exposure Immunization:</b> <ul style="list-style-type: none"> <li>○ Post-exposure immunization could be considered for susceptible contacts of varicella or disseminated zoster cases. <ul style="list-style-type: none"> <li>▪ When given within 5 days of first exposure, it may prevent or modify varicella disease.</li> <li>▪ If more than 5 days after first exposure, the vaccine could still be offered as this will provide protection for future exposures.</li> <li>▪ For disease investigation, contact assessment and reporting requirements, refer to <a href="#">Alberta public health disease management guidelines - varicella</a></li> </ul> </li> </ul> </li> </ul> |  |
| <b>Serology</b> | <p><b>Susceptible individual</b> includes those without a history of disease, without age-appropriate varicella immunization, or without serological evidence of disease (including negative or indeterminate varicella IgG result). For further information on history of disease, <b>refer to the Indications Section.</b></p>  |  |

|                 | Varilrix®   | Varivax® III |
|-----------------|---|--------------|
|                 | <p><b>Pre-Immunization serology:</b></p> <ul style="list-style-type: none"> <li>• Varicella IgG serology is indicated for all susceptible individuals 13 years of age and older <b>with the exception</b> of children being immunized as part of the school immunization program (grades 1 to 9). <ul style="list-style-type: none"> <li>○ For students being immunized as part of the school program (grades 1 to 9), pre-immunization serology is not required to determine susceptibility for immunization – use history of disease or documented age-appropriate varicella immunization. This applies to students assessed in the school or clinic settings.</li> </ul> </li> <li>• Swab results for shingles or varicella vesicles that are positive for varicella zoster (HZ PCR/NAT), or historical varicella IgM positive serology may be used to determine disease history/immunity to chicken pox.</li> <li>• For individuals who have received one dose of varicella vaccine and who are eligible for a second dose, serology is not required. Complete the series.</li> </ul> <p><b>Post-Immunization Serology:</b></p> <ul style="list-style-type: none"> <li>• Not indicated as commercial laboratory tests are not sensitive enough to detect vaccine-induced antibodies.</li> </ul>   |              |
| <b>Schedule</b> | <p><b>Children 12 months up to and including 6 years of age:</b></p> <ul style="list-style-type: none"> <li>• Dose 1: 12 months of age</li> <li>• Dose 2: 18 months of age</li> </ul> <p><b>Notes:</b></p> <ul style="list-style-type: none"> <li>• Most young children in Alberta routinely receive MMR – Varicella combined vaccine at 12 months and 18 months of age. See <a href="#">Measles, Mumps, Rubella and Varicella Vaccine Biological Page</a>.</li> <li>• After the start of the second dose varicella vaccine program August 1, 2012, children born on August 1, 2005 or later, will continue to be eligible for two doses of varicella vaccine.</li> <li>• The recommended spacing between the first and the second dose is 3 months.</li> <li>• If varicella vaccine is given as the first dose, MMR-varicella combined vaccine (if MMR also required) can be administered for the other dose to complete the series. The recommended interval between the 2 vaccines is at least 3 months.</li> <li>• The minimum interval between live vaccines is 4 weeks if rapid protection is required.</li> <li>• Children who have received a single dose of varicella-containing vaccine and develop <b>laboratory-confirmed</b> (varicella PCR/NAT swab result) varicella disease, do not require the second dose of a varicella-containing vaccine.</li> </ul> <p><b>Children 7 years up to and including 12 years of age:</b></p> <ul style="list-style-type: none"> <li>• Dose 1: day 0</li> <li>• Dose 2: 3 months after dose 1</li> </ul> <p><b>Note:</b> The minimum interval between live vaccines is 4 weeks if rapid protection is required.</p> <p><b>Individuals 13 years of age and older</b> (if susceptible – refer to Serology Section):</p> <ul style="list-style-type: none"> <li>• Dose 1: day 0</li> <li>• Dose 2: 6 weeks after dose 1 (See information below in Spacing Considerations)</li> </ul> <p><b>Note:</b> The minimum interval between live vaccines is 4 weeks if rapid protection is required.</p> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>• Individuals who received one dose under the age of 13 years AND whose birthdate is prior to August 1, 2005 are considered COMPLETE at this time.</li> </ul> |              |

|   | Varilrix®   | Varivax® III |                                  |   |  |  |  |                               |                                   |  |  |         |     |                           |         |          |         |          |     |         |         |         |                        |          |         |                                  |
|---|---|--------------|----------------------------------|---|--|--|--|-------------------------------|-----------------------------------|--|--|---------|-----|---------------------------|---------|----------|---------|----------|-----|---------|---------|---------|------------------------|----------|---------|----------------------------------|
|   | <p><b>Exceptions:</b></p> <ul style="list-style-type: none"> <li>• Women identified through routine prenatal screening are eligible for a maximum of two doses of varicella containing vaccine.</li> <li>• HCWs and Post-secondary HCW Students are eligible for a maximum of two doses of varicella containing vaccine as they present.</li> <li>• Shingrix doses cannot be counted in a varicella vaccine series.</li> </ul> <p><b>Spacing Considerations:</b></p> <table border="1"> <thead> <tr> <th colspan="4">Recommended Intervals for MMR and Varicella Containing Vaccines</th> </tr> <tr> <th rowspan="2">Previous Vaccine Administered</th> <th colspan="3">Recommended Interval to Next Dose</th> </tr> <tr> <th>MMR-Var</th> <th>MMR</th> <th>Varicella<sup>1, 2</sup></th> </tr> </thead> <tbody> <tr> <td>MMR-Var</td> <td>3 months</td> <td>6 weeks</td> <td>3 months</td> </tr> <tr> <td>MMR</td> <td>6 weeks</td> <td>4 weeks</td> <td>4 weeks</td> </tr> <tr> <td>Varicella<sup>1</sup></td> <td>3 months</td> <td>4 weeks</td> <td>6 weeks or 3 months<sup>3</sup></td> </tr> </tbody> </table> <p><sup>1</sup> For all HSCT recipients and SOT candidates there must be a minimum of 3 months separating 2 doses of varicella vaccine. See <i>Standard for Immunization of Transplant Candidates and Recipients</i>.</p> <p><sup>2</sup> Individuals infected with HIV, who meet the clinical and immunologic categories under Indications above, should receive 2 doses of varicella vaccine with an interval of at least 3 months between doses. MMR vaccine, if needed, may be administered at the same time.</p> <p><sup>3</sup> An interval of 3 months between doses of varicella containing vaccines is recommended for individuals under 13 years of age and 6 weeks for individuals over 13 years of age unless they have one of the following conditions: HIV, asplenia/hyposplenia and chronic renal disease. Individuals with these conditions require a minimum spacing of three months between doses.</p> <ul style="list-style-type: none"> <li>• Univalent varicella vaccine can be administered simultaneously with other live vaccines or separated by an interval of at least 4 weeks. See above for recommended intervals between all measles, mumps, rubella and varicella vaccines.</li> <li>• If live vaccine was administered at less than the routine intervals outlined above, the dose can be considered valid, and vaccine would not need to be repeated if there is a minimum interval of at least 4 weeks.</li> </ul> |              |                                  | Recommended Intervals for MMR and Varicella Containing Vaccines |  |  |  | Previous Vaccine Administered | Recommended Interval to Next Dose |  |  | MMR-Var | MMR | Varicella <sup>1, 2</sup> | MMR-Var | 3 months | 6 weeks | 3 months | MMR | 6 weeks | 4 weeks | 4 weeks | Varicella <sup>1</sup> | 3 months | 4 weeks | 6 weeks or 3 months <sup>3</sup> |
| Recommended Intervals for MMR and Varicella Containing Vaccines |   |              |                                  |   |  |  |  |                               |                                   |  |  |         |     |                           |         |          |         |          |     |         |         |         |                        |          |         |                                  |
| Previous Vaccine Administered                                   | Recommended Interval to Next Dose   |              |                                  |   |  |  |  |                               |                                   |  |  |         |     |                           |         |          |         |          |     |         |         |         |                        |          |         |                                  |
|   | MMR-Var   | MMR          | Varicella <sup>1, 2</sup>        |   |  |  |  |                               |                                   |  |  |         |     |                           |         |          |         |          |     |         |         |         |                        |          |         |                                  |
| MMR-Var   | 3 months  | 6 weeks      | 3 months                         |   |  |  |  |                               |                                   |  |  |         |     |                           |         |          |         |          |     |         |         |         |                        |          |         |                                  |
| MMR   | 6 weeks   | 4 weeks      | 4 weeks                          |   |  |  |  |                               |                                   |  |  |         |     |                           |         |          |         |          |     |         |         |         |                        |          |         |                                  |
| Varicella <sup>1</sup>  | 3 months  | 4 weeks      | 6 weeks or 3 months <sup>3</sup> |   |  |  |  |                               |                                   |  |  |         |     |                           |         |          |         |          |     |         |         |         |                        |          |         |                                  |
| <b>Dose</b>   | 0.5 mL<br><b>Note:</b> <ul style="list-style-type: none"> <li>• Withdraw the entire contents of the diluent and inject into the vial containing the powder. Once reconstituted withdraw the entire contents of the vial and inject the entire volume.</li> </ul>  |              |                                  |   |  |  |  |                               |                                   |  |  |         |     |                           |         |          |         |          |     |         |         |         |                        |          |         |                                  |
| <b>Route</b>  | SC  |              |                                  |   |  |  |  |                               |                                   |  |  |         |     |                           |         |          |         |          |     |         |         |         |                        |          |         |                                  |
| <b>Contraindications/Precautions</b>                            | <p><b>Contraindications:</b></p> <ul style="list-style-type: none"> <li>• Known severe hypersensitivity to any component of the vaccine.</li> <li>• Individuals with a history of anaphylactic/anaphylactoid reaction to neomycin.<br/><b>Note:</b> A history of contact dermatitis to neomycin is not a contraindication.</li> <li>• Individuals with blood dyscrasias, leukemia, lymphomas of any type or other malignant neoplasms affecting the bone marrow or lymphatic systems except as outlined in Indications above.</li> <li>• Individuals receiving immunosuppressive therapy except as outlined in Indications above.</li> </ul>  |              |                                  |   |  |  |  |                               |                                   |  |  |         |     |                           |         |          |         |          |     |         |         |         |                        |          |         |                                  |

|  | Varilrix®   | Varivax® III |
|--|---|--------------|
|  | <ul style="list-style-type: none"> <li>• Individuals with primary and acquired immunodeficiency states including HIV infection except as outlined in Indications above.</li> <li>• Family history of congenital or hereditary immunodeficiency unless the immune competence of the potential vaccine recipient is demonstrated.</li> <li>• Active, untreated tuberculosis.</li> <li>• Anaphylactic or other allergic reactions to a previous dose of a vaccine containing similar components.</li> <li>• Pregnancy.</li> <li>• Individuals with a suspicious medical history for immunodeficiency disorders until they have been investigated and T-cell dysfunction is ruled out.</li> <li>• Individuals with T-cell or combined T- and B-cell immunodeficiencies.</li> <li>• Individuals with advanced HIV.</li> <li>• Individuals with solid tumours undergoing immunosuppressive therapy.</li> <li>• Individuals undergoing radiotherapy.</li> <li>• Individuals with chronic inflammatory diseases (e.g., inflammatory bowel disease, collagen-vascular disease, nephritic syndrome) taking long-term immunosuppressive therapy or whose immunosuppressive therapy was stopped less than 6-12 weeks previously. Immunosuppressive therapy could include monoclonal antibodies (e.g., rituximab), alkylating agents, tumour necrosis factor (e.g., Enbrel®), antimetabolites (e.g., methotrexate) or long-term steroids. Consult zone MOH/MOH designate as required.</li> <li>• Solid Organ Transplant recipients. <ul style="list-style-type: none"> <li>○ Refer to SOT Transplant Guidelines for Exceptions: <ul style="list-style-type: none"> <li>▪ <a href="#">SOT Children Before 18 Months</a></li> <li>▪ <a href="#">SOT Children After 18 Months</a></li> </ul> </li> </ul> </li> <li>• Immune globulins and blood products within the previous 3 to 11 months. See <a href="#">Standard for Recommended Immunization Schedules</a> for Guidelines for Interval Between Immune Globulin and other Blood Products and Live Vaccines.</li> <li>• Varicella immunization of susceptible post-partum women should be delayed for 3 months after receipt of Rh immune globulin (RhIG).</li> </ul> <p><b>Precautions:</b></p> <ul style="list-style-type: none"> <li>• Avoid use of salicylates for 6 weeks after immunization if possible due to association of varicella and Reye syndrome. However, children and adolescents on long-term salicylate therapy should be considered for immunization with close subsequent monitoring. Medical consultation is recommended before proceeding with immunization in children on salicylate therapy.</li> <li>• Children with ALL in remission should have maintenance chemotherapy withheld 1 week before and 1 week following immunization. Medical consultation is recommended before proceeding with immunization.</li> <li>• Individuals taking long-term antiviral therapy should discontinue these drugs (e.g., acyclovir, valacyclovir or famciclovir) at least 24 hours before administration of varicella vaccine and up to 14 days after immunization. Medical consultation is recommended before proceeding with immunization.</li> <li>• If the vaccine recipient develops a varicella-like rash, it should be covered when possible; when not possible, direct contact with susceptible high-risk individuals (non-immune pregnant women, immunocompromised individuals, newborn infants of mothers without documented history of disease or negative serology) should be avoided for the duration of the rash.</li> </ul> |              |

|                           | Varilrix®  | Varivax® III  |
|---------------------------|--|---|
| <b>Possible Reactions</b> | <p><b>Common:</b></p> <ul style="list-style-type: none"> <li>• Pain, redness, swelling, pruritus, hematoma, induration, stiffness, rash/varicella-like rash and numbness at injection site</li> <li>• Fever</li> <li>• Varicella-like rash usually 5 to 26 days following immunization</li> <li>• Rash</li> </ul> <p><b>Uncommon:</b></p> <ul style="list-style-type: none"> <li>• Lymphadenopathy</li> <li>• Nausea, vomiting</li> <li>• Irritability</li> <li>• Headache</li> <li>• Fatigue, malaise, somnolence</li> <li>• Arthralgia, myalgia</li> <li>• Pruritus</li> <li>• Cough, rhinitis, and pharyngitis</li> </ul> <p><b>Rare:</b></p> <ul style="list-style-type: none"> <li>• Anaphylaxis</li> <li>• Urticaria</li> <li>• Abdominal pain, diarrhea</li> <li>• Conjunctivitis</li> <li>• Febrile seizures</li> <li>• As with any immunization, unexpected or unusual side effects can occur. Refer to the product monograph for more detailed information.</li> </ul> <p><b>Post-immunization varicella-like rash:</b></p> <ul style="list-style-type: none"> <li>• Transmission from post-varicella rash to susceptible individuals is rare. Health care workers who develop a rash post-immunization should be individually evaluated. Generally, if the post-vaccine rash at the injection site can be covered, the individual can continue to work. Those with varicella-like rash not confined to the injection site should be excluded from work in high-risk patient care areas (e.g., where there are premature infants and immunocompromised patients) until the lesions are crusted.</li> </ul> |   |
| <b>Pregnancy</b>          | Live vaccines are contraindicated in pregnant women. Women of child-bearing potential should be advised to avoid pregnancy for at least 1 month following immunization.  |   |
| <b>Lactation</b>          | <ul style="list-style-type: none"> <li>• It is not known whether varicella vaccine virus is secreted in human milk.</li> <li>• Can be administered to eligible breastfeeding women.</li> <li>• If post-immunization rash develops, breastfeeding should not be discontinued. The rash should be covered if possible.</li> </ul>  |   |
| <b>Composition</b>        | <p><b>Each dose of 0.5 mL reconstituted vaccine contains:</b></p> <ul style="list-style-type: none"> <li>• Not less than 10<sup>3.3</sup> PFU (plaque-forming units) of varicella-zoster virus</li> <li>• Amino acids</li> <li>• Human albumin</li> <li>• Lactose</li> <li>• Neomycin sulphate</li> <li>• Polyalcohols</li> <li>• Sterile water for injection (diluent)</li> </ul>   | <p><b>Each 0.5 mL dose of reconstituted vaccine contains:</b></p> <ul style="list-style-type: none"> <li>• A minimum of 1,350 PFU (plaque forming units) of Oka/Merck varicella virus</li> <li>• 18 mg sucrose</li> <li>• 8.9 mg hydrolyzed gelatin</li> <li>• 3.6 mg urea</li> <li>• 2.3 mg sodium chloride</li> <li>• 0.36 mg monosodium L-glutamate</li> <li>• 0.33 mg sodium phosphate dibasic</li> <li>• 57 mcg potassium phosphate monobasic</li> <li>• 57 mcg potassium chloride</li> <li>• Sterile water for injection (diluent)</li> </ul> |



|   | <b>Varilrix®</b>  | <b>Varivax® III</b>   |
|---|---|---|
|   |   | Residual amounts of: <ul style="list-style-type: none"> <li>• MRC-5 cells (DNA and protein)</li> <li>• Neomycin</li> <li>• Fetal bovine serum from MRC-5 culture media</li> </ul> |
| <b>Blood/Blood Products</b>               | Contains human albumin as an excipient (1 mg/dose).   | Does not contain blood/blood products however the varicella virus is grown in MRC-5 human diploid cell culture.   |
| <b>Bovine/Porcine Products</b>            | <ul style="list-style-type: none"> <li>• Bovine materials are used early in the manufacturing process but are not present in the final product.</li> <li>• No porcine products are used in the development of this vaccine.</li> </ul>  | <ul style="list-style-type: none"> <li>• Contains trace quantities of fetal bovine serum from MRC-5 culture media.</li> <li>• Contains porcine products.</li> </ul>               |
| <b>Latex</b>                              | Does not contain latex.   |   |
| <b>Interchangeability</b>                 | Vaccines may be used interchangeably provided the appropriate dose and schedule recommended by the manufacturer are used.   |   |
| <b>Administration with Other Products</b> | <ul style="list-style-type: none"> <li>• Varicella vaccine can be administered simultaneously with other live vaccines or separated by an interval of at least 4 weeks. See schedule section for recommended intervals between all measles, mumps, rubella and varicella vaccines.</li> <li>• Varicella vaccine can be administered at the same time as other inactivated or live vaccines using a separate needle and syringe for each vaccine.</li> <li>• SHINGRIX® can be administered a minimum of 8 weeks after live varicella vaccine.</li> <li>• The same limb may be used if necessary, but different sites on the limb must be chosen.</li> <li>• Immune globulins (IG) and antibody-containing blood products cannot be given concurrently with live vaccines and must be separated by specified time frames depending upon the dosage and the biological. Varicella vaccine should be given at least 14 days prior to administration of an IG preparation or blood product or delayed until the antibodies in the IG preparation or blood product have degraded. If the interval between administration of vaccine and subsequent administration of an IG preparation or blood product is less than 14 days, the vaccine dose should be repeated after the recommended interval. See Recommended Schedules Standard for Guidelines for Interval Between Immune Globulin and other Blood Products and Live Vaccines.</li> <li>• Tuberculin skin tests should be given either before or at the same time as varicella vaccine; otherwise, the tuberculin skin test should be delayed for 4 weeks following varicella vaccine.</li> </ul> |   |
| <b>Appearance</b>                         | <ul style="list-style-type: none"> <li>• Slightly creamy to yellowish- or pinkish-coloured powder.</li> <li>• Once reconstituted, the liquid may vary from clear peach to pink-coloured solution.</li> </ul>  | <ul style="list-style-type: none"> <li>• Reconstituted vaccine is clear, colourless to pale yellow liquid.</li> </ul>   |
| <b>Storage</b>                            | <ul style="list-style-type: none"> <li>• Store at +2°C to +8°C</li> <li>• Must be protected from light</li> <li>• Do not freeze</li> <li>• Do not use beyond the labeled expiry date</li> <li>• Diluent may be stored at room temperature</li> <li>• Reconstituted vaccine should be used as soon as possible (Vaccine is unstable and begins to deteriorate as soon as reconstituted)</li> </ul>   |   |

|  | Varilrix®   | Varivax® III   |
|--|---|--|
| <b>Vaccine Code</b>  | VZ  |  |
| <b>Antigen Code</b>  | VZ  |  |
| <b>Licensed Use</b>  | <ul style="list-style-type: none"> <li>All individuals 12 months of age and older as per the indications section</li> </ul>   | <ul style="list-style-type: none"> <li>All individuals 12 months of age and older as per the indications section</li> </ul>  |
| <b>Off-License Use</b>   | <ul style="list-style-type: none"> <li>Children starting at 6 months of age to less than 12 months of age expecting solid organ transplant.</li> <li>Third dose for solid organ transplant candidates if VZ IgG is negative after the second dose (only at the request of the transplant physician).</li> </ul> | <ul style="list-style-type: none"> <li>Children starting at 6 months of age to less than 12 months of age expecting solid organ transplant.</li> <li>Susceptible adults with HIV meeting clinical criteria.</li> <li>Children with acute lymphocytic leukemia (ALL).</li> <li>Individuals receiving other immunosuppressive treatment.</li> <li>Third dose for solid organ transplant candidates if VZ IgG is negative after the second dose (only at the request of the transplant physician).</li> </ul> |
| <p><b>Program Notes:</b></p> <ul style="list-style-type: none"> <li>2001 March: Varicella vaccine was made available to non-immune special groups (household contacts of immunocompromised individuals, health care workers known to be susceptible, and women identified through routine pre-natal care).</li> <li>2001 April: A catch-up program was offered in the grade 5 school immunization program.</li> <li>2001 July 1: Varicella vaccine was introduced into the 12 month routine childhood immunization visit for all individuals born on or after January 1, 2000.</li> <li>2002 Spring: A catch-up program was offered during the preschool immunization visit.</li> <li>2003 April: All other susceptible individuals in Alberta became eligible to receive the varicella vaccine.</li> <li>2012 August 1: All children born on or after August 1, 2005 became eligible to receive 2 doses of varicella vaccine. With 2 doses of MMR vaccine and 2 doses of varicella vaccine recommended in the routine schedule as of August 1, 2012, MMR-Var became the vaccine of choice at the 12 month and 4 to 6 year immunization appointments.</li> <li>2018 September 1: Children born August 1, 2012 or later with a verbal history of chicken pox disease became eligible to receive varicella vaccine as they present in child health clinic. Additionally, women identified through prenatal screening and HCWs became eligible to receive varicella vaccine regardless of disease history to a maximum of two doses.</li> <li>2021 January 1: Varicella second dose offered at 18 months instead of 4 years of age.</li> <li>2022 April 25: Included Ukrainian evacuees 13 years of age and older under exception for serology requirement to determine susceptibility.</li> <li>2023 August 28: Removal of Varilrix® as product no longer available in Alberta. Included expert advice allowing off-license use of VARIVAX® III in children with acute lymphocytic leukemia (ALL) and persons receiving other immunosuppressive treatment.</li> <li>2023 October 12: Removal of Contraindications to Varilrix® as product no longer available in Alberta.</li> <li>2024 January 29: Third dose provincially funded for SOT candidates if VZ IgG negative at request of transplant physician.</li> <li>2024 April 8: Varilrix® product available in Alberta.</li> </ul> |   |  |
| <p><b>Related Resources:</b></p> <ul style="list-style-type: none"> <li>Varicella Vaccine Information Sheet (104508).</li> </ul>   |   |  |

|   | Varilrix® | Varivax® III |
|---|-----------|--------------|
| <b>References:</b>  |           |              |
| <ol style="list-style-type: none"> <li>1. Alberta Health, Health System Accountability and Performance Division, Alberta Immunization Policy, (2024, April 8). <i>Varicella Vaccine</i>.</li> <li>2. Alberta Health. (2018, December). Alberta Immunization Policy. <i>Adverse Event Following Immunization (AEFI) Policy for Alberta Health Services Public Health</i>. Alberta Health.</li> <li>3. American Academy of Pediatrics. (2018). Red Book: 2015 Report of the Committee on Infectious Diseases. Elk Grove, IL: American Academy of Pediatrics.</li> <li>4. Centers for Disease Control and Prevention. (2011). General Recommendations on Immunization: Recommendations of the Advisory Committee on Immunization Practices. <i>Morbidity and Mortality Weekly Report</i>, 60(2), 36-39.</li> <li>5. Centers for Disease Control and Prevention. (2021) Routine Varicella Vaccination. <i>In Vaccines and Preventable Diseases</i>. Retrieved December 19, 2023 from <a href="https://www.cdc.gov/vaccines/vpd/varicella/hcp/recommendations.html">https://www.cdc.gov/vaccines/vpd/varicella/hcp/recommendations.html</a></li> <li>6. GlaxoSmithKline. (2019, August 14). Product Monograph. Varilrix®: Varicella virus vaccine, live, attenuated (Oka-strain).</li> <li>7. Merck Canada Inc. (2023, January 18). Product Monograph. Varivax® III (varicella virus vaccine, live, attenuated [Oka/Merck]).</li> <li>8. National Advisory Committee on Immunization. (2018). Canadian Immunization Guide (Evergreen Edition). Ottawa, ON: Public Health Agency of Canada.</li> <li>9. National Advisory Committee on Immunization. (2015 Update). Varicella Proof of Immunity. An Advisory Committee Statement (ACS). <a href="http://www.healthycanadians.gc.ca/publications/healthy-living-vie-saine/varicella-proof-immunity-2015-varicelle-preuve-immunite/alt/varicella-proof-immunity-2015-varicelle-preuve-immunite-eng.pdf">http://www.healthycanadians.gc.ca/publications/healthy-living-vie-saine/varicella-proof-immunity-2015-varicelle-preuve-immunite/alt/varicella-proof-immunity-2015-varicelle-preuve-immunite-eng.pdf</a></li> <li>10. National Advisory Committee on Immunization. (2010). Varicella vaccination two-dose recommendations. <i>Canada Communicable Disease Report</i>, 36(ACS-8).</li> <li>11. National Advisory Committee on Immunization. (2010). Updated recommendations for the use of varicella and MMR vaccines in HIV-infected individuals. <i>Canada Communicable Disease Report</i>, 36(ACS-7).</li> <li>12. Pergam, S. A. et al. (2019 September) Varicella zoster virus in solid organ transplantation: Guidelines from the American Society of Transplantation Infectious Diseases Community of Practice. <i>Clinical Transplantation</i>, Vol. 39, Issue 9. doi.org/10.1111/ctr.13622.</li> <li>13. Pittet, L. F. et al. (2020 September). Management and prevention of varicella and measles infections in pediatric solid organ transplant candidates and recipients: An IPTA survey of current practice. <i>Pediatric Transplantation</i>, 2020 Dec; 24(8):e13830. doi.org/10.1111/petr.13830</li> <li>14. Verolet, C. M., et al. (2019 November). Long-term Seroprotection of Varicella-zoster Immunization in Pediatric Liver Transplant Recipients. <i>Transplantation</i>, 2019 Nov;103(11):e355-e364. doi: 10.1097/TP.0000000000002866.</li> </ol> |           |              |