Measles

Revision Dates

Case Definition	May 2018
Reporting Requirements	May 2018
Remainder of the Guideline (i.e., Etiology to References sections inclusive)	May 2018

Case Definition

Confirmed Case

In the absence of recent immunization[A] with measles-containing vaccine:

- Detection of measles virus by nucleic acid tests (e.g., RT-PCR) or by culture;
  OR
- Positive serologic test for measles IgM antibody[B] in a person who is either epidemiologically linked to a laboratory-confirmed case or has recently travelled to an area of known measles activity;
  OR
- Seroconversion or a significant rise (e.g., fourfold or greater) in measles IgG titre by any standard serologic assay between acute and convalescent sera;
  OR
- Clinical illness[C] in a person who is epidemiologically linked to a laboratory-confirmed case.

OR

Detection of wild-type measles virus through genotyping, regardless of recent immunization[A] with a measles-containing vaccine.

Probable Case

In the absence of both recent immunization[A] with a measles-containing vaccine and laboratory confirmation of disease:
Clinical illness [C] in a person with either an epidemiologic link to a non laboratory-confirmed case or recent travel to an area of known measles activity.

Suspect Case (Outbreak Only)[D]

Regardless of recent immunization[A], clinical illness[C] in a person with rash of any duration, who does not meet the probable or confirmed case definition, and where the clinician has a high index of suspicion of measles.

[A] Immunization within 28 days prior to onset of rash or illness.
[B] See Appendix A - Specimen Collection for Potential Cases regarding possible false positive and false negative IgM results.
[C] Clinical illness, evaluated by a health care professional including public health, includes ALL of the following:

- Fever 38.3°C or greater
- Cough, coryza or conjunctivitis
- Generalized maculopapular rash for at least 3 days

[D] A measles outbreak is two or more confirmed cases linked, either epidemiologically or virologically or both.

Reporting Requirements

1. **Physicians, Health Practitioners and Others**
   Physicians, health practitioners and others shall notify the Medical Officer of Health (MOH) (or designate) of the zone, of all confirmed, probable, and suspect cases in the prescribed form by the Fastest Means Possible (FMP).

2. **Laboratories**
   All laboratories shall report all positive laboratory results:
   - by FMP to the MOH (or designate) of the zone, and
   - by mail, fax or electronic transfer within 48 hours (two business days) to the Chief Medical Officer of Health (CMOH) (or designate).

3. **Alberta Health Services and First Nations and Inuit Health Branch**
   - The MOH (or designate) of the zone where the case currently resides shall notify the CMOH (or designate) by FMP of all confirmed, probable and suspect cases.
   - The MOH (or designate) of the zone where the case currently resides shall forward the initial Notifiable Disease Report (NDR) of all confirmed and probable cases to the CMOH (or designate) within one week of notification and the final NDR (amendment) within two weeks of notification.
   - For out-of-province and out-of-country reports, the following information should be forwarded to the CMOH (or designate) by FMP:
     - name,
     - date of birth,
     - out-of-province health care number,
     - out-of-province address and phone number,
     - positive laboratory report
     - travel history (if known)
     - immunization history (if known), and
     - other relevant clinical / epidemiological information.
   - For out-of-province and out-of-country susceptible contacts the following information should be forwarded to the CMOH (or designate) as soon as possible:
     - name,
     - date of birth,
     - out-of-province / country contact information, and
     - relevant exposure information.

Etiology
Disease is caused by the measles virus, a member of the Paramyxoviridae family, genus *Morbillivirus*.[1]

Clinical Presentation
Measles is an acute, highly contagious viral disease that is characterised by prodromal fever, coryza, conjunctivitis, cough and Koplik spots (clustered blue-white lesions on the buccal mucosa). A red blotchy rash usually appears 3 – 7 days after symptom onset.[1] This rash begins on the face and spreads to the rest of the body and may last 4 – 7 days.[1,2] It clears in the same direction it appeared and sometimes ends in brawny desquamation. Serum vitamin A levels are often decreased and leukopenia is common.[1] Atypical measles presentation can occur in vaccinated persons or those with prior exposure.[3]

Approximately 30% of reported measles cases have one or more complications which are most often seen in children under 5 years of age and adults 20 years of age and older.[4] Complications of measles infection may include pneumonia, otitis media, febrile seizures, croup, diarrhea, and encephalitis.[1] In developed countries, the case-fatality rate is estimated to be less than 1%.[1] The most common causes of measles related deaths are acute encephalitis in adults and pneumonia in children.[4] In addition, subacute sclerosing panencephalitis (SSPE) a rare, fatal degenerative central nervous system disease may occur many years later in hosts with a history (often before two years of age) of primary measles infection.[1]

Measles infection during pregnancy results in a higher risk of spontaneous abortion, premature labour and infants with low birth weight. Birth defects have rarely been reported, however measles could not be confirmed as the cause.[4]

Disease in the immunocompromised may be severe and have a prolonged course, present without the typical rash, and the person may shed virus for several weeks after the acute illness.[4]

Reservoir
Humans.[1]

Transmission
Measles is airborne, and is also spread by direct contact with respiratory secretions of an infected person, and less commonly by articles freshly soiled with respiratory secretions.[1] The virus can survive in evaporated droplets in the air for up to two hours in closed areas.[5] The secondary attack among susceptible persons is greater than 90%.[4]

Incubation Period
Time from exposure to prodrome is approximately 10 days with a range of 7-18 days.[4] The incubation period from exposure to rash onset averages 14 days with a range of 7 – 21 days.[1,4] Individuals who receive immune globulin (Ig) for post-exposure prophylaxis (PEP) may have a prolonged incubation period if they develop disease despite the PEP.[1,4,6]

Period of Communicability

Cases are infectious from one day prior to the onset of the prodromal period to four days after the appearance of the rash.[2] Individuals who are immunocompromised may have prolonged excretion of the virus in respiratory secretions and can be contagious for the duration of their illness.[7] Although, there is evidence that the virus is detectable in a variety of body secretions following immunization, there have been no documented cases of vaccine-strain transmission from person-to-person.[8,9]

Host Susceptibility

All persons who have not had the disease or received age appropriate immunization are susceptible. However, in the case of a measles exposure, children one year of age up to and including 3 years of age who have received one dose of vaccine are also considered susceptible. Individuals who recover from measles infection have lifelong immunity.[1,10] The efficacy of a single dose of measles vaccine given between 12 – 15 months of age is estimated to be 85 – 95%. With a second dose, efficacy is almost 100%.[10]

Adults born in Canada before 1970 are likely to have acquired natural immunity to measles and are generally considered immune. However, immunization may still be recommended for some individuals born before 1970 if those individuals are also at a high risk of exposure and/or high risk of transmitting disease to others. Individuals at greatest risk of exposure include health care workers, travellers, military personnel and students in post-secondary educational settings.[10]Refer to the *Alberta Immunization Policy* (AIP) for further information.

All individuals born in or after 1970 are considered susceptible unless they have serological proof of immunity, or two documented doses of measles-containing vaccine given at appropriate intervals on or after 12 months of age.[11]

Infants whose mothers have had measles are protected against disease for approximately 6 – 9 months or more. Children born to mothers with vaccine-induced immunity receive lower levels of maternal antibodies and may be susceptible at an earlier age.[1]

Incidence

World

Prior to widespread immunization programs an estimated 100 million measles cases and six million deaths occurred each year worldwide. Despite the existence of a safe and effective vaccine for over 50 years, measles remains the leading cause of vaccine-preventable deaths in children worldwide.[1] The World Health Organization estimates that 134,200 measles deaths occurred globally in 2015.[5]

Canada

Measles became reportable in Canada in 1924.[12] In the pre-vaccine era from 1924 to 1958, an average of 45,000 cases were reported annually. A single dose of measles, mumps and rubella (MMR) vaccine was introduced for one year olds in 1983, and a second dose was added to routine schedules in 1996-1997 with concurrent catch-up programs in school-aged children.[13]

Canada eliminated measles in 1998.[14] Sporadic cases and outbreaks continue post-elimination as a result of importations.[10] To achieve herd immunity, the recommended 2-dose immunization coverage rate is ≥ 95%.[15] While Canada's overall coverage is high, it is not uniform across the country, so the risk of domestic transmission following an importation of measles remains a reality.[15]

Alberta
Since the elimination of endemic measles in Canada, Alberta has experienced a number of outbreaks.

From March to October 2000, a measles outbreak resulted in 123 cases, 103 of which were unimmunized. Cases ranged in age from 3 months to 29 years of age and the majority were between 2 and 14 years of age. The initial cases were imported from Mexico and Bolivia.[16] From October to November 2013, an outbreak occurred resulting in 44 cases. All of these cases were unimmunized and came from a largely unimmunized population. The age range of the cases was from 11 months to 24 years. The initial cases were imported from the Netherlands.

In 2014, Alberta experienced an outbreak in which a total of 29 cases were reported. Eight cases were associated with travel to, or immigration from the Philippines. Four of the 29 cases were completely immunized, while the majority (19 cases) were not immunized.

Annual case counts may be accessed through the Interactive Health Data Application (IHDA) at: www.ahw.gov.ab.ca/IHDA_Retrieval/.

Public Health Management

Diagnosis
Diagnosis of measles is made on the basis of clinical presentation, exposure history, and laboratory testing.

If an epidemiological link to an already laboratory confirmed case has been established, laboratory testing is not necessary to meet the confirmed case definition. However, it is extremely valuable to have genotyping information on clusters/outbreaks to support public health surveillance and so testing should be considered. Genotyping helps determine the probable origin of the case and can distinguish between vaccine strains and wild-type virus. Samples that are positive by RT-PCR are referred to the National Microbiology Laboratory (NML) for genotyping and surveillance.[3]

Key Investigation
- Confirm that the client meets the case definition.
- Facilitate collection of all appropriate specimens. Generally blood, urine, and NP swab collection is recommended for all potential measles cases. However, if the case or contact may be infectious, collection sites should be notified so that arrangements can be made to limit the risk of transmission. See Appendix A for details on timing of samples.
- Obtain a history of illness, including date of onset, signs and symptoms.
- Determine measles immunization history including:
  - Number of doses;

  - Date administered;
  - Type of vaccine (e.g., killed or live- refer to the AIP history of biologicals) if known;
  - Where the person was immunized (e.g., out-of-country) and type of immunization provider (e.g., public health, doctor's office, travel clinic).
- Determine the possible source of infection:
  - Identify recent travel history (during the incubation period).
  - Identify recent contact with a confirmed, probable or suspect case of measles.
  - Assess for similar symptoms in other members of the household.
- Determine the period of communicability for the case:
  - Generally, from one day before the start of the prodrome until four days after rash onset.
  - However, where prodrome onset is not well defined consider the case contagious from four days before until four days after rash onset.[1,2,7,14]
- Identify contacts who had exposure to the case during the period of communicability.
  - Contacts include any individual who:
    - is living in the household with the case, or
    - had face-to-face contact with the case, or
    - shared confined air space or was in the same confined air space as the case within a two-hour period after the case had left (e.g., doctor's offices, laboratories, classrooms). There is no minimum time that the case or contact must have been present in the room, or
    - attends the same school or facility as a case, including all students, staff and volunteers[14]
  - Open setting exposures (e.g. retail facilities such as pharmacies or grocery stores) require an assessment by the MOH to determine the level of follow-up required. The MOH's assessment may include, but is not limited to, estimations of the:
    - Number of susceptible contacts
    - Presence of high risk individuals (immunocompromised, pregnant, infants)
    - Exposure type (e.g., proximity to case, length of exposure)
    - Public health resources available

Case Management

- Provide information about disease transmission and appropriate infection control measures to minimize the possibility of transmission.
- The MOH shall exclude confirmed and probable cases, from all public places, including but not limited to schools, childcare facilities, post-secondary institutions, and employment, for four days after the appearance of the rash. Suspect cases may also be excluded from all public places, during the period of communicability, if the clinician has a high index of suspicion of measles disease.
- For hospitalized cases, in addition to routine practices, airborne precautions should be used from the onset of the catarrhal stage of the prodromal period through to the fourth day of the rash to reduce exposure to other patients who may be susceptible and at high-risk.[1]
- Immunocompromised measles cases should be isolated and remain on airborne precautions for the duration of their illness.[7]

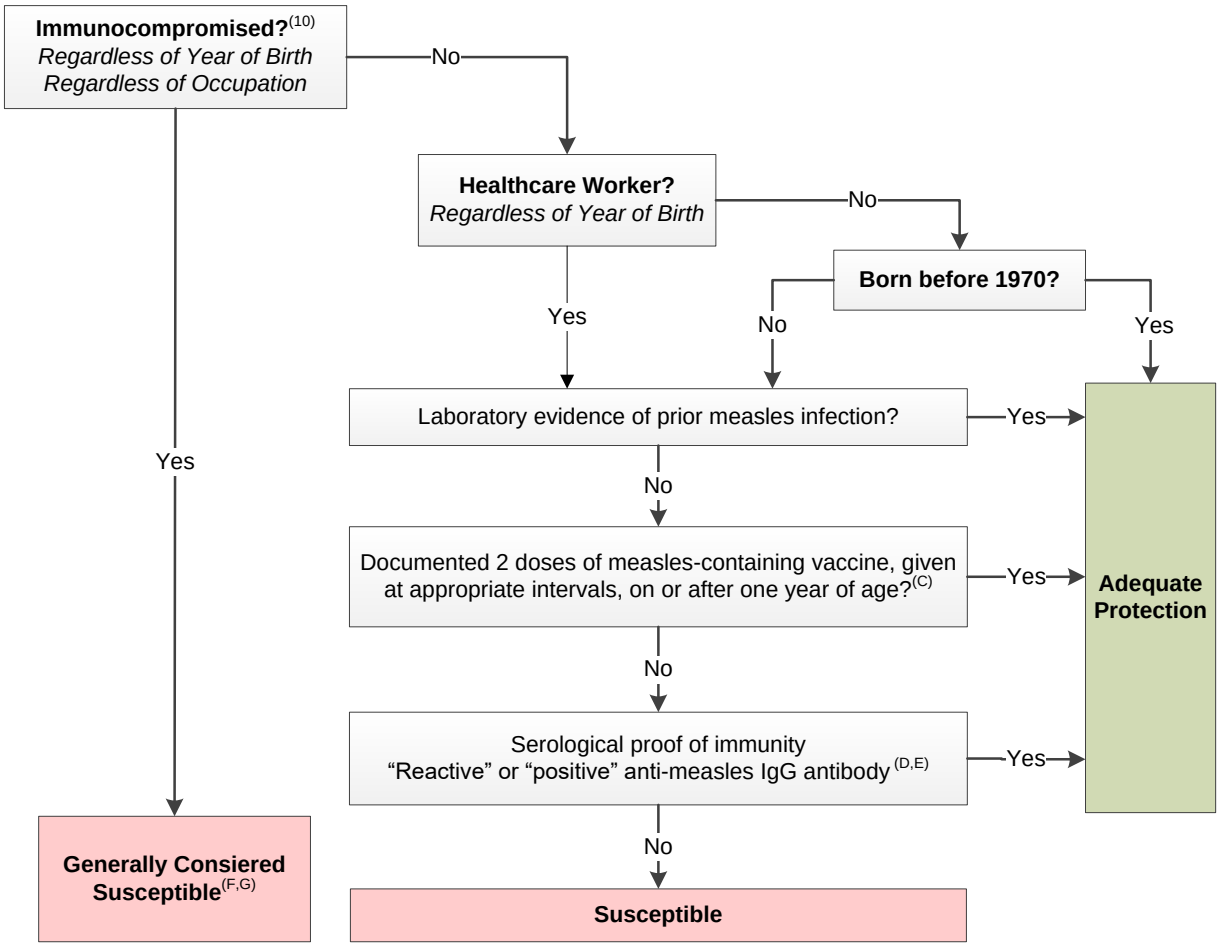
Treatment of a Case

- No specific treatment available. Supportive therapy as indicated.[6]

Contact Management

- Review signs and symptoms of measles disease including the prodrome symptoms and stress the importance of notifying public health immediately if measles symptoms appear.
- Review immunization and health status, including the presence of high risk conditions, of all contacts as soon as possible.
- Assess whether asymptomatic contacts have adequate protection from measles or whether they are susceptible, using the flowchart on the following page. Assessment varies for contacts who are health care workers (HCWs).
    - Health Care Workers are individuals who provide health care or health support services. Examples include but are not limited to nurses, physicians, dentists, nurse practitioners, paramedics, emergency first responders, allied health professionals, unregulated health care providers, clinical instructors, students, volunteers and housekeeping staff.[14]
    - Immunocompromised Individuals are those with certain immunocompromising conditions listed in the current Canadian Immunization Guide (CIG).
- Determine high-risk contacts. Susceptible contacts in any of the following groups are considered high-risk for measles complications:
    1. Immunocompromised individuals
    2. Pregnant women
    3. Infants[14]
- Whenever possible, it is recommended that all symptomatic contacts have laboratory testing done while taking appropriate measures to limit potential exposures. A positive IgG needs to be interpreted with IgM and RT-PCR to determine if the result indicates immunity or early disease.
    - An investigation should be considered for all symptomatic contacts, regardless of any post-exposure prophylaxis provided. If symptoms could be vaccine related, urine and NP swabs are required for genotyping to determine if they are caused by vaccine or by wild-type.

Assessing Measles Contact Susceptibility [A,B]



[A] Infants under 6 months of age are generally considered to have the same susceptibility/protection as their mother due to antibody transfer.
[B] When determining who is adequately protected, consideration should be given to individuals who have recently received Ig or intravenous immune globulin (IVIG). Duration of protection will depend on the dose, frequency of administration of IVIG and immunocompetence. Consultation with a specialist may be required.
[C] Children who are up-to-date for age (1 year of age up to and including 3 years of age, with one dose of vaccine) are considered susceptible and should be managed accordingly.
[D] There is no expiry on IgG positive results. However, all individuals born in or after 1970 who are IgG positive following one dose of vaccine, should receive a second dose of vaccine.
[E] Serological proof of immunity should generally be considered for individuals one year of age or older. However, serology may also be considered for infants 6-11 months of age with a history of immunization. Note: IgG serology is not a reliable measure of immunity for infants whose only protection comes from maternal antibodies, ie. unimmunized.
[F] Refer to Immunization of Specific Populations in the AIP for further information. Consultation with a specialist may be required.
[G] See Appendix D for management of immunocompromised health care workers.

Management of Contacts Assessed as Susceptible

Determine if post-exposure prophylaxis and/or exclusion are required for contacts who are assessed as susceptible.

Post-Exposure Prophylaxis (PEP)

Post-exposure prophylaxis given to susceptible contacts in the appropriate timeframe can modify or prevent disease.[10,14] Susceptible contacts of a measles case should receive either MMR vaccine or Immune Globulin (Ig) depending on the time-lapse from exposure, age, and health status.[11] See Appendix B for a quick reference on the recommendations for vaccine and Ig.

While the post-exposure prophylaxis options are the same for all Albertans, the steps required in the overall management of susceptible contacts (serology, PEP, exclusions) differ for health care workers (HCW) and non-health care workers.

- *See Appendix C for Non-Health Care Workers (p13).*
- *See Appendix D for Health Care Workers (p14).*

Vaccine

- Immunization should be the primary prophylactic intervention for all susceptible immunocompetent contacts 6 months of age and older, **unless** MMR vaccine is contraindicated.[10,14] This includes up-to-date for age children (aged 1-3 years) who have had one dose of measles containing vaccine.
- Do not delay administration of vaccine beyond 72 hours pending serology results. Vaccine given beyond 72 hours does not offer protection for the current exposure, but it does protect against subsequent exposures.

Ig

- Ig should **not** be used to control outbreaks, and is **not** generally indicated for contacts who have received one dose of vaccine at 12 months of age or older, unless they are immunocompromised.
- Consider Ig administration for the following susceptible contacts:
  - High-risk individuals for whom vaccine is contraindicated, particularly:
    - immunocompromised people,
    - pregnant women, and
    - infants 6 – 12 months of age who cannot receive MMR vaccine within 72 hours of exposure.[10,14,17]
  - Infants < 6 months of age, whose mother contracts measles or is known to be non-immune.
  - HIV Infected Persons: Measles antibody titre is known to decline more rapidly over time in HIV-infected children as compared to HIV-uninfected children.[10]
  - Others may be considered, on a case-by-case basis in consultation with the CMOH.
- Offering Ig beyond 6 days of first exposure is not recommended. It does not prevent disease and delays immunization to protect from further exposures.
- See the AIP for dosage information.Dosage (see AIP for details)

Exclusions

- The MOH shall exclude all susceptible contacts from the 5th day after the first exposure (day zero) to the 21st day after the last exposure, or until they demonstrate an acceptably low risk for infecting others, as outlined in either Appendix C or D (through serology and/or prophylaxis).
- Most exclusions apply to all public settings including but not limited to schools, childcare facilities, post-secondary institutions and employment. The one exception is any HCWs who receive Ig post-exposure and will be excluded from work only.
- Individuals who experience financial difficulty during their exclusion may be able to access funding through federal and/or provincial government programs.

Long-Term Protection

- All contacts initially identified as susceptible in an investigation should be evaluated for long-term measles protection according to recommendations in the AIP. This includes individuals who receive vaccine or Ig as PEP and who may then be considered protected for the current exposure.
- Although positive IgG serology in partially immunized individuals may be used as evidence of immunity post-exposure, it should not prevent administration of a second dose of measles containing vaccine to ensure long-term protection.

Outbreak Management

- Two or more confirmed cases of measles, linked either epidemiologically or virologically or both, constitutes an outbreak.(14)
- During a measles outbreak, the MOH may recommend either or both of the following, in consultation with the CMOH to ensure continuity of vaccine supply:
  1. Immunizing children 6-11 months of age inclusive, with MMR vaccine. Two additional doses of measles-containing vaccine must be administered after the child is 12 months old to ensure long lasting immunity.(10)
  2. Offering an early second dose of measles-containing vaccine, respecting the minimum interval between doses. Minimum intervals vary depending on the vaccine product. See the AIP for details.

Preventive Measures

- Public education about the risks of measles disease and the importance of immunization.
- Immunization of all eligible Albertans according to recommendations in the current AIP.
- Assessment of protection is particularly important for the following groups:
  1. All health care workers. (See Appendix E for details on pre-exposure assessment),
  2. Other adults who are at greatest risk of exposure, regardless of year of birth (e.g., students at post-secondary institutions, military recruits),
  3. Individuals travelling to countries with circulating measles disease, and
  4. All adults born in 1970 or later
- To ensure long-term immunity, all Albertans born in or after 1970 should receive a second dose of measles containing vaccine, even if post-immunization serology following the first dose showed protection.
- See the current AIP for additional measles vaccine recommendations.

Appendix A - Specimen Collection for Potential Cases

In order to limit potential transmission:

- Ensure collection sites are notified prior to sending individuals for testing so that appropriate measures can be taken to prevent exposure of patients/staff. **NOTE:** Many collection sites do not collect NP swabs.
- Consideration may be given to collecting only urine and NP samples in the acute phase of illness and completing serology when the patient is no longer infectious.

<table>
<tr><th>Test</th><th>Sample</th><th colspan="5">Recommended Specimen Collection Timing
(Days Since Rash Onset)</th></tr>
<tr><td rowspan="2">RT-PCR[A]</td><td>NP Swab</td><td colspan="2">OPTIMAL
(0-4 Days)</td><td>Viral Load
Declines
(5-7 Days)</td><td colspan="2"></td></tr>
<tr><td>Urine</td><td colspan="3">OPTIMAL
(0-7 Days)</td><td colspan="2"></td></tr>
<tr><td>IgM</td><td>Serology</td><td>False
Negatives
Likely[B]
(0-3 Days)</td><td colspan="3">OPTIMAL[C]
(4-28 Days)</td><td>False
Negatives
Likely
(29-42 Days)</td></tr>
<tr><td>IgG[D]</td><td>Serology</td><td colspan="2">ACUTE[E]
(0-7 Days)</td><td></td><td>CONVALESCENT[F]
(10-27 Days)</td><td></td></tr>
</table>

[A] Molecular testing (RT-PCR) has many advantages over serological testing:

- Allows earlier case confirmation because detection is possible prior to a serological response.
- Permits genotyping which can distinguish between vaccine and wild-type strains.
- Eliminates the need for convalescent serology if measles is confirmed.

[B] If a person meets the clinical illness definition for measles and the IgM serologic results from an early acute phase are inconclusive or negative for measles, and if no other pathogen is identified, a second blood sample is indicated.

[C] Testing for IgM antibody also has the potential for false positive findings. If the clinical presentation is inconsistent with measles or in the absence of recent travel/exposure history, positive IgM antibody results must be confirmed by either paired IgG serology or virus detection.

[D] IgG antibody serology using paired acute and convalescent specimens is a reliable test for measles, provided that specimens are collected at the appropriate times and tested simultaneously.

[E] Acute samples should be obtained as soon as possible after the onset of the rash, and no later than seven days afterwards.[14]

[F] Convalescent samples should be collected 10-20 days after the acute sample.

Also, see ProvLab Laboratory Bulletin, Laboratory Testing for Measles.

Culturing of measles virus is not performed in Alberta, but NP swab and/or urine specimens can be referred to the NML when collected and processed in a timely manner.

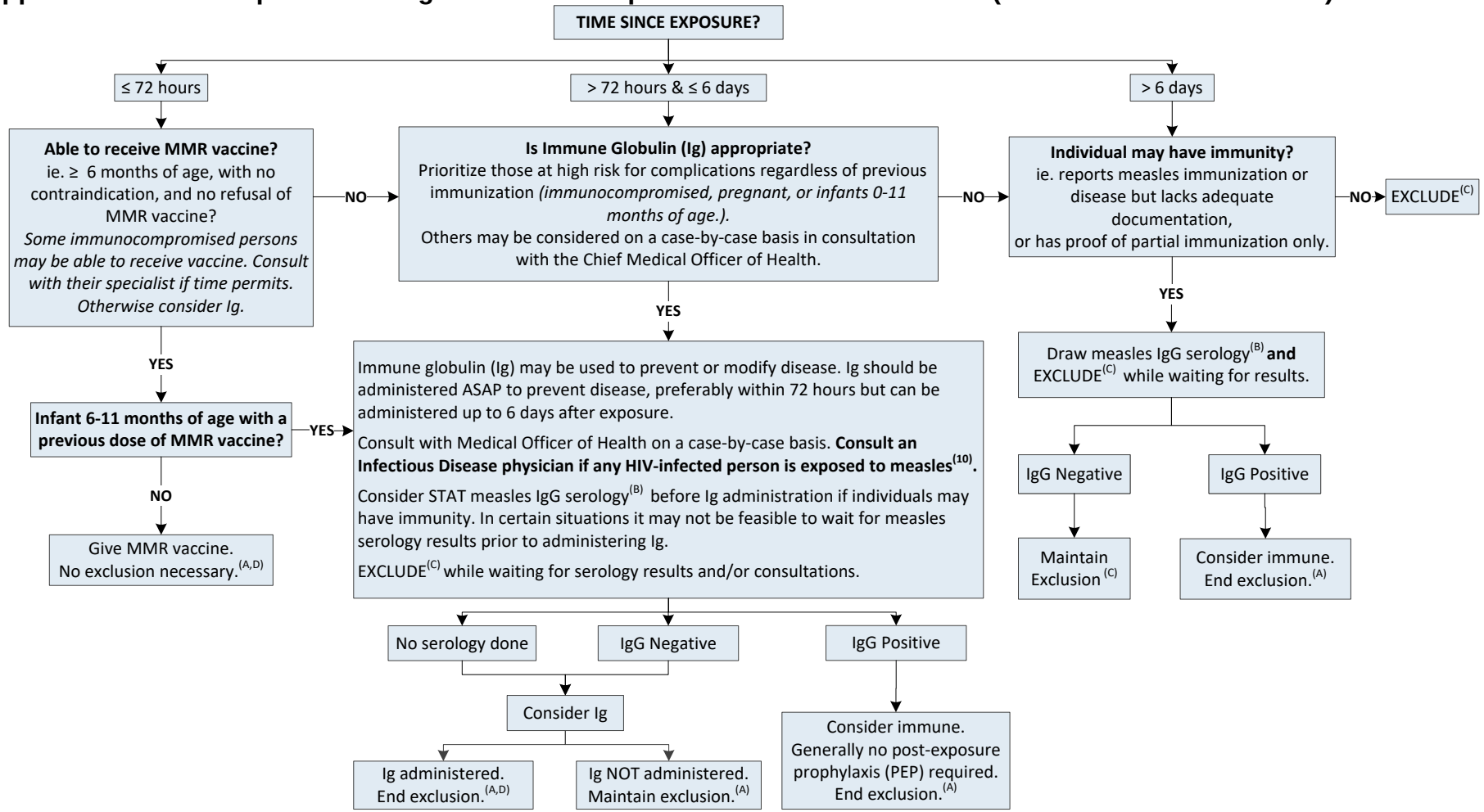
Appendix B – Immunoprophylaxis of Susceptible Contacts Exposed to Measles Disease

Time Since First Exposure	< 6 months of age[A]	≥ 6 months to < 12 months of age	≥ 12 months of age for whom MMR vaccine is safely indicated		High risk contacts ≥ 6 months of age with a contraindication to MMR vaccine (e.g., pregnant, some immunocompromised individuals[G]
			Unimmunized	History of one dose of measles vaccine ≥4 weeks ago	
≤ 72 hours	Assess on a case-by-case basis[A]	MMR vaccine[B]	MMR vaccine	MMR vaccine[E]	Ig
4 – 6 days	Assess on a case-by-case basis[A]	Ig[C]	Ig may be considered on a case-by-case basis[C,D]	MMR vaccine[F]	Ig[C]
≥7 days	N/A	N/A	MMR vaccine [F]		N/A

[A] Infants <6 months of age are generally considered immune from antibody transfer from the mother. If the mother contracts measles or is known to be non-immune, the child should receive Ig.
[B] Infants who receive a dose of MMR vaccine at less than 12 months of age should receive two additional doses according to the routine schedule.
[C] Ig should be given within 72 hours of exposure but has been shown to be effective in preventing or modifying disease if administered within 6 days of exposure.
[D] Ig is usually reserved for susceptible high-risk contacts but may be considered in other situations**.**
[E] A dose of MMR vaccine would be indicated even if the child is considered "up-to-date" for age (e.g., a 3 year old that has had one dose of vaccine at 12 months of age).
[F] If infection has already occurred it will not prevent or modify disease. The vaccine will offer protection for subsequent measles exposures. Health care providers may consider offering vaccine at the end of the incubation period.
[G] An Infectious Disease Physician should be consulted if any HIV-infected person is exposed to measles.

See the Alberta Immunization Policy for detailed information on products used for post-exposure prophylaxis.

Appendix C – Post-Exposure Management of Susceptible Members of the Public (NON-Health Care Workers)



(A) Counselling regarding signs and symptoms of measles disease and self-reporting is recommended for all contacts, regardless of serology results and administration of post-exposure prophylaxis.

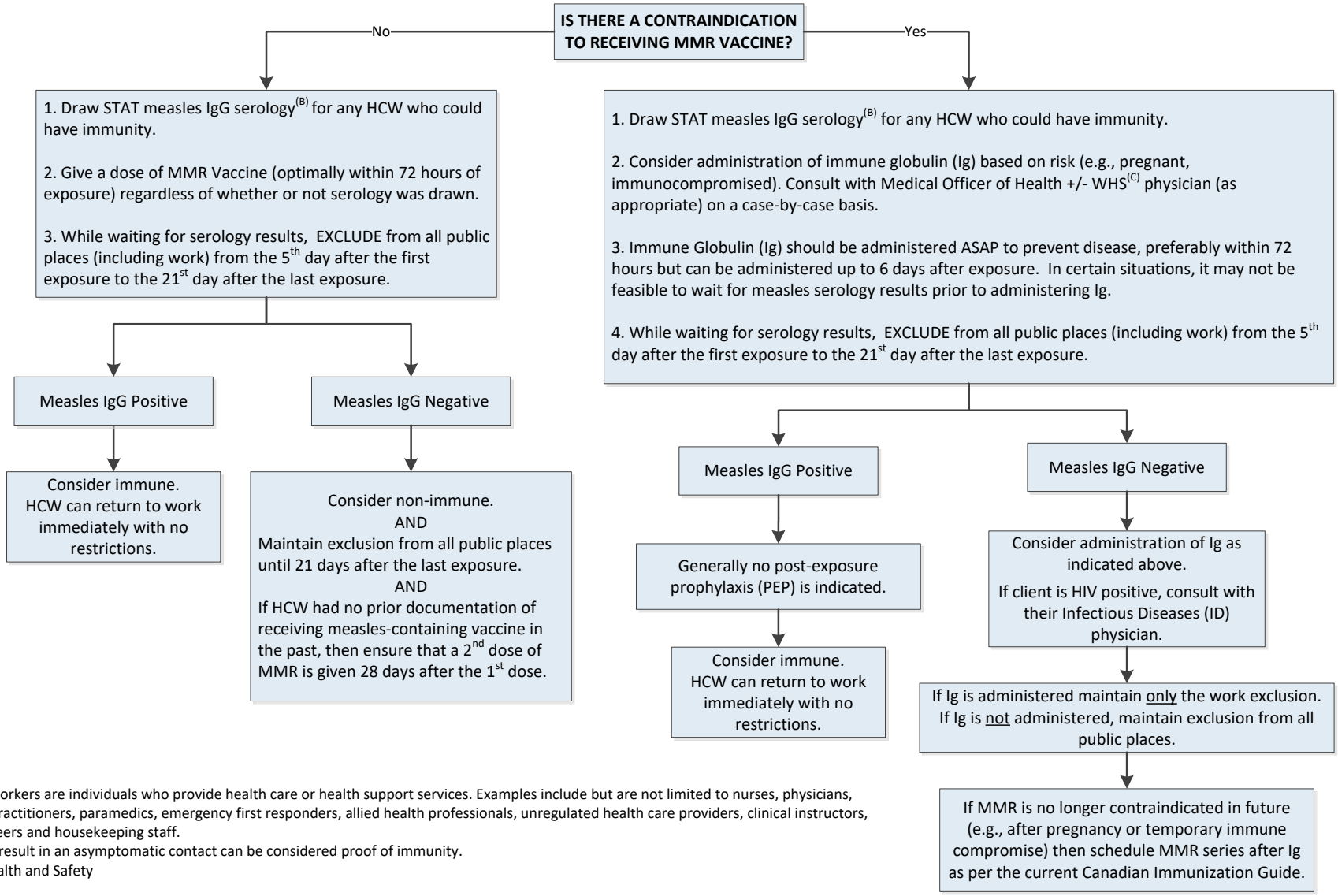
(B) Positive IgG serology in the following asymptomatic susceptible contacts can be considered proof of immunity:
- ≥ 1 year of age reporting a history of at least one measles immunization, or measles disease.
- 6-11 months of age and received a dose of measles containing vaccine ≥ 14 days before exposure.

Note: Do not draw measles IgG serology for infants under 6 months of age, or for infants 6-12 months of age whose only protection is from maternal antibodies (ie. unimmunized), because a positive result may not be reliable.

(C) Exclude from all public places from the 5th day after the first exposure to the 21st day after the last exposure.

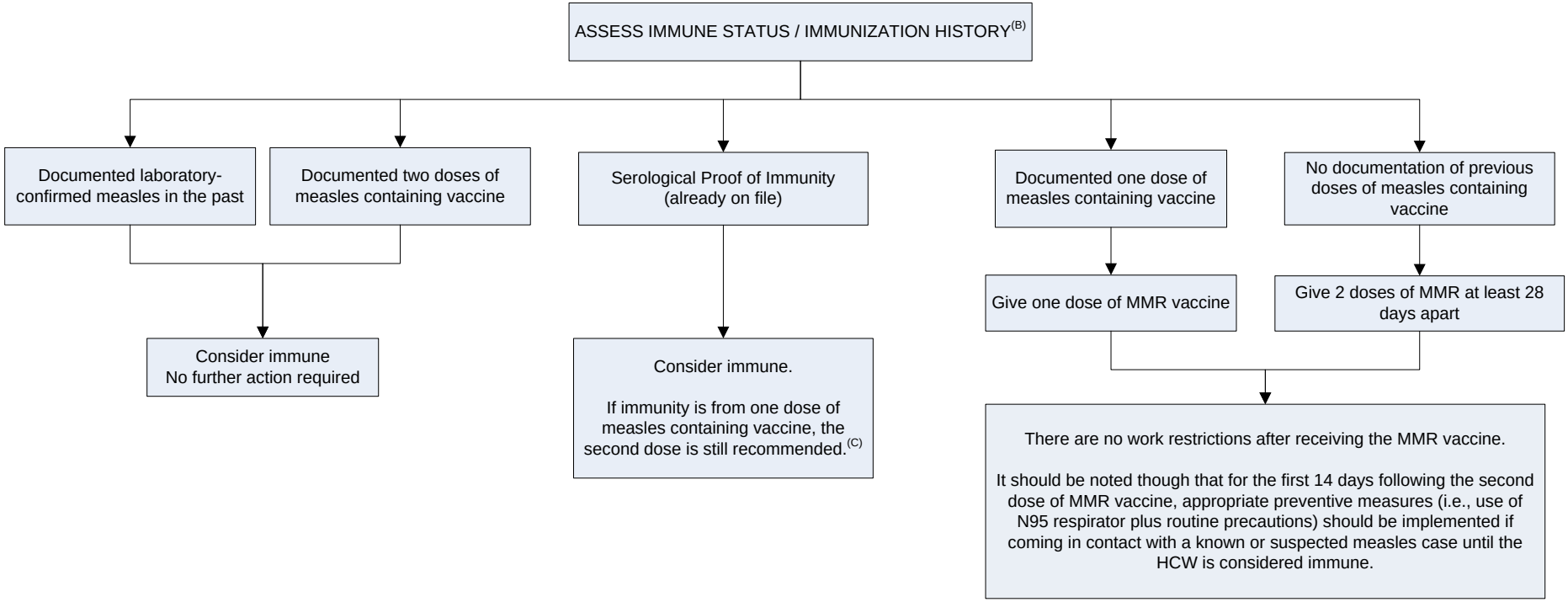
(D) Post-exposure prophylaxis is not 100% effective. Advise clients to avoid unnecessary contact with individuals at high risk for complications until 21 days after their last exposure.

Appendix D – Post-Exposure Management of Susceptible Health Care Workers (HCW) [A]



[A] Health Care Workers are individuals who provide health care or health support services. Examples include but are not limited to nurses, physicians, dentists, nurse practitioners, paramedics, emergency first responders, allied health professionals, unregulated health care providers, clinical instructors, students, volunteers and housekeeping staff.
[B] A positive IgG result in an asymptomatic contact can be considered proof of immunity.
[C] Workplace Health and Safety

Appendix E – Assessing Health Care Worker (HCW)[A] Susceptibility to Measles Pre-Exposure



[A] Health Care Workers are individuals who provide health care or health support services. Examples include but are not limited to nurses, physicians, dentists, nurse practitioners, paramedics, emergency first responders, allied health professionals, unregulated health care providers, clinical instructors, students, volunteers and housekeeping staff.
[B] Immunocompromised individuals are generally considered susceptible. However, for immunocompromised health care workers, a physician may need to be consulted to adequately determine susceptibility.
[C] A second dose of vaccine is still recommended to ensure protection against mumps.

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