Notification Timeline:

From Lab/Practitioner to Public Health: Immediate
From Public Health to Ministry of Health: Immediate

Public Health Follow-up Timeline: Immediate

Public Health Purpose for Notification of Measles

- To prevent transmission of measles from imported cases and further local transmission;
- To prevent mortality and serious morbidity from measles through contact tracing;
- To track epidemiology trends of measles in Saskatchewan including risk factors and distribution;
- To monitor the effectiveness of prevention and control measures;
- To make timely and evidence informed actions on outbreaks; and
- To inform the public and medical community about measles.

Surveillance Case Definition[1] (Public Health Agency of Canada, 2013)

Confirmed Case (Public Health Agency of Canada, 2013)	Laboratory confirmation of infection in the absence of recent immunization [a] with measles-containing vaccine: • isolation of measles virus from an appropriate clinical specimen [b] **OR** • detection of measles virus ribonucleic acid (RNA) (e.g. PCR) [c] **OR** • seroconversion or a significant (e.g., fourfold or greater) rise in measles immunoglobulin G (IgG) titre by any standard serologic assay between acute and convalescent sera **OR** • positive serologic test for measles immunoglobulin M (IgM) antibody using a recommended assay[d] 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** Clinical illness in a person with an epidemiologic link to a laboratory-confirmed case.

[1] Surveillance case definitions ensure uniform reporting to allow comparability of surveillance data. The definition is not intended to be used for clinical or laboratory diagnosis or management of cases.

Probable Case (Public Health Agency of Canada, 2013)	Clinical illness in the absence of appropriate laboratory tests and in the absence of known contact with a laboratory-confirmed case, in a person who: • Has travelled during the 21 days prior to onset of rash to an area where measles is endemic or an outbreak of measles is occurring **OR** Belongs to a defined risk group during an outbreak.
Clinical Case (Public Health Agency of Canada, 2013)	Clinical illness is characterized by all of the following features: • fever of 38.3° C or greater; • cough, coryza or conjunctivitis; • generalized maculopapular rash for at least 3 days.
[a] The most frequent reaction to measles-mumps-rubella (MMR) immunization is malaise and fever (with or without rash) occurring 6-23 days after immunization. However, this should be determined for each case, as these reactions and the timeframe can vary (Public Health Agency of Canada, 2015). [b] See Specimen Collection and Transport [c] Confirmation of genotype is required in recently vaccinated individuals (within the past 6-45 days) to determine if illness is related to wild virus or vaccine-related. [d] IgM serology has the potential for false-positive findings. If the clinical presentation is inconsistent with a diagnosis of measles or in the absence of recent travel/exposure history, IgM results must be confirmed by the other listed confirmatory methods. Most acute measles cases develop IgM after 3 days post rash onset. Therefore, a suspected measles case in which serum collected ≤ 3 days after rash onset initially tests IgM negative should have a second serum specimen collected > 3 days after onset for retesting for IgM. Further strain characterization is indicated for epidemiologic, public health and control purposes.	

Refer to Specimen Collection and Transport for further details about interpretation of lab results in the context of past immunization for measles.

Epidemiology and Occurrence

Measles became reportable in Canada in 1924 (Public Health Agency of Canada [PHAC], 2024). Prior to the development of a vaccine (1924 to 1958), an average of 45,000 cases were reported annually. Through the use of vaccines, Canada eliminated measles in 1998 (PHAC, 2013), however sporadic cases and outbreaks continue as a result of importations (PHAC, 2018). To achieve herd immunity, the recommended 2-dose immunization coverage rate is ≥ 95% (PHAC, 2014). While Canada's overall coverage is high, pockets of susceptible individuals and communities remain so the risk of domestic transmission following an importation of measles remains a reality.

Saskatchewan
UNDER CONTRUCTION

Table 1. Evolution of the Measles Immunization Program in Saskatchewan

1966	Measles vaccine introduced for ages 1-3 (Lirugen - live, further attenuated)
1970	Measles vaccine extended to ages 1-7 (ATTENUVAX - live, further attenuated)
1970	Rubella vaccine for grade 7 girls. (MERUVAX and MERUVAX-II); Cendevax (rubella vaccine) used ~1970-72
1970-1975	Rubella vaccine for grade 1 students (MERUVAX)
1971	Rubella vaccine available to physicians for susceptible women at premarital exams
1979	MMR vaccine for age 1 year
1981 - 1982	Review of measles immunization for children ages 1-14, followed by program to raise coverage to > 98%
Fall 1991 to 1992	Mass MMR immunization for teen-aged boys in high schools and post-secondary institutions
Fall 1996	• Second dose Measles & Rubella (MR) added to 18 months. • Catch-up program included school entry, Grade 6 (until 2004) and Grade 8 (until 1998).
Spring 1997	MR immunization of Grades 9-12
2001	MMR used exclusively for all 1st and 2nd doses; MR discontinued by Berna
2003 - 2004	2 dose mumps catch-up in Grade 6
2007 - 2013	2-dose mumps catch-up for eligible Grade 12 students
2008 - 2013	2-dose mumps catch-up for eligible Grade 8 students
2011 - 2013	2nd dose provided to eligible Grade 6 students
May 2013	Adult born since Jan. 1, 1970 eligible for 2 MMR doses

Saskatchewan Immunization Manual Chapter 1 Introduction

Adults born before 1970 in Canada (PHAC, 2023) or before 1957 in the United States (Centers for Disease Prevention and Control, 2021) are generally presumed to have acquired natural immunity to measles. The Roy Romanow Provincial Laboratory (RRPL) conducted a review of measles immunity in February 2014 to inform risk populations. Based on this review, approximately 93% of samples tested from individuals born prior to 1965 indicated immunity for measles, while approximately 83% of samples from persons born between 1965 and 1980 indicated immunity to measles. Factors to consider include age, history of exposure to measles, and availability of medical records. A follow up review was conducted by RRPL in February 2024 for individuals born before 1957 which showed approximately 98% of the samples tested indicated immunity for measles.

Additional Background Information

Causative Agent

Measles virus, an RNA virus, a member of the family paramyxovirus, genus *Morbillivirus*.

Symptoms

Measles is an acute, highly communicable disease with a prodrome that lasts two to four days (range one to seven days). The prodrome is characterized by fever followed by conjunctivitis, coryza, or cough.

- Koplik spots on the buccal mucosa are considered pathognomic for measles. They occur one to two days before the rash.
- A characteristic red maculo-papular rash appears on the third to seventh day beginning behind the ears and on the face. The rash gradually spreads downwards to the trunk and then the extremities. The skin lesions are usually discrete but may become confluent.
- Fever often rises as the rash appears. The rash may last four to seven days and often fades in the same sequence as it appears.
- Symptoms are more severe in infants and they are more likely to experience complications.
- Immunocompromised individuals experience more severe disease and may have a prolonged course. These individuals may not develop the characteristic rash.
- Other symptoms of measles include anorexia, diarrhea (especially in infants), and generalized lymphadenopathy.
- Individuals who have been previously exposed to measles antigen (e.g., previously vaccinated), may have a modified clinical presentation (Centers for Disease Control and Prevention, 2018).

Complications (Heymann, 2015)

- Diarrhea (8%), otitis media (7%), pneumonia (6%), seizures (0.7%), encephalitis (0.1%), and laryngotracheobronchitis (croup).
- Very rarely, sub-acute sclerosing panencephalitis (SSPE) develops 7-10 years after infection as a late sequelae (Centers for Disease Control and Prevention, 2018).
- The case-fatality rate can be as high as 10-30% in developing countries (typically 3-5%); it is approximately 0.1-0.2% in Canada.

Reservoir

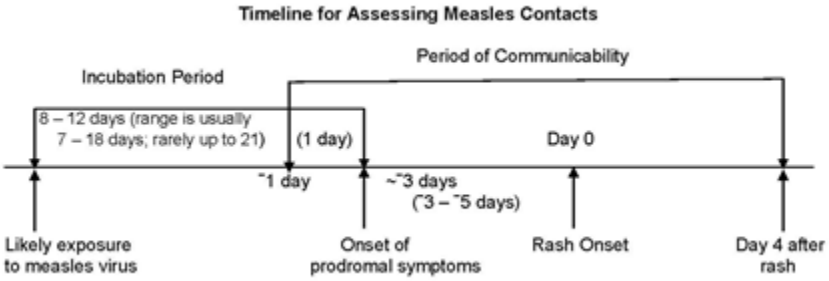
- Humans.

Incubation Period

- About 10 days (range 7 to 18 days) from exposure to onset of fever.
- Usually 14 days until rash appears (range 9 to 21 days).

Period of Communicability

- Measles is highly communicable, with greater than 90% secondary attack rates among susceptible persons.
- Cases are infectious from one day before onset of prodrome, usually about four days before onset of the rash, and continue until four days after rash onset (Heyman, 2015).
- Maximum communicability occurs from onset of prodrome through the first three to four days of rash.



(Adapted from BCCDC, 2014)

Mode of Transmission

- Large respiratory droplets.
- Airborne transmission via droplet nuclei has been documented.
- Direct person-to-person contact with the nasal or throat secretions of the infected person.
- Indirect contact with articles freshly soiled with the respiratory secretions.

Risk Factors

Risk factors are associated with individual susceptibility and settings that create opportunities for acquisition or transmission to others.

- Non-immune individuals.
- Immunocompromised individuals.
- Infants.
- Children in childcare settings.
- Childcare workers.
- Health care workers (HCWs).
- Students at post-secondary institutions.

- Travellers.
- Military personnel.
- Infection during pregnancy is associated with an increased frequency of spontaneous abortion, premature labor and preterm birth and low birth weight.

Specimen Collection and Transport

Specimen collection needs to be done in coordination and consultation with public health and infection control to ensure it is completed in a that will reduce further transmission (e.g. in home collection by immune employee or arrangements with the lab for end of day collection).

When sending specimens for measles testing, laboratory requisitions should be clearly marked "suspect case of measles" to facilitate rapid testing. When an outbreak number has been assigned, the outbreak number should be included on the requisition and the transport tote should be marked that outbreak specimens are included.

Molecular isolation/detection[2] of the virus is preferred to confirm the diagnosis of suspected measles cases because of the complications in interpreting positive IgM serology in the absence of an epidemiological link to a confirmed case and the contradictory serological results in previously immunized individuals (Public Health Agency of Canada, 2013). There is no single laboratory test capable of confirming with confidence 100% of true measles cases. Therefore, to confirm the diagnosis the following specimens should be submitted to Roy Romanow Provincial Laboratory (RRPL):

- Urine, throat and nasopharyngeal secretions for isolation of measles virus (i.e. PCR):
  - Collect nasopharyngeal swab or aspirate, or a throat swab[3] as soon as possible after the onset of the rash (within four to seven[4] days). Place in viral transport medium.
  - Collect approximately 50 ml of urine within seven days after the onset of rash.
- Serum sample for measles IgM and IgG (acute and convalescent):
  - IgM response begins with onset of rash and will persist for one to two months.
  - IgG response begins about one week after the onset of rash and will persist for a lifetime.

[2] Isolation permits measles virus genotyping which provides confirmation of epidemiologic data showing measles virus transmission routes and the differentiation of wild-type from vaccine strain measles virus in cases where vaccine may be implicated in serious illness.
[3] Nasopharyngeal and throat swabs must be collected in physicians' office.
[4] Measles virus may be still detected after seven days from the onset of rash, but with rapidly decreasing sensitivity.

- Convalescent sera should be drawn 10 to 30 days after the initial serology to assess the rise in IgG titre (seroconversion).

Negative results do not definitively rule out measles because both methods are affected by timing of specimen collection and quality of handling.

Treatment/Supportive Therapy

- There is no specific treatment available for measles.
- Supportive therapy as indicated.
- Vitamin A supplementation of children with measles has been associated with decreased morbidity and mortality rates. The World Health Organization (WHO) currently recommends vitamin A for all children with acute measles, regardless of their country of residence. Vitamin A for measles is administered once daily for two days at the following doses:
  - 200 000 IU for children 12 months of age or older;
  - 100 000 IU for children six through 11 months of age;
  - 50 000 IU for infants younger than six months of age (American Academy of Pediatrics, 2018).

Public Health Investigation

I. Single Case/Household Cluster

All reports of probable and laboratory-confirmed measles cases should be investigated immediately. Refer to Attachment – Measles Data Collection Worksheet to assist. See also Attachment-Case Investigation and PEP Documentation.

History

- Determine measles immunization history including number of doses, date(s) administered,[5] and type of vaccine.
- Determine if there is an opportunity for acquisition through:
  - In the 7-21 days before the onset of rash, there was a history of travel or contact with a person who had recent travel.

[5] Fever and rash may occur in the 6-23 days following administration of a measles-containing vaccine. The inability to rely on positive IgM serology when vaccine was administered in the 6-45 days prior to onset of rash can create challenges in confirming a diagnosis of measles. In this case, specimens for viral isolation should also be obtained (see Specimen Collection and Transport section above); if wild type measles virus is isolated, the case can be confirmed. When strain typing to confirm wild type virus is not available in these situations, the case should only be confirmed if:

i. they meet the clinical case definition, **and**
ii. they are epidemiologically linked to a laboratory-confirmed case (Centers for Disease Control and Prevention, 2013).

  - contact with a confirmed or probable case of measles.
- Health conditions that may render the individual more susceptible to infection or alter the period of communicability (e.g. immunocompromised).
- Identify opportunities for transmission events and contacts exposed during the infectious period, which includes four days prior to and four days after the rash appears:
  - household;
  - childcare/school;
  - workplaces;
  - health care facilities[6] (including physicians' offices and waiting rooms).
- Identify locations, dates, times and details of any event the case has attended during the infectious period. This includes gatherings of all sizes in both public and private forums such as:
  - social or religious functions;
  - sports activities;
  - shopping excursions;
  - concerts;
  - conferences and meetings.
- Identify routes, dates, times and details of public transportation (flights, buses, taxis, etc.).
  - Obtain details about the public transportation involved (e.g., company of carrier, seating information, depots/terminals/gates involved, etc.).

Public Health Interventions

Assessment

Assess for contacts paying particular attention to vulnerable contacts as per Table 3. See Attachment-Case Investigation and PEP Documentation.

Communication

- Letters can be sent to other group settings where individual contact tracing is not required (i.e. in the same workplace, but do not share the same work schedule or location of work) to inform them of the exposure, symptom monitoring and when to seek medical attention (see Sample letter).

[6] In acute care settings, Infection Control and Occupational/ Employee Health should also be involved.

Education

- All cases should be provided disease information as well as information on prevention and control measures including period of communicability, to self-isolate at home (no visitors).

Exclusion and Isolation

Exclusion and isolation of cases should be implemented as outlined in Table 2.

Table 2. Exclusion Requirement for Confirmed, Probable, Clinical Cases and Persons Under Investigation for Measles

Context	Exclusion Requirement	Timeframe
Community Settings.	Self-isolation at home. Exclude from childcare, schools, and workplaces. Avoid exposing non-household contacts (i.e. no outside visitors)	Immediately and up to and including four days after onset of rash.
Hospitalized Settings[7] 1. Immunocompetent patients.	Airborne precautions.	Immediately and up to and including four days after onset of rash (Public Health Agency of Canada, 2013).
2. Immunocompromised patients.	Airborne precautions.	**Immediately and up to and including four days after onset of rash, or for the duration of illness because viral excretion is expected to be prolonged[8]** (Public Health Agency of Canada, 2013). Consult with Medical Microbiologist in charge of Infection Control and/or ID Specialist for an individual assessment

Immunization

- Review the documented immunization history. Consider potential issues with vaccines administered for cases who are fully immunized. Immunization of case is not indicated but may be provided to offer protection against other vaccine antigens (e.g. mumps or rubella) if eligible.

Referrals

Not applicable.

[7] Refer to Health Care Facility Control Measures for further details and additional measures to be taken with cases.

[8] An immunocompromised person may shed virus for several weeks after the acute illness (CDC, 2015)

II. Contacts/Contact Investigation

Identification of contacts and contact investigation should proceed immediately and should be re-evaluated once laboratory results are available. Contact Investigation Worksheet should be used to support investigation. See also Attachment-Case Investigation and PEP Documentation.

Contacts should be prioritized based on individual and public health risk including:

- high risk contacts;
- employees in health care settings (direct and indirect patient care staff);
- other susceptible contacts;
- public exposures.

Table 3. Contact Definitions (Adapted from Public Health Agency of Canada, 2013)

A. Contact A contact is defined as any individual who has: • spent any length of time in a room or enclosed space with a measles case during that case's infectious period (i.e., from one day before onset of prodrome, usually about four days before onset of the rash, and continue until four days after rash onset); or • spent time in the same room as in infectious case of measles or in a room that the case vacated in the previous two hours.[9] **Individualized (person-by-person) contact investigation should include**: 1. household contacts; 2. in a childcare/educational facility – all employees, volunteers, students, bus drivers, members of a sports team or club; 3. in a workplace – individuals who share the same schedule or office location as the case; 4. in a health care facility – individuals who shared the same room, waiting room or exam room and did not use appropriate protection (i.e., N95 respirator). NOTE: This is not limited to patients in these settings but includes anyone attending appointments with the patient.
B. High Risk Contacts • Infants <1 year of age. • Pregnant women. • Immunocompromised individuals.

[9] This would include doctors' offices, emergency departments, waiting rooms, classrooms, laboratories, locker rooms, etc. **There is no minimum duration of time for which the case must be present in the room.**

C. Susceptible Contacts

Employees in health care and childcare settings are considered susceptible if they **do not** have:

- laboratory evidence of immunity, **OR**
- documented evidence of two doses of measles-containing vaccine (given at the appropriate interval as outlined in the Saskatchewan Immunization Manual Chapter 7 for vaccine type [MMR or MMRV]).

Non-health care/childcare workers[10], may be susceptible if they **do not** have:

- laboratory evidence of immunity, **OR**
- documented evidence of two doses of measles-containing vaccine (given at the appropriate interval as outlined in the Saskatchewan Immunization Manual for vaccine type [MMR or MMRV]), **OR**
- history of measles disease[11].

See Attachment – Immunoprophylaxis and Exclusion Considerations for Contacts for further assessment and management

Public Health Interventions

Assessment

Individualized (person-by-person) contact investigations (Table 3) include assessment of immunization records.

Assessment varies by setting:

Individuals in Health Care Settings Who Are Contacts

- Coordination between Public Health, Occupational/Employee Health services as well as Infection Prevention and Control for the facility involved is required so there can be a systematic approach to:
  - Review immunization records and immune status for all employees (both direct and indirect patient care staff), support exclusion requirements as necessary and monitor for suspicious cases within their facility. See Figure 4, Attachment – Immunoprophylaxis and Exclusion Considerations for Contacts.
  - Review immunization records and immune status for all other individuals exposed (both patients and visitors), implementation of exclusion requirements as necessary and active surveillance for secondary cases. See Attachment – Immunoprophylaxis and Exclusion Considerations for Contacts.

[10] Generally, individuals born in Canada before 1970 are considered immune. During outbreak situations and in consultation with the Medical Health Officer, this date may be expanded to 1965 based on the review of the RRPL data in February 2014 which indicated that approximately 93% of samples tested from individuals born prior to 1965 indicated immunity for measles, while approximately 83% of samples from persons born between 1965 and1980 indicated immunity to measles. Factors to consider include age, history of exposure to measles, and availability of medical records. RRPL's review in February 2024 found 98% of samples from individuals born before 1957 showed immunity for measles.

[11] Clinical judgement is required to determine if documentation is necessary.

Individuals in Child Care Centers Who Are Contacts

- Documented vaccination histories should be reviewed for all employees, attendees and volunteers in childcare settings and appropriate action taken as per Attachment – Immunoprophylaxis and Exclusion Considerations for Contacts.
- Parents may also be considered as potential contacts based on their child's risk of becoming infected.

Individuals Exposed in Public Venues

Gatherings apply to events of any size in both public and private fora. They can include (but are not limited to) social or religious functions, sports activities, shopping excursions, concerts, conferences and meetings as well as public transit.

Communication

- Person-by-person individualized investigation of contacts identified in Table 3 should include direct notification where possible.
- Identifiable contacts should, at a minimum, be provided with a letter that includes all details as outlined in education.
- When exposures involve public settings where individuals cannot be identified, news, social media as well as public websites should be used to communicate the exposure setting to the public.
  - Details to be provided in the messaging include dates and times (including two hours after the infected individual vacated the venue). Attachment – Information for People who May Have Been Exposed to Measles in a Public Facility should be used in the messaging or, at a minimum, be made available so exposed individuals have relevant information about measles and what to do if they develop symptoms.

Education

Close contacts of confirmed cases should be educated about measles and the signs and symptoms of measles. They should also be advised:

- that measles is communicable to others 4 days before the onset of the rash and until 4 days after the rash appears. They should be advised to use self-isolation (work, school, travel and other activities) as per exclusion;
- to limit new or further exposure to other individuals; and
- to call ahead to their health care provider's office if signs and symptoms appear so arrangements can be made to see the patient in a way that reduces the chance of exposing other individuals to measles.

For infection prevention and control measures in these settings, refer to:

- Attachment – Template Letter to Measles Contacts

- Attachment – Infection Prevention and Control Measures in Physicians' Offices
- IPAC Algorithm: Management of Suspect/Confirmed Measles

Exclusion

- Exclusion of susceptible contacts that meet the criteria in Table 3 (C) is outlined in Figures 1–6, Attachment – Immunoprophylaxis and Exclusion Considerations for Contacts.
- Exclusion may be applied in all circumstances where the contact may be exposing other individuals (this includes work or school settings, organized groups and activities and public places including public transit).
- Consideration should be given to the number of susceptible individuals in that setting; the presence of high-risk individuals (e.g. susceptible infants, or immunocompromised individuals); and the reliability of the contact to adhere to public health direction regarding early recognition and self-isolation.
- When exclusion is recommended, it should apply:
  - From five days after first exposure and up to 21 days after last exposure; or
  - Until serological confirmation of immunity is provided.
- If the contact develops symptoms compatible with measles, exclusion criteria for cases should be applied.
- When Ig has been provided, extend the exclusion period to 28 days after the last exposure.

Immunoprophylaxis

- Studies show the use of measles post-exposure prophylaxis (PEP) (vaccine or intramuscular or intravenous administered immune globulin (Ig)) for the prevention of measles infection yields estimated effectiveness between 75 to 100% (PHAC, 2025). However, the results must be interpreted with caution due to most studies not including information needed, such as details of measles exposure, time from exposure to prophylaxis administration and Ig dose and product.
- There are limited data on the effectiveness of measles PEP against complications due to measles infection (PHAC, 2025).
- The use of either of these products may provide some protection or alter the clinical course of disease when provided within the timeframes outlined in Table 1, Attachment – Immunoprophylaxis and Exclusion Considerations for Contacts.
- Post-exposure measles vaccination in those 6 months and older is preferable to the use of Ig (whenever feasible) to prevent secondary cases. In addition, contact follow-up provides an opportunity to improve vaccination coverage in general.
- Figures 1-6 in Attachment – Immunoprophylaxis and Exclusion Considerations for Contacts outline the appropriate immunoprophylaxis recommendations based on the age and setting of contacts based on their documented immunization history.

- See Attachment-Case Investigation and PEP Documentation.

  For more information, refer to the National Advisory Committee on Immunization (NACI) statement *Updated recommendations on measles post-exposure prophylaxis*.

Testing

- Routine screening for immune status of susceptible contacts is not recommended. Figures 4–5, Attachment – Immunoprophylaxis and Exclusion Considerations for Contacts outline the testing for contacts who are employees in health care settings or patients in hospital settings.
- Under certain circumstances it would be beneficial to evaluate immunity of individuals involved through immunization history or immunity serology. Figures 3-5 should be referenced if the MHO determines testing is recommended for other contacts.
- No laboratory testing for measles required if asymptomatic.
- Confirmatory testing is recommended for contacts that develop symptoms.

III. Environment

Child Care Centre/Schools Control Measures

Strict enforcement of infection control measures – refer to Saskatchewan Ministry of Health Infection Control Manual for Child Care Facilities.[12]
Recommendations for the facility and attendees/employees must be individualized based on the characteristics and operations of the childcare/school and the susceptibility of the population in attendance.

- The school or childcare centre must report immediately to public health any person suspected of having or diagnosed with measles.
- Contact tracing must be completed. Information about staff and attendees, must be obtained as soon as possible so immunization records can be reviewed to determine their susceptibility and their need for post-exposure immunoprophylaxis (see Attachment – Immunoprophylaxis and Exclusion Considerations for Contacts). Provide Attachment – Template Letter to Schools or Group Exposed to a Measles Case.
- Inform parents of the need for unimmunized/under immunized children to be immunized immediately.
- Contacts should be excluded as outlined in Figures 1-3 Attachment – Immunoprophylaxis and Exclusion Considerations for Contacts.
- Individuals who attend the childcare centre or home but were not present during the exposure period (i.e. are not considered contacts) should not return to childcare until

[12] https://publications.saskatchewan.ca/#/products/88618

their immunizations have been brought up to date for age. However, the risks and benefits of returning to childcare need to be considered and exclusion may be indicated until transmission within the facility can be ruled out.

- Active surveillance of absent contacts should be conducted on a daily basis to determine if reason for absenteeism is related to measles. This allows public health to implement additional measures in a timely manner.
- Case finding for the source, concurrent and secondary cases should be targeted to one incubation period before (i.e. 21 days) the current case and for 21 days after the onset of rash of the last case in the setting.
- Evaluate parents and siblings of attendees to detect cases and identify susceptible individuals. Those who are susceptible should be immunized as per the Saskatchewan Immunization Manual.[13]

Health Care Facilities Control Measures

Health care workers (HCWs)[14] have an increased risk of exposure to measles and should have proof of immunity or adequate protection upon employment. See Chapter 7, Section 3.2 (Health Care Workers) of the Saskatchewan Immunization Manual[15] and other relevant Saskatchewan Ministry of Health policies/memos.

- All individuals suspected of having or diagnosed with measles must be reported immediately to the local public health office, infection control and occupational/employee health.
- Strict enforcement of infection prevention and control measures. See IPAC Algorithm: Management of Suspect/Confirmed Measles and to the Authority's Infection Control Manual for additional details.
  - Airborne precautions in addition to Routine/Standard precautions should be taken immediately from the time measles diagnosis is being considered up to an including four days after onset of rash (PHAC, 2013).
  - Immunocompromised patients should be isolated for the duration of their illness (PHAC, 2013)
- Provide measles-containing vaccine to susceptible contacts (or Ig to high-risk susceptible contacts) according to Figure 4–5, Attachment – Immunoprophylaxis and Exclusion Considerations for Contacts.
- Employees in health care settings who are contacts should be managed as per Figure 4, Attachment – Immunoprophylaxis and Exclusion Considerations for Contacts.

[13] http://www.ehealthsask.ca/services/manuals/Pages/SIM.aspx

[14] Health care workers should be considered as ALL employees in health care settings. This includes direct and indirect patient care staff and students.

[15] http://www.ehealthsask.ca/services/manuals/Documents/sim-chapter7.pdf .

- Patients in health care settings who are contacts should be managed as per Figure 5, Attachment – Immunoprophylaxis and Exclusion Considerations for Contacts.
- Public Health should ensure that:
  - all susceptible contacts (Table 3), have been immunized as soon as possible;
  - no further cases of related illness have been detected (over the subsequent 21 day period).
  - If a person acquired measles while in hospital, a case finding for the source investigation should be conducted in partnership with public health and infection control.

Outpatient Departments (including Lab and Radiology)/Physicians' Offices

Physicians' offices have been identified as the setting for transmission of secondary cases of measles. Strict application of infection prevention and control measures are required to reduce further transmission.

When measles is circulating in the community, contacts should be instructed to call HealthLine so the MHO/public health can provide direction for seeking medical attention in a way that reduces the risk of further transmission. In addition to staff using personal protective equipment, the following practical measures can be used[16]:

- arrange to see patients with clinical signs of measles at the end of the day;
- provide signage and procedural masks at the entrance instructing patients to don a mask before entering the facility (see Measles Alert Poster);
- immediately take patients to a separate examination room and only allow staff who are considered immune to measles (documented serology or immunization records) to interact with the patient;
- ensure the exam room used by the patient is not used by other patients for two hours after the patient leaves the facility (regardless of whether the room is cleaned by an immune employee before the 2-hour period lapses).
- Susceptible staff should be immunized as soon as possible.

IV. Epidemic Measures

- Immediate reporting (within 24 hours) of probable and clinical cases or persons under investigation for measles.
- Determine source and manner of spread.
- Determine extent of exposure and transmission.

16 See Attachment – Infection Prevention and Control Measures in Physicians' Offices.

- If there is exposure of groups like schools, health care facilities, childcare centres, etc., it may be necessary to implement a coordinated immunization program for all unimmunized and incompletely immunized individuals to limit spread. The decision for this will be made in consultation with the Medical Health Officer and Saskatchewan Ministry of Health.
  - If vaccine supply is limited, immunization priority should be given to young children (>6 months) for whom the risk is greatest.
- In institutional settings, all individuals without adequate protection should be immunized (Heymann, 2015).
- In community-wide outbreaks, alternative measures such as broad immunization catch up programs may be considered and the date of presumed immunity expanded from 1970 to 1965.

Prevention Measures

Refer to the Respiratory and Direct Contact Introduction and General Considerations section of the manual that highlights topics for client education that should be considered as well as provides information on high-risk groups and activities.

Immunization

- Routine immunization of children 1 year and older with two doses of a measles containing vaccine in accordance with the recommended schedule in the Saskatchewan Immunization Manual Chapter 5.[17]
- One dose of measles-containing vaccine given at 12 to 15 months of age is 85-95% effective in preventing measles (PHAC, 2023). Most cases of vaccine failure following one dose occur in individuals who had an inadequate immune response to the vaccine and are not related to waning immunity (American Academy of Pediatrics, 2018).
- Two doses of measles-containing vaccine are nearly 100% effective in preventing measles (PHAC, 2023).
- Those born in 1970 or later who have not had two doses of measles vaccine or have not had natural measles infection should be vaccinated for measles as per the Saskatchewan Immunization Manual[18]
- Individuals born since 1957 who are travelling abroad should have a pre-travel consultation and be offered MMR as noted in SIM Chapter 5 Appendix 5.2.

[17] http://www.ehealthsask.ca/services/manuals/Pages/SIM.aspx see Chapter 5, Appendix 5.2
[18] This differs from the CDC year of presumed natural immunity of prior to 1957.

Education

- Education should be provided regarding respiratory etiquette and measures to prevent transmission.
- Educate the public about the disease and the need for active immunization for measles. Immunization information fact sheets[19] can be used to guide discussion.

[19] https://www.saskatchewan.ca/residents/health/accessing-health-care-services/immunization-services/immunization-forms-and-fact-sheets

Revisions

Date	Change
April 2025	• Throughout, clarified proof of immunization must be documented • Table 1 ➢ Added years to the statement: Catch-up program included school entry, Grade 6 (until 2004) and Grade 8 (until 1998). ➢ Added link to SIM Chapter 1 • Case-Immunization- added "documented" to statement: Review the documented immunization history. • Table 3- added hyperlinks to SIM • Immunoprophylaxis- Updated information on the effectiveness of measles PEP on prevention of infection and complications. • Reference to NACI's *Updated recommendations on measles post-exposure prophylaxis* added. • Prevention Measures- clarified age of children in statement: Routine immunization of children 1 year and older with two doses of a measles containing vaccine in accordance with the recommended schedule in the Saskatchewan Immunization Manual Chapter 5.[20] • Prevention Measures: added year of birth to statement: Individuals born since 1957 who are travelling abroad should have a pre-travel consultation and be offered MMR as noted in SIM Chapter 5 Appendix 5.2.
June 2024	• Probable case definition – updated language for clarity. • Epidemiology and Surveillance- Included RRPL data regarding immunity demonstrated in samples from individuals born before 1957. • Table 3- clarified definition for susceptible contacts. • Linked to updated SHA IPAC Algorithm: Management of Suspect/Confirmed Measles and Measles Alert poster. • Immunization- updated effectiveness following one dose and added effectiveness following two doses.

[20] http://www.ehealthsask.ca/services/manuals/Pages/SIM.aspx see Chapter 5, Appendix 5.2

	• Added new *Attachment-Measles Case and Contact Investigation and PEP Reporting*.
May 2019	• Updated notification timeline from Lab/Practitioner to public health and from Public Health to the Ministry of Health. • Updated Public Health purpose to include prevention of local transmission. • Included reference to PCR in case definition. • Risk Factors - Added Child Care Worker; • Specimen Collection - Added footnote regarding nasopharyngeal/throat swabs collected in physicians' office; • Exclusion of Cases - Updated exclusion criteria to remove caveat regarding other susceptible individuals not yet exposed. • Exclusion in Table - Added context on the prolonged duration of illness for immunocompromised individuals and to consult Medical Microbiologist or ID Specialist. • Corrected reference in Contact Exclusion to Table 3(C) rather than 3(A). • Updated Public Health Interventions: ➢ Clarified that coordination is required with Employee/Occupational Health and Infection Control is required for exposures in Health Care and Child Care Settings. ➢ Included discretion of MHO for serological testing of contacts ➢ Provided more explicit information for contacts who develop symptoms to seek advise from public health via HealthLine before seeking medical attention ➢ Added caveat that 1970 is generally considered cut off year for presumed immunity, but included information about RRPL information to use 1965 during outbreak situations. • Prevention Measures ➢ Updated footnote with reference to 1965 in Prevention Measures to explain the Saskatchewan context for this date. ➢ Updated the year for eligibility for measles vaccine in Prevention Measures to align with the Saskatchewan Immunization Manual. ➢ Added reference to recommending a pre-travel consultation for international travel considerations.

	Updated references as applicable.
May 2018	• Updated to align with Panorama configuration • Clarified the purpose for notification of cases to public health • Incorporated an Epidemiology and Occurrence as a placeholder and included Saskatchewan Immunization program history from the SIM to provide context. • Rearranged and updated the style into the new format of the Manual. • References reaffirmed or updated as necessary.

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Government of Saskatchewan

Measles Data Collection Worksheet

Please complete **all** sections.

PANORAMA

Panorama QA complete: ☐ **Yes** ☐ **No**
Initials:

Panorama Client ID: _____
Panorama Investigation ID: _____

A) CLIENT INFORMATION

LHN -> SUBJECT -> CLIENT DETAILS -> PERSONAL INFORMATION

Last Name:	First Name: and Middle Name:	Alternate Name (Goes by):
DOB: YYYY / MM / DD Age: _____	Health Card Province: _____ Health Card Number (PHN): _____	Preferred Communication Method: (specify - i.e. home phone, text): Email Address: ☐ Work ☐ Personal
Phone #: ☐ Primary Home: ☐ Mobile contact: ☐ Workplace:		
Place of Employment/School:	Gender: ☐ Male ☐ Female ☐ Other ☐ Unknown	
Alternate Contact: _____ Relationship: _____ Alt. Contact phone: _____	Address Type: ☐ No fixed ☐ Postal Address ☐ Primary Home ☐ Temporary ☐ Legal Land Description Mailing (Postal address): Street Address or FN Community (Primary Home): Address at time of infection if not the same:	

B) INVESTIGATION INFORMATION

SUBJECT SUMMARY-> RESPIRATORY &DIRECT CONTACT ENCOUNTER GROUP->CREATE INVESTIGATION

Disease Summary Classification: CASE:	**Date**	***Classification: CONTACT:***	***Date***	***LAB TEST INFORMATION:***
☐ Confirmed	YYYY / MM / DD	☐ *Contact*	*YYYY / MM / DD*	*Date specimen collected:*
☐ Does Not Meet Case	YYYY / MM / DD	☐ *Not a Contact*	*YYYY / MM / DD*	*YYYY / MM / DD*
☐ Person Under Investigation	YYYY / MM / DD	☐ *Person Under Investigation*	*YYYY / MM / DD*	*Specimen type:* ☐ *Blood* ☐ *Urine* ☐ *Throat* ☐ *Nasopharyngeal*
☐ Probable	YYYY / MM / DD			
☐ Clinical	YYYY / MM / DD			

Disposition:

FOLLOW UP:

☐ In progress	YYYY / MM / DD	☐ Complete	YYYY / MM / DD
☐ Incomplete - Declined	YYYY / MM / DD	☐ Not required	YYYY / MM / DD
☐ Incomplete – Lost contact	YYYY / MM / DD	☐ Referred – Out of province	YYYY / MM / DD
☐ Incomplete – Unable to locate	YYYY / MM / DD	(Specify where)	YYYY / MM / DD

REPORTING NOTIFICATION Name of Attending Physician or Nurse:	Location:
Provider's Phone number:	Date Received (Public Health): YYYY / MM / DD
Type of Reporting Source: ☐ Health Care Facility ☐ Lab Report ☐ Nurse Practitioner ☐ Physician ☐ Other_____	

Measles Data Collection Worksheet

Please complete **all** sections

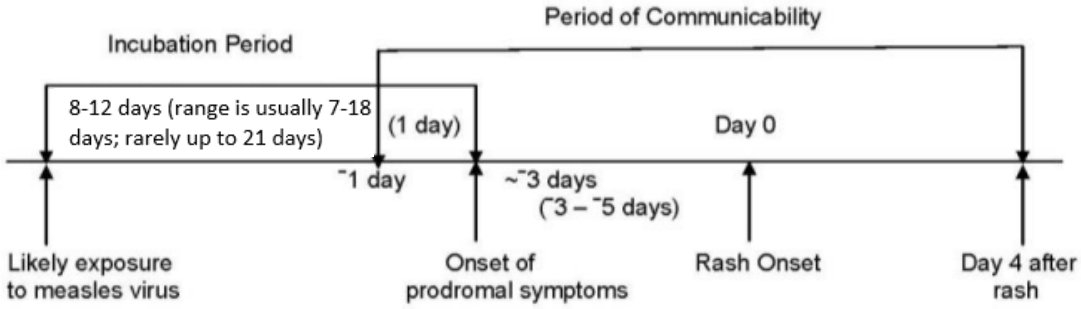
Panorama Client ID: _____
Panorama Investigation ID: _____

C) SIGNS & SYMPTOMS *(Bold text = part of case definition)*

LHN-> INVESTIGATION->SIGNS & SYMPTOMS

Description	No	Yes – Date of onset	Description	No	Yes - Date of onset
Conjunctiva - inflammation (conjunctivitis)		YYYY / MMM / DD	Koplik spots		YYYY / MMM / DD
Coryza or rhinitis		YYYY / MMM / DD	Lymphadenopathy - generalized		YYYY / MMM / DD
Cough		YYYY / MMM / DD	Pain – photophobia (light sensitivity)		YYYY / MMM / DD
Fever		YYYY / MMM / DD	**Rash – maculopapular (3 days)**		YYYY / MMM / DD
Other s/s					

Timeline for Assessing Measles Contacts



D) INCUBATION AND COMMUNICABILITY

LHN-> INVESTIGATION->INCUBATION & COMMUNICABILITY

Incubation for Case (period for acquisition):
Earliest Possible Exposure Date: YYYY / MM / DD **Latest Possible Exposure Date**: YYYY / MM / DD

Exposure Calculation details:

Communicability for Case (period for transmission):
Earliest Possible Communicability Date: YYYY / MM / DD **Latest Possible Communicability Date**: YYYY / MM / DD

Communicability Calculation Details:

E) RISK FACTORS (RF followed by + impact the Immunization Forecaster)

LHN-> SUBJECT->RISK FACTORS

DESCRIPTION	State Date Yes	N, NA, U	Add'l Info
Contact - At risk population (international travellers or immigrants)	YYYY / MM/DD		
Contact – Persons with similar symptoms	YYYY / MM/DD		
Contact to a known case (Add'l Info)	YYYY / MM/DD		
Immunocompromised - Related to underlying disease or treatment	YYYY / MM/DD		
Occupation - Health Care Worker - IOM Risk Factor	YYYY / MM/DD TE		
Special Population - Attends childcare	YYYY / MM/DD TE		
Special Population - Attends school	YYYY / MM/DD TE		
Special Population - Lives in a communal setting	YYYY / MM/DD TE		
Special Population - Post secondary education institution	YYYY / MM/DD TE		
Travel - Outside of Canada (Add'l Info)	YYYY / MM/DD AE/TE		
Travel - Outside of Saskatchewan, but within Canada (specify)_	YYYY / MM/DD AE/TE		
Other risk factor (Add'l Info)	YYYY / MM/DD		

Measles Data Collection Worksheet

Please complete **all** sections

Panorama Client ID: _____
Panorama Investigation ID: _____

F) IMMUNIZATION HISTORY INTERPRETATION SUMMARY

LHN -> INVESTIGATION-> IMMUNIZATION HISTORY INTERPRETATION SUMMARY

Interpretation Date: YYYY / MM / DD

Interpretation of Disease Immunity: ☐ IOM - Fully immunized (for age) ☐ IOM - Partially immunized

☐ IOM – Unimmunized ☐ IOM - Unclear immunization history **Valid doses received**: _____ **Doses needed**: _____

Reason:

☐ Previous disease ☐ Previous responder/Previous history of immunity ☐ Date Of Birth

☐ IOM - Interpretation of history by investigator

G) INTERVENTIONS

INVESTIGATION->TREATMENT & INTERVENTIONS->INTERVENTION SUMMARY

Intervention Type and Sub Type:

Assessment:
☐ Assessed for contacts YYYY / MM / DD
Investigator name

Immunization: Investigator name
☐ Eligible Immunization recommended YYYY / MM / DD
☐ Disease-specific immunization recommended YYYY / MM / DD
☐ Disease-specific immunization given YYYY / MM / DD

Communication:
☐ Other communication (see Investigator Notes) YYYY / MM / DD
Investigator name
☐ Letter (See Document Management) YYYY / MM / DD
Investigator name

Isolation:
☐ Facility isolation YYYY / MM / DD
Investigator name
☐ Home isolation YYYY / MM / DD
Investigator name

General: Investigator name
☐ Disease-Info/Prev-Control YYYY/ MM / DD
☐ Disease-Info/Prev-Cont/Assess'd for Contacts YYYY/ MM / DD

Other Investigation Findings:
☐ Investigator Notes YYYY / MM / DD
☐ Document Management YYYY / MM / DD

Education/counselling:
☐ Prevention/Control measures YYYY / MM / DD
Investigator name
☐ Disease information provided YYYY / MM / DD
Investigator name

Quarantine:
☐ Quarantine YYYY / MM / DD
Investigator name

Exclusion: Investigator name
☐ Work YYYY / MM / DD ☐ Preschool YYYY / MM / DD
☐ School YYYY / MM / DD ☐ Daycare YYYY / MM / DD

Testing:
☐ Lab testing recommended YYYY / MM / DD
Investigator name

Date	Intervention subtype	Comments	Next follow-up Date	Initials
YYYY / MM / DD			YYYY / MM / DD	
YYYY / MM / DD			YYYY / MM / DD	
YYYY / MM / DD			YYYY / MM / DD	
YYYY / MM / DD			YYYY / MM / DD	
YYYY / MM / DD			YYYY / MM / DD	
YYYY / MM / DD			YYYY / MM / DD	
YYYY / MM / DD			YYYY / MM / DD	
YYYY / MM / DD			YYYY / MM / DD	
YYYY / MM / DD			YYYY / MM / DD	
YYYY / MM / DD			YYYY / MM / DD	

Measles Data Collection Worksheet

Please complete **all** sections

Panorama Client ID: ___________
Panorama Investigation ID: ___________

H) OUTCOMES

LHN-> INVESTIGATION-> OUTCOMES

☐ Not yet recovered/recovering YYYY / MM / DD ☐ ICU/intensive medical care YYYY / MM / DD ☐ Hospitalization YYYY / MM / DD
☐ Recovered YYYY / MM / DD ☐ Intubation /ventilation YYYY / MM / DD ☐ Unknown YYYY / MM / DD
☐ Fatal YYYY / MM / DD ☐ Other ___________________YYYY / MM / DD

Cause of Death: (if Fatal was selected) ____________________________

I) EXPOSURES

Acquisition Event

INVESTIGATION-> EXPOSURE SUMMARY-> ACQUISITION EVENT SUMMARY > QUICK ENTRY

Acquisition Event ID:_________

Exposure Name: ____

Acquisition Start YYYY / MM / DD to **Acquisition End:** YYYY / MM / DD

Location Name: ____

Setting Type

☐ Travel ☐ Health care setting ☐ Public facilities ☐ Recreational facilities ☐ Most likely source

Transmission Events

LHN -> INVESTIGATION-> EXPOSURE SUMMARY -> TRANSMISSION EVENT SUMMARY -> QUICK ENTRY

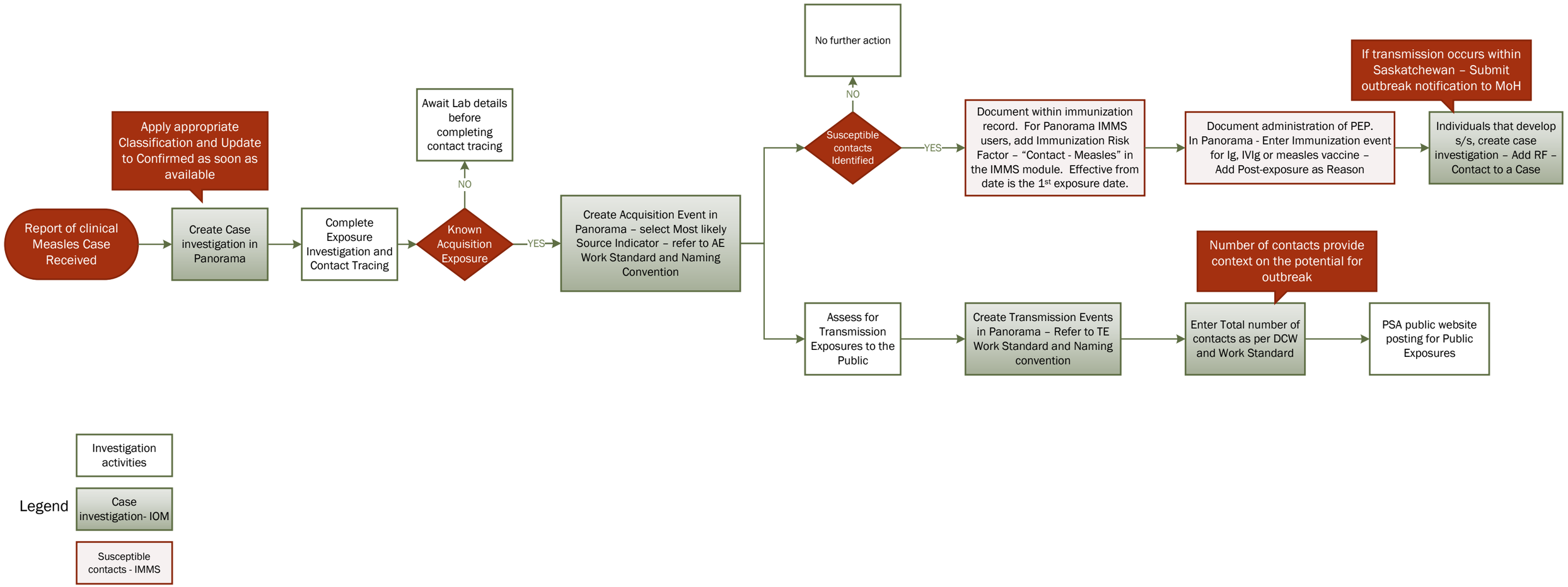
Transmission Event ID	Exposure Name	Setting type (Consider the following settings for TE; if >1 select "multiple settings" in Panorama)	Date/Time	# of contacts
		☐Congregate/Communal living ☐Health Care setting ☐Type of community contact ☐ Household Exposure ☐Public facilities	YYYY / MM / DD to YYYY / MM / DD	
		☐Congregate/Communal living ☐Health Care setting ☐Type of community contact ☐ Household Exposure ☐Public facilities	YYYY / MM / DD to YYYY / MM / DD	
		☐Congregate/Communal living ☐Health Care setting ☐Type of community contact ☐ Household Exposure ☐Public facilities	YYYY / MM / DD to YYYY / MM / DD	
		☐Congregate/Communal living ☐Health Care setting ☐Type of community contact ☐ Household Exposure ☐Public facilities	YYYY / MM / DD to YYYY / MM / DD	
		☐Congregate/Communal living ☐Health Care setting ☐Type of community contact ☐ Household Exposure ☐Public facilities	YYYY / MM / DD to YYYY / MM / DD	
		☐Congregate/Communal living ☐Health Care setting ☐Type of community contact ☐ Household Exposure ☐Public facilities	YYYY / MM / DD to YYYY / MM / DD	
	Measles – Inv ID# _____	☐Multiple Settings	YYYY / MM / DD to YYYY / MM / DD	

J) TOTAL NUMBER OF CONTACTS

LHN -> INVESTIGATION-> EXPOSURE SUMMARY -> TRANSMISSION EVENT SUMMARY -> TE HYPERLINK -> UNKNOWN/ANONYMOUS CONTACTS

Anonymous contacts:________ (total number of individuals [including groups that 1:1 follow-up is not required or is not feasible])

Initial Report completed by:		**Date initial report completed:** YYYY / MM / DD


Report of clinical Measles Case Received
Apply appropriate Classification and Update to Confirmed as soon as available
Create Case investigation in Panorama
Complete Exposure Investigation and Contact Tracing
Known Acquisition Exposure
NO
Await Lab details before completing contact tracing
YES
Create Acquisition Event in Panorama – select Most likely Source Indicator – refer to AE Work Standard and Naming Convention
Susceptible contacts Identified
NO
No further action
YES
Document within immunization record. For Panorama IMMS users, add Immunization Risk Factor – "Contact - Measles" in the IMMS module. Effective from date is the 1st exposure date.
Document administration of PEP. In Panorama - Enter Immunization event for Ig, IVIg or measles vaccine – Add Post-exposure as Reason
If transmission occurs within Saskatchewan – Submit outbreak notification to MoH
Individuals that develop s/s, create case investigation – Add RF – Contact to a Case
Assess for Transmission Exposures to the Public
Create Transmission Events in Panorama – Refer to TE Work Standard and Naming convention
Number of contacts provide context on the potential for outbreak
Enter Total number of contacts as per DCW and Work Standard
PSA public website posting for Public Exposures
Legend
Investigation activities
Case investigation- IOM
Susceptible contacts - IMMS

Please see the following pages for the Letter Template to a Measles Case.

<DATE>

<MR./MS. NAME OF CASE>
<ADDRESS>
<CITY SK POSTAL CODE>

Re: Temporary Exclusion from Work and Public for <INDIVIDUAL> until <DATE>

Dear <MR./MS. NAME OF CASE>

As we have discussed, you are <SUSPECTED/CONFIRMED> to have measles disease. Because this is a very contagious disease, all precautions need to be taken to prevent possible spread of infection to others. You are considered to be contagious from <DATE> to <DATE>.

Your assistance is important to prevent spreading this disease to individuals who have not been immunized or who have not had the disease previously. This means that you are required to remain in your home (not to be out in public or at school/work) until <DATE>. This also means that during this time, there cannot be visitors in the home. **Should you require medical attention, it is important to call ahead to your health care provider so they can plan to see you in a way that reduces the chance of exposing other individuals to measles.**

Thank you for your cooperation in identifying individuals and locations where people may have been exposed to measles and for your cooperation during this period. We appreciate that you are doing your best to prevent further spread of infection. Please feel free to call < PHONE NUMBER> as needed.

The Medical Health Officer has authority under *The Public Health Act, 1994* of Saskatchewan to enforce compliance with this requirement.

Sincerely,

<NAME OF PUBLIC HEALTH DESIGNATE>
<TITLE>

cc: Medical Health Officer

Table 1. Vaccination or Immune Globulin (Ig) for Susceptible Contacts – See Table 3 (Person-by-person contact investigation) (PHAC, 2025)

If measles vaccine is given to those 6 months and older within 72 hours of exposure, it may provide some protection.
Do not delay providing an age-appropriate measles-containing vaccine (MMR or MMRV) to contacts that are not up-to-date, even if >72 hours have lapsed to provide protection from future exposures.
Notes:

1. Refer to SIM Chapter 5 section 3.5.1 for immunization intervals if the individual has received any immune globulin preparations or blood products in the past year.
2. MMRV vaccine is only licensed for immunocompetent children 1 to 12 years old

Immune globulin is available in two products (see Appendix D Publicly Funded Meds for SHA-FNJs):

- IMIg (intramuscular immune globulin)
- IVIg (intravenous immune globulin)

Population	Time since Exposure to Measles	
	≤ 72 hours	**73 hours – 6 days**
Susceptible infants 0 to less than 6 months of age;	IMIg (0.5 mL/kg)[a, b, c]	
Susceptible immunocompetent infants 6 months to less than 12 months of age;	MMR vaccine [a]	IMIg (0.5 mL/kg) [a, b, c]
Susceptible immunocompetent persons 12 months of age or older	Measles-containing vaccine series [a]	Offer measles-containing vaccine series for protection from future exposures [e]
Susceptible pregnant women[f] who are unvaccinated or known measles IgG negative **OR** 1 documented dose or uncertain vaccination status [d]	IVIg (400 mg/kg) [a, c]	
Immunocompetent individuals with serological confirmed measles immunity or who have 2 documented measles doses after 1 year old	Measles PEP not recommended	
Immunocompromised individuals 6 months of age and older: Refer to Table 2		

[a] Administer as soon as possible within the specified timeline.
[b] Refer to SIM Chapter 8 for IMIg administration guidance.
[c] IMIg is not recommended for individuals weighing more than 30 kg due to lack of evidence of the efficacy/effectiveness of IMIg administered at dosages below 0.5 mL/kg. However, more than 15mL IMIg can be administered based on clinical judgement. For those under 12 months of age, IVIg can be administered at a concentration of 400 mg/kg.
[d] Consider serological testing prior to PEP administration if results are expected within 24 hours of sampling time. Uncertain vaccination status includes individuals who report immunization but have 0 documented doses.
[e] A measles-containing vaccine is not known to provide protection after 72 hours of exposure, however, starting or completing a two-dose series in those 1 year and older should not be delayed as it provides long term protection.
[f] For women born in Canada after 1970, rubella immunity is a proxy for immunization with measles/rubella vaccine. This may not be true for foreign born women.

Table 2. Recommended measles post-exposure prophylaxis strategies for individuals 6 months of age and older who are immunocompromised (PHAC, 2025)

For each Group of immunocompromised individuals outlined below, PEP strategies have been stratified by the extent of immunocompromise, the likelihood of maintaining measles-antibody mediated protection from past vaccination or infection, and the ability to safely receive a measle-containing vaccine.

Examples of immunocompromising conditions [a] to consider within each group are:

- Transplant
- Chimeric antigen receptor T-cell (CAR T) therapy
- Acute lymphoblastic leukemia (ALL)
- Human immunodeficiency virus (HIV) infection
- Primary immunodeficiency
- Therapies/medications

The status of these immunocompromising conditions are defined for each group in NACI's Updated recommendations on measles post-exposure prophylaxis.

Group	Recommended measles PEP
Group 1: Individuals with an **absent/near absent immune system and therefore are not expected to have sufficient natural/acquired measles antibody-mediated protection** and are known to have a high risk of severe disease. Refer to NACI's Updated recommendations on measles post-exposure prophylaxis.	**Offer PEP as soon as possible and within 6 days of exposure**; previous vaccination status/serological testing is not relevant • IVIg (400 mg/kg) [b, c] OR • IMIg (0.5 mL/kg) [b, c]
Group 2: Individuals who are immunocompromised who **may have measles antibody-mediated protection** from known previous vaccination or infection. Refer to NACI's Updated recommendations on measles post-exposure prophylaxis	• Measles immunity and need for measles PEP should be examined regardless of year of birth, or measles vaccination status. • Consider STAT measles serological testing • If serology is negative or measles serology testing is not available within 24 hours of sampling, **administer PEP as soon as possible and within 6 days of exposure** ➢ IVIg (400 mg/kg) [b, c] OR ➢ IMIg (0.5 mL/kg) [b, c]
Group 3: Individuals who have low-level immunocompromise who are expected to have measles antibody-mediated protection from known previous infection or vaccination, for whom measles-containing vaccine is not contraindicated.	**For transplant clients more than 24 months following HSCT with no chronic GVHD and received measles-containing vaccine after transplant:** if no documented evidence of positive measles IgG post-transplant, provide measles-containing vaccine as soon as possible.[d] **For other individuals in Group 3:** Consider criteria for measles susceptibility outlined in Table 3

Refer to NACI's Updated recommendations on measles post-exposure prophylaxis.	If the individual meets the definition of a susceptible contact or patient history is unknown, provide **measles-containing vaccine** as soon as possible. [d, e, f]

[a] This table does not provide a comprehensive list of immunocompromising conditions. PEP eligibility for immunocompromised individuals that is not addressed by NACI will be determined by the local/on-call MHO, in consultation with a specialist as needed and feasible. To avoid delayed PEP administration, when an individual's immune status in relation to Group 1, 2, or 3 is uncertain, IVIg (400mg/kg for individuals over 30 kg) or IMIg (0.5mg/kg for individuals 30kg or less) may be administered as soon as possible and within 6 days of exposure.

[b] For individuals already receiving Ig replacement therapy (as IVIg or SCIg), Ig for measles PEP is not required if the last dose of IVIg (at least 400 mg/kg) was received within three weeks prior to measles exposure, or if SCIg (at least 200 mg/kg) was received for 2 consecutive weeks prior to measles exposure. If outside these parameters, administer patient's usual dose as soon as possible.

[c] IMIg is not recommended for individuals weighing more than 30 kg due to lack of evidence of the efficacy/effectiveness of IMIg administered at dosages below 0.5 mL/kg. If injection volume is a major concern, if recipient weights more than 30kg, or if access to IVIg is more feasible than IMIg, IVIg can be administered at a concentration of 400 mg/kg. If IVIg administration is not feasible, more than 15mL IMIg can be administered based on clinical judgement.

[d] A measles-containing vaccine is not known to provide protection after 72 hours of exposure, however, starting or completing a two-dose series should not be delayed as it provides long term protection. Refer to SIM Chapter 7 Appendix 7.3 MMR Immunization Referral form and provide to specialist/primary care provider to obtain their immunization approval for the patient.

[e] Refer to SIM Chapter 5 Table section 3.5.1 for immunization intervals if the individual has received any immune globulin preparations or blood products in the past year.

[f] MMRV vaccine is contraindicated in immunocompromised persons.

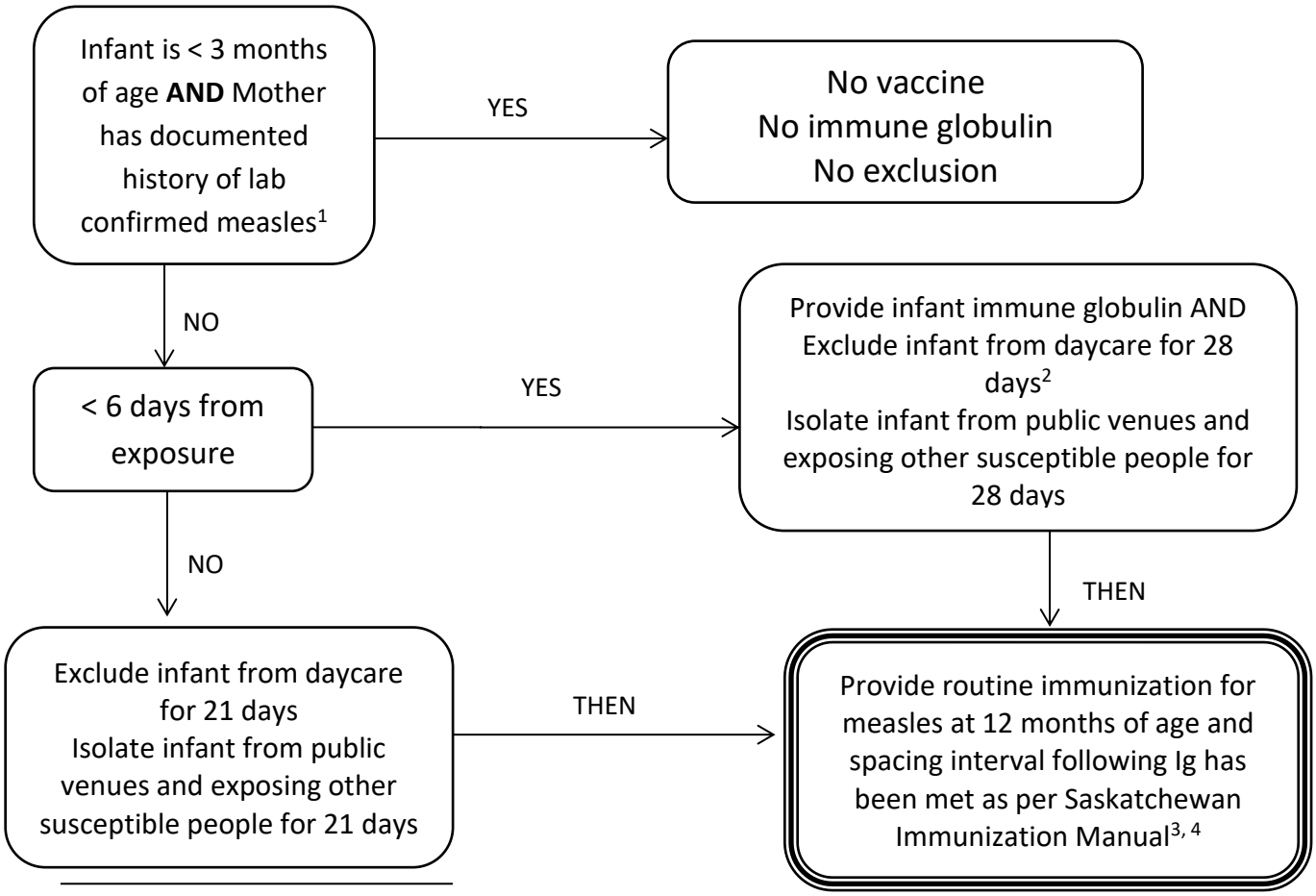
The following figures outline when vaccine or immune globulin should be provided to different populations and when exclusion/self-isolation should be implemented.

When exclusion is recommended, it should apply:

- From five days after first exposure and up to 21 days after last exposure; or
- Until serological confirmation of immunity is provided.

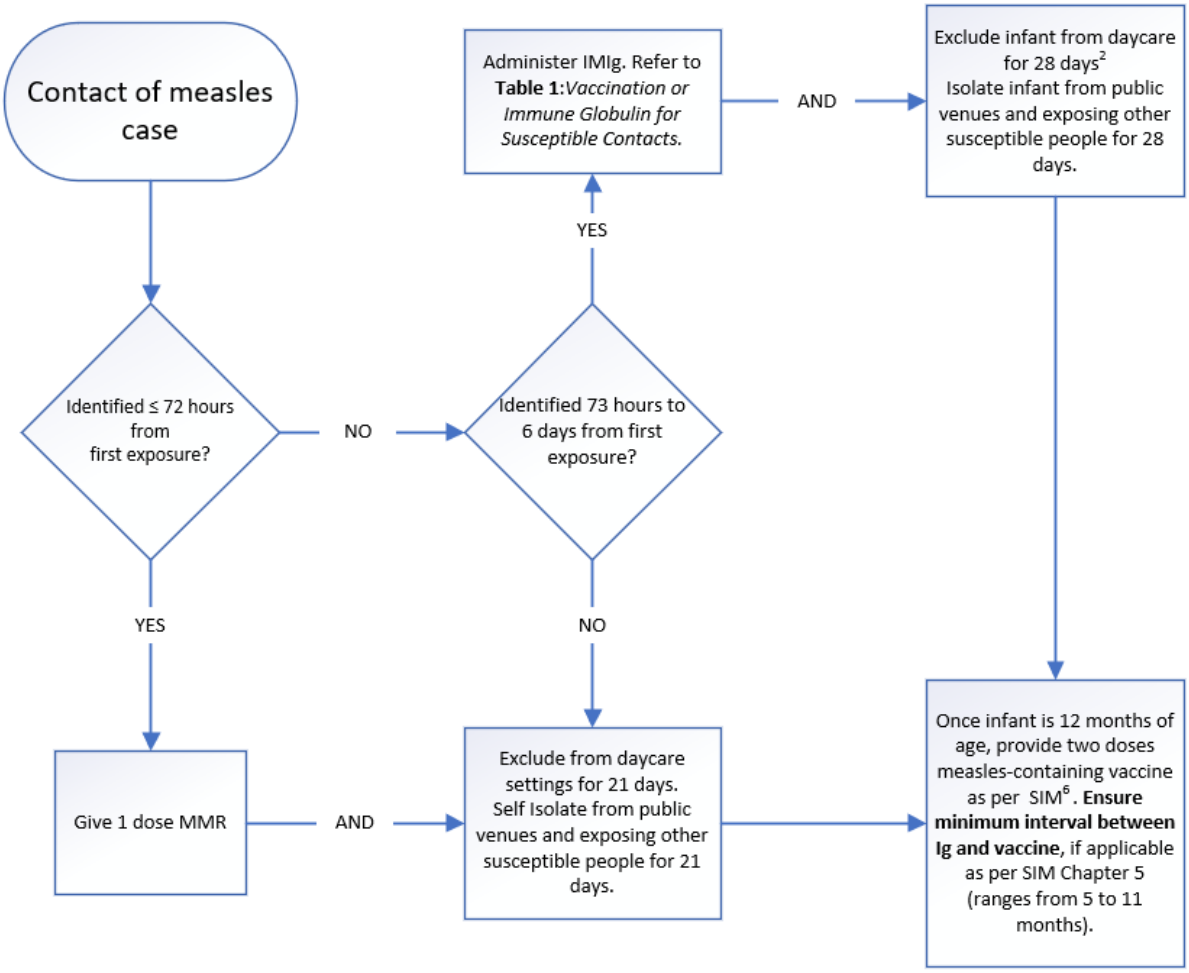
If a contact develops symptoms compatible with measles, exclusion criteria for cases should be applied. When Ig has been provided, extend the exclusion period to 28 days after the last exposure.

Figure 1. Infants 0 to less than 6 months of age



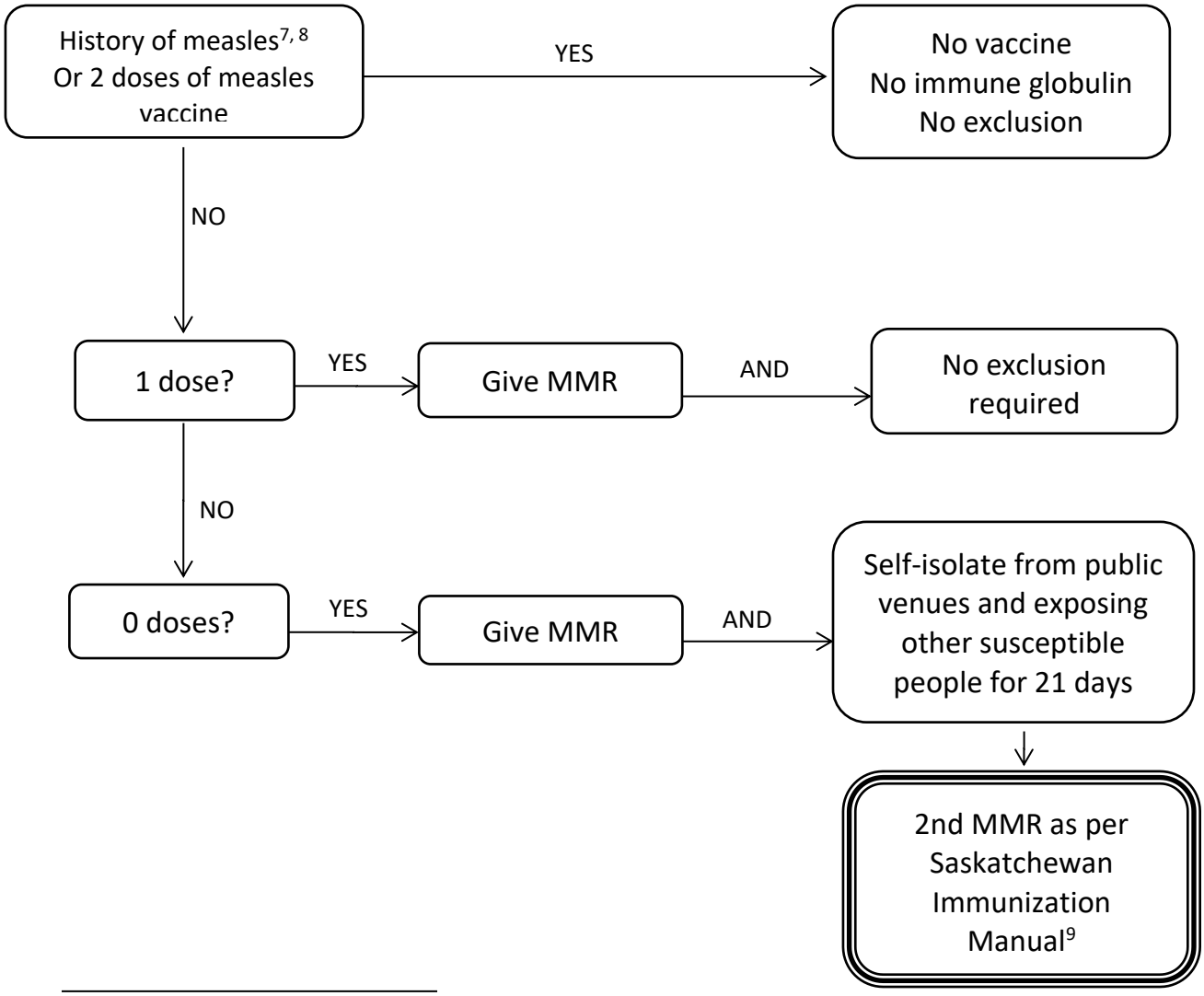
[1] Maternal antibodies from vaccination wane more quickly than antibodies from natural infection. Considering the vulnerable population, immune globulin is recommended for infants < 3 months if mother's immunity is vaccine-induced.
[2] Immune globulin may not prevent measles, and may cause a longer incubation period up to 28 days
[3] http://www.ehealthsask.ca/services/manuals/Documents/sim-chapter5
[4] If risk of measles is ongoing and Ig was not given, MMR may be given at 6 months of age.

Figure 2. Immunocompetent infants 6 months to less than 12 months of age[5]



[2] Immune globulin may not prevent measles, and may cause a longer incubation period up to 28 days
[5] No previous measles-containing vaccine previously provided for travel or past measles exposure.
[6] https://www.ehealthsask.ca/services/Manuals/Pages/SIM.aspx

Figure 3. Immunocompetent persons 12 months of age and older (Non-Health Care Settings)

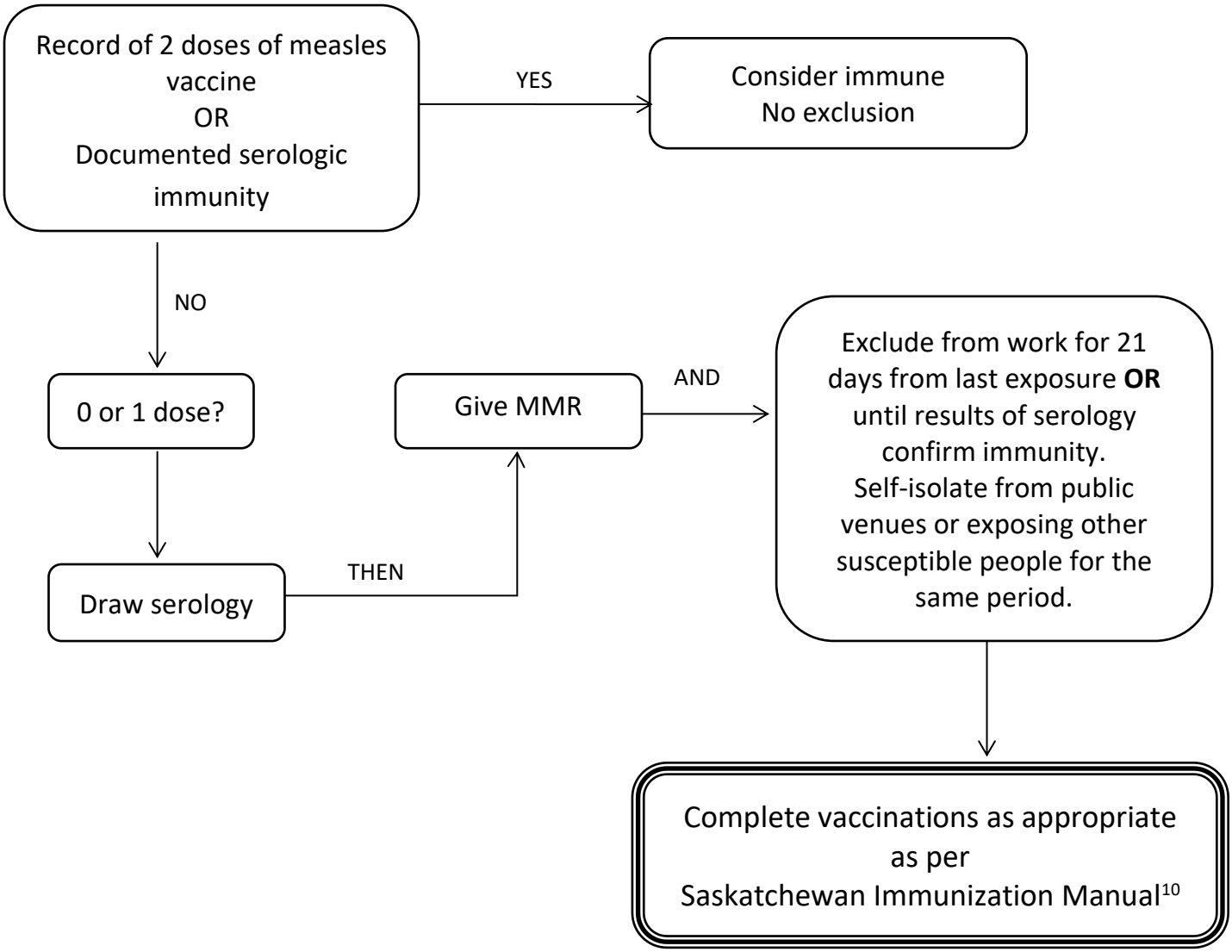


[7] Generally, people born prior to 1970 are considered to have natural immunity. During outbreak situation, this date may be expanded to 1965 based on a review of RRPL (February 2014): approximately 93% of samples tested from individuals born prior to 1965 indicated immunity for measles, while approximately 83% of samples from persons born between 1965 and 1980 indicated immunity to measles. Factors to consider include age, history of exposure to measles, and availability of medical records.

[8] Clinical judgement is required to determine if serology is necessary. If born in Canada in 1970 or later, previous rubella immunity serves as a proxy for measles immunity based on past measles-rubella vaccine.

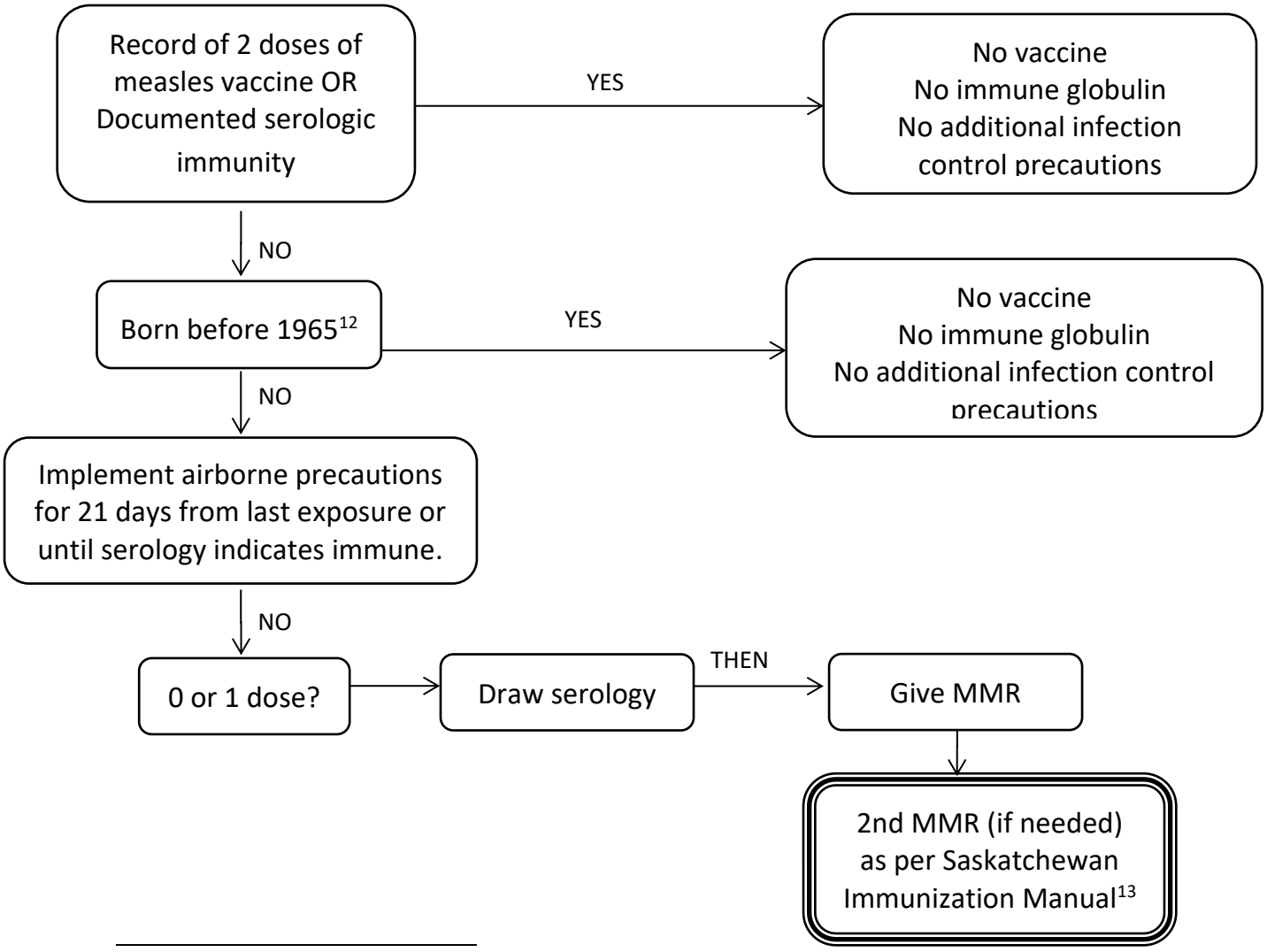
[9] http://www.ehealthsask.ca/services/manuals/Documents/sim-chapter5 and http://www.ehealthsask.ca/services/manuals/Documents/sim-chapter7

Figure 4. Health Care Settings – All Employees



[10] http://www.ehealthsask.ca/services/manuals/Documents/sim-chapter7

Figure 5. Health Care Settings – Patients[11]

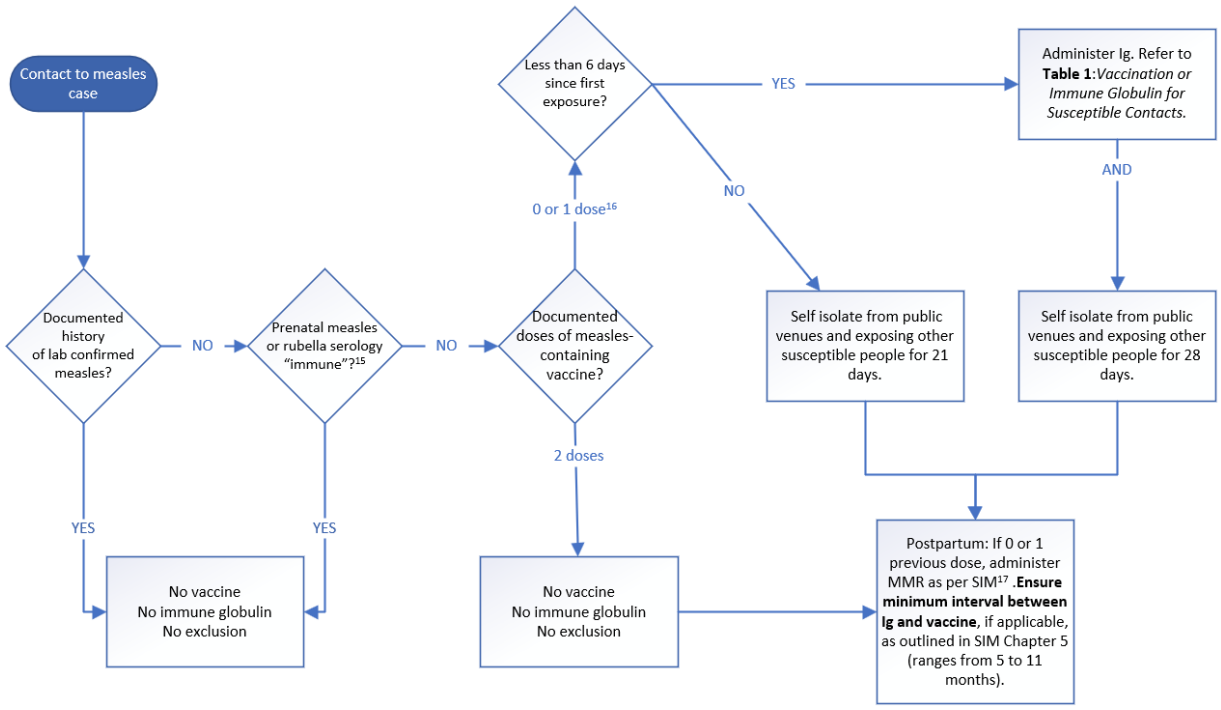


[11] If immunocompromised, consult with MHO and attending physician.

[12] Generally, people born prior to 1970 are considered to have natural immunity. During outbreak situation, this date may be expanded to 1965 based on a review of RRPL (February 2014): approximately 93% of samples tested from individuals born prior to 1965 indicated immunity for measles, while approximately 83% of samples from persons born between 1965 and 1980 indicated immunity to measles. Factors to consider include age, history of exposure to measles, and availability of medical records.

[13] http://www.ehealthsask.ca/services/manuals/Documents/sim-chapter5 and http://www.ehealthsask.ca/services/manuals/Documents/sim-chapter7

Figure 6. Pregnant Women



[15]For women born in Canada after 1970, rubella immunity is a proxy for immunization with measles/rubella vaccine. This may not be true for foreign born women.
[16] Consider serological testing prior to PEP administration if results are expected within 24 hours of sampling time.
[17] https://www.ehealthsask.ca/services/Manuals/Pages/SIM.aspx

Revisions

Date	Change
April 2025	Updated PEP guidance based on NACI update: • IMIg is not recommended for individuals weighing more than 30 kg • Table 1 and Figure 6- Pregnant women ➢ If 1 previous documented dose or uncertain vaccination status, consider serology and eligible for Ig (previously not eligible) ➢ Removed immunocompromised consideration for pregnant women PEP eligibility • Differentiated groups of immunocompromised individuals (Table 2)
June 2024	Table 1- clarified definition of susceptible pregnant women. Figure 2- revised flow chart to align timeline from first exposure to administration of MMR and Ig. Figure 6- revised flow chart for clarity. Added Reference section.
April 2019	Figure 1 – added footnote #4 regarding use of MMR in ongoing exposure situations; added caveat about use of MMR as per spacing guidelines following Ig. Figure 2 – simplified flowchart; updated spacing interval following Ig from 5 months to 6-8 months; corrected footnote 5 to refer to measles exposure (not disease) Figure 3 – added footnote that rubella immunity may serve as proxy for measles immunity; adjusted to refer to year of birth 1965 for immunity during outbreaks Figure 4 – simplified flowchart for 0 or 1 doses of vaccine Figure 5 – simplified flowchart for 0 or 1 doses of vaccine Figure 6 – added footnote that rubella immunity may serve as a proxy for measles immunity
September 2018	Updated the dosage and formulation recommendations for immunoglobulin to align with the September 2018 National Advisory Committee on Immunization recommendations.

References

Public Health Agency of Canada. (2025, February 13). *Updated recommendations on measles post-exposure prophylaxis*. https://www.canada.ca/en/public-health/services/publications/vaccines-immunization/national-advisory-committee-immunization-statement-updated-recommendations-measles-post-exposure-prophylaxis.html

Tunis MC, Salvadori MI, Dubey V, Baclic O on behalf of the National Advisory Committee on Immunization (NACI). Updated NACI recommendations for measles post-exposure. Can Commun Dis Rep 2018;44(9):226-30. https://doi.org/10.14745/ccdr.v44i09a07

<DATE>

<NAME SCHOOL/SPORTS GROUP/ETC.>
<ADDRESS>
<CITY SK POSTAL CODE>

Re: Possible Exposure to Measles between <DATE> to <DATE>

Dear <NAME SCHOOL/SPORTS GROUP/ETC.>

We are investigating a person with red measles (Rubeola) who, while infectious, may have exposed others during <SCHOOL/SPORTS GROUP ACTIVITY/ETC.> Measles is a highly contagious disease spread through the air (by coughing, sneezing, talking). Public health is actively obtaining immunization records for individuals who have been exposed and may be contacting you to ask for your assistance in obtaining this information. Individuals who have had two doses of measles-containing vaccine (commonly provided as measles, mumps rubella [MMR] vaccine) or who have had a lab-confirmed infection in the past are considered immune and not at risk for infection.

Individuals who have not been immunized are at risk of developing infection and may be asked to stay out of <SCHOOL/SPORTS GROUP ACTIVITY/ETC.> until immunization has been provided.

Individuals who have been exposed may develop symptoms as early as 7 or as late as 21 days after the exposure. Early symptoms usually include:

- high fever;
- cough;
- runny nose;
- red eyes.

A rash then develops after a day or 2 and usually starts on the face then spreads over the rest of the body.

If you develop symptoms during this time, it is important to call ahead to your health care provider's office and inform them of your exposure so arrangements can be made for you to be assessed in a way that reduces the chance of exposing other individuals to measles.

Measles is contagious before early symptoms develop, which is 4 - 5 days before a person develops a rash, and remains contagious until 4 days after the rash appears. If you have symptoms and are waiting for laboratory confirmation, it is very important that you avoid contact with others who are not immune until the 5th day after the rash appears (you are no longer considered contagious after that time). If you require further medical attention, it is important call ahead to your health care provider as mentioned above.

We appreciate your assistance in preventing the possible spread of infection. Please feel free to call NUMBER as needed.

Sincerely,

<NAME OF PUBLIC HEALTH DESIGNATE>
<TITLE>

cc: Medical Health Officer

Public Health is investigating persons with measles who, while infectious, visited one or more public venues.

Measles is a highly contagious disease. Individuals who have had two doses of measles-containing vaccine (commonly provided as MMR or MMR-V) are considered immune and not at risk for infection. Individuals born before 1965 are likely to have been exposed to measles in childhood, and are considered to have a natural immunity to it.

Individuals born in 1965 or later and who have not been immunized are at risk of developing infection. Symptoms may develop as early as 7 or as late as 21 days after the exposure. Early symptoms usually include:

- high fever;
- cough;
- runny nose;
- red eyes.

A rash then develops after a day or 2 and usually starts on the face then spreads over the rest of the body.

If you develop symptoms compatible with measles in 7 to 21 days after being exposed, it is important to call ahead to your health care provider's office and inform them of your exposure so arrangements can be made for you to be assessed in a way that reduces the chance of exposing other individuals to measles.

Measles is contagious before symptoms develop, which is 4 to 5 days before a person develops a rash, and remains contagious until 4 days after the rash appears. If you have symptoms and are waiting for laboratory confirmation, it is very important that you avoid contact with others who are not immune until the 5th day after the rash appeared (you are no longer considered contagious after that time). If you require further medical attention, it is important to call ahead to your health care provider as mentioned above.

We appreciate your assistance in preventing the possible spread of infection. Please call your local public health office or the HealthLine at 811 as needed.

Please see the following pages for the Infection Prevention and Control Measures in Physicians' Offices.

Please see the following pages for the Infection Prevention and Control Measures in Physicians' Offices.

Infection Prevention and Control Measures in Physicians' Offices

- For each patient encounter, screen the patient to determine whether the patient has any signs/symptoms of measles. Screen the patient:
  - at time of booking;
  - upon arrival in the waiting room; or
  - in exam room.

NOTE: Symptoms of measles include prodromal fever, conjunctivitis, coryza, cough and small spots with white or bluish white centers on an erythematous base on the buccal mucosa (Koplik spots). Three to five days after the start of the symptoms a red, blotchy (maculopapular) rash appears on the face and then progresses down the body.

- Book anyone with symptoms at the end of the day if clinical status allows; ensure other patients are not in the office.
- Use airborne precautions as measles virus remains suspended in the air; health care providers (HCP) entering the patient's room must wear a fit-tested N95 respirator unless the HCP has documented immunity to measles.
- Where possible immune staff should provide care to patients suspected to have measles.
- Post signage at the entrance (Measles Alert Poster) instructing patients with signs and symptoms of measles or other respiratory symptoms to put on a surgical mask **before** entering the clinic.
- Provide surgical face masks for symptomatic patients as close to the entry of the clinical office as possible, with instructions on how to put on and take off mask. Consider having client call when in the parking lot (outside) and having immune staff go out to provide patient with a surgical mask. Instruct patient to wear the mask at all times while in the clinical office. Pediatric masks should be available on an individual patient basis if needed.
- Quickly triage the patient out of the common waiting areas and move the patient to an examining room. If possible, the patient should enter and exit through a separate entrance and go directly in and out of the examination room. Close door to examination room. The room should be a single room with a solid door (closed).
- Place a "DO NOT ENTER" sign for staff on the closed door.
- Keep the door closed to allow sufficient time (**two hours**) for the air to change in the room and be free of droplet nuclei before using the room for a non-immune patient.
- A bathroom used by a suspect case, to collect urine for measles virus, should also be off limits to non-immune patients for **two hours**. The bathroom door should be closed and have a "DO NOT ENTER" sign for staff/patients placed on the closed door. This is another reason to have patients seen at the end of the day.
- Routine cleaning for the room/equipment (once free of droplet nuclei) is sufficient.
- Ensure/encourage appropriate hand hygiene by staff and patient.

These recommendations align with Ontario's Infection Prevention and Control for Clinical Office Practice (June 2013) at:
http://www.publichealthontario.ca/en/eRepository/IPAC_Clinical_Office_Practice_2013.pdf