Measles Risk in Cancer Patients FAQ

Reason for FAQ: To ensure that adult patients with cancer and/or on cancer treatment receive appropriate measles advice.

Background:
With increasing measles activity in Canada and globally, there is a small but rising probability that cancer patients will be exposed to the measles virus.

Many adult cancer patients will still have immunity due to past infection or vaccination. However, certain immunosuppressive conditions and/or treatments may affect previous measles immunity.

Cancer patients with hematological malignancies are at highest risk of severe measles infection, specifically:

- Bone marrow transplant (BMT) or CAR T-cell therapy recipients
- Leukemia, lymphoma and multiple myeloma patients
- Patients with severe hypogammaglobulinemia (IgG <3g/L) not on immunoglobulin replacement therapy

However, some cancer patients may not be able to receive measles, mumps, rubella (MMR) vaccine since it is a live attenuated virus vaccine with the potential to replicate and cause symptomatic disease in heavily immunosuppressed individuals.

Is my patient considered immune to measles?
Patients are considered immune if they have ANY of the following:

- Birth date before January 1, 1970
  Measles was endemic before the introduction of routine vaccines and older patients are presumed to have had infection and developed natural immunity.
- Documented evidence of vaccination with 2 valid doses of live measles containing vaccine on/after their 1st birthday and given at least one month apart.
- Laboratory evidence of immunity (i.e., “reactive” or “positive” anti-measles IgG antibody or a previous measles antibody level of ≥ 200 mIU per mL).
- Laboratory evidence of prior measles infection. Physician diagnosis of measles without laboratory confirmation is not considered proof of immunity.

Many adults do not have documentation of vaccine history or measles illness; however, a self-reported history of either is highly correlated with serology results and is sufficient as confirmation of prior immunity.

Which cancer patients should NOT receive MMR vaccine?

The MMR vaccine is rarely indicated in:

- Cancer patients **on active treatment**
  There is a risk of symptomatic disease from the live vaccine, until 3 months after the end of cytotoxic chemotherapy, targeted therapy, or most immunotherapy; except until 6 months after anti-CD20 therapy and until 12 months after B-lymphocyte or plasma cell directed bispecific T-cell engager (BiTE) therapy.
- Patients on immunoglobulin (Ig) replacement therapy (IVIG, SCIg).
  Ig will prevent the live virus expansion needed to induce an antibody response.
  MMR can be administered ≥ 8 months after the last dose of Ig.

Which cancer patients CAN receive MMR vaccine?

Cancer patients may receive MMR vaccination in the following circumstances**:**

1. Untreated and on surveillance
2. After completion of cancer treatment
≥ 3 months from cytotoxic chemotherapy, targeted therapy, and most immunotherapy
≥ 6 months from any treatment of lymphoma (excluding bone marrow transplant, CAR T-cell and bispecific T-cell engager therapies)
≥ 6 months from anti-CD20 therapy
≥ 12 months from B-lymphocyte or plasma cell directed bispecific T-cell engager (BiTE) therapy.
3. On active treatment with
Hormonal therapy alone (e.g., tamoxifen, anti-androgens) and after completion of other cancer treatments (see #2 above).
Multiple myeloma on lenalidomide or bortezomib maintenance alone with no active disease, ≥ 12 months post-autologous stem cell transplant, and after completion of other cancer treatments (see #2 above).
Chronic myelogenous leukemia (CML) in chronic phase, with no prior allogeneic stem cell transplant and stable on tyrosine kinase inhibitor (TKI) therapy.
4. After bone marrow transplant or CAR T-cell therapy
Autologous stem cell transplant and CAR T-cell therapy recipients with ○ ≥ 12 months post transplant/therapy ○ No active disease ○ Completion of other cancer treatments (see #2 above).
Allogeneic stem cell transplant recipients with ○ ≥24 months post-transplant ○ No active disease ○ Free from GVHD ○ ≥ 3 months from all immunosuppression
Allogeneic stem cell transplant recipients with potential risk of measles exposure (e.g. high-risk travel) ○ 12-24 months post-transplant ○ All the above listed criteria

There may be rare exceptions when immunization is possible based on patient specific factors (e.g. disease status, therapy, risk of exposure) but at the discretion of the hematologist/medical oncologist.

MMR vaccination of immunocompromised patients requires physician approval. Please provide your patient with a completed BCCDC Referral Form for MMR vaccination, available here (ReferralFormMMR.pdf).

For additional information, please refer to the BCCDC Immunization Manual – Immunization of Special Populations and Biological Products (Vaccines & Immune Globulins).

What if my patient's immunity is unknown? Is it appropriate to test measles IgG serology for evidence of immunity? (i.e. patients born on or after January 1, 1970 and unable to confirm 2 prior MMR doses, prior infection or a prior measles IgG positive test)

Measles IgG testing is appropriate for:

- Immunocompromised patients with a ***confirmed*** exposure to measles.
- Medical Health Officers (MHO) will arrange measles IgG testing at the time of the exposure if needed to determine susceptibility.

Outside of a confirmed measles exposure, measles IgG testing is rarely indicated to assess evidence of immunity, and usually not appropriate for:

- Patients on immunoglobulin replacement.
- Patients expected to have waning antibody levels (e.g. planned autologous or allogeneic stem cell transplant, CAR T-cell therapy, severe hypogammaglobulinemia). Pre-emptive testing will not predict immunity at the time of a future exposure.

If your patient's immunity is unknown and they can receive MMR, they should receive the vaccine. Measles IgG testing is not recommended.

If your patient **cannot** receive MMR vaccine and is on standard "non-myeloablative" cancer therapies (i.e. protective antibody levels will not wane), measles IgG testing is not routinely recommended but can be considered on a case-by-case basis.

When is post-exposure prophylaxis (PEP) indicated for cancer patients exposed to measles?

- PEP is indicated immediately following a measles exposure for individuals who are susceptible to measles.
- Susceptible individuals at high risk of severe disease are recommended to receive a single 0.4 g/kg dose of intravenous immunoglobulin (IVIg), administered up to 6 days following exposure.
- The need for PEP will depend on your patient's level of immunosuppression, the likelihood that they have retained any pre-existing measles immunity and if they are on immunoglobulin (Ig) replacement.

The local MHO will assess measles exposures, perform contact tracing, and determine if your patient requires PEP. They may reach out to you as the patient's oncologist/hematologist to ask if you are able to arrange IVIG for your patient, following local care pathways for outpatient infusion of blood products.

What should I do if my patient reports an exposure to measles?

- For advice on a patient with potential measles exposure, contact the patient's local health authority MHO for further guidance.
- MHO Contact information is available at Medical Health Officers - Province of British Columbia.

References:

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3. Public Health Agency of Canada. Summary of National Advisory Committee on Immunization (NACI) Statement on February 13, 2025. https://www.canada.ca/content/dam/phac-aspc/documents/services/publications/vaccines-immunization/national-advisory-committee-immunization-summary-updated-recommendations-measles-post-exposure-prophylaxis/naci-summary-2025-02-13.pdf
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5. Pergam SA et al. Preventing measles in immunosuppressed cancer and hematopoietic cell transplantation patients: A position statement by the American Society for Transplantation and Cellular Therapy. Biol Blood Marrow Transplant 2019; 25: e321-e330.
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8. BC Cancer Provincial Systemic Therapy Committee. Measles Vaccine Guideline. 1 April 2019. http://www.bccancer.bc.ca/nursing-site/Documents/BCCancer-MeaslesVaccineGuideline.pdf