

## Measles Assessment Tool (MAT) for Infection Control in Healthcare Settings: Measles Preparedness and Response During Community Outbreaks

This Measles Assessment Tool (MAT) is intended to be a resource for use by health departments and/or healthcare facilities to aid in a focused review of measles prevention and response policies and procedures at a healthcare facility and guide infection prevention and control (IPC) observations during an outbreak of measles in the community. Findings from this assessment can help the healthcare facility determine if it is currently able to safely identify, isolate, and care for a patient with measles. It also facilitates addressing any identified gaps. Ideally, this assessment would be used by a health department or healthcare facility to proactively identify and address any gaps in IPC policies and practices before a measles exposure occurs, either through importation or community transmission.

A healthcare facility may implement different policies to minimize measles exposures based on the burden of measles transmission in the community or healthcare setting. If used as a preparedness tool, before measles is identified in the community, some questions may need to be rephrased to ask about the addition of measures (e.g., use of measles-specific signage) that would be taken in response to cases in the community. Further, as practices related to screening and rapid isolation broadly apply to anyone presenting with signs or symptoms of acute respiratory illness, concepts could be broadened to address pathogens beyond measles.

This MAT includes information for different types of facilities and units (and their related specific challenges). To the extent possible, the assessment facilitator should attempt to follow the paths a patient with suspected or confirmed measles could take in the facility, from facility entry to room placement, to best identify opportunities for exposure.

**Note:** Recommended IPC practice(s) based upon current CDC recommendations, when available, are included in this blue text box following select questions. These recommendations are meant to complement applicable law and health department guidance. By having ready access to the recommended practice(s), the facilitator can better identify gaps in practices and provide immediate verbal feedback and recommendations to the facility during the assessment. If HCP participating in the assessment do not know the answer, encourage them to consult with someone at the facility who does know, rather than leaving the answer as “unknown.”

### Additional Resources:

[Interim Infection Prevention and Control Recommendations for Measles in Healthcare Settings | Infection Control | CDC](#)

[Measles | Infection Control | CDC](#)

[Prevention of Measles, Rubella, Congenital Rubella Syndrome, and Mumps, 2013](#)

[Infection Control Assessment and Response \(ICAR\) Tool for General Infection Prevention and Control \(IPC\) Across Settings | HAIs | CDC](#)

## Section 1. Assessment Information

Assessment Date: \_\_\_\_\_

Type of Assessment: ☐ On-site ☐ Other (specify): \_\_\_\_\_

Healthcare Facility Name: \_\_\_\_\_

Completed by: \_\_\_\_\_

## Section 2. General Facility Demographics

### 1. Facility type (Select all that apply):

☐ Acute care hospital (Specify number of beds: \_\_\_\_\_)

**1a.** If Acute Care, indicate if:

☐ Critical access hospital

☐ Long-term Acute Care Hospital

☐ Outpatient clinic (Specify type): \_\_\_\_\_

☐ Urgent care

☐ Nursing home

If performing an assessment in a nursing home, replace “patient” with “resident”, as appropriate, in subsequent questions.

☐ Other (specify): \_\_\_\_\_

### 2. Has the facility designated someone to oversee infection prevention?

☐ Yes ☐ No ☐ Unknown

### 3. Do healthcare personnel (HCP) have access to occupational health services?

☐ Yes ☐ No ☐ Unknown

These questions are intended to identify individuals who work onsite at the facility or provide infection prevention (IP) or occupational health oversight at satellite locations (e.g., hospital infection preventionist provides IP oversight to affiliated outpatient clinics).

CDC recommends assigning “one or more qualified individuals with training in infection prevention and control to manage the facility’s infection prevention program.” [CDC's Core Infection Prevention and Control Practices for Safe Healthcare Delivery in All Settings | Infection Control | CDC](#). CDC also recommends dedicating “one or more persons with appropriate authority and training to lead occupational infection prevention and control services.” [Infection Control in Healthcare Personnel: Infrastructure and Routine Practices | Infection Control | CDC](#)

4. For acute care hospitals and nursing homes, what is the average daily census? \_\_\_\_\_

5. For outpatient facilities, what is the average number of patients seen daily? \_\_\_\_\_

6. What is the approximate number of HCP that work on a full or part-time basis at the facility? \_\_\_\_\_

Definition of HCP: “HCP includes all paid and unpaid persons working in healthcare settings who have the potential for exposure to patients and/or to infectious materials, including body substances, contaminated medical supplies and equipment, contaminated environmental surfaces, or contaminated air. HCP include but

are not limited to, emergency medical service personnel, nurses, nursing assistants, physicians, technicians, therapists, phlebotomists, pharmacists, students and trainees, contractual staff not employed by the healthcare facility, and persons not directly involved in patient care, but who could be exposed to infectious agents that can be transmitted in the healthcare setting (e.g., clerical, dietary, environmental services, laundry, security, engineering and facilities management, administrative, billing, and volunteer personnel).” [Interim Infection Prevention and Control Recommendations for Measles in Healthcare Settings | Infection Control | CDC](#)

7. Does the facility provide care for pediatric patients? ☐ Yes ☐ No

8. Does the facility provide obstetric care? ☐ Yes ☐ No

9. Has the facility cared for any patients who were confirmed to have measles over the last 3 months?

☐ Yes ☐ No ☐ Unknown

If [YES],

9a. Number of patients with measles cared for: \_\_\_\_\_

9b. Were all these individuals recognized at presentation and isolated?

☐ Yes ☐ No ☐ Unknown

If [NO],

Describe situation(s) further.

---

9c. Describe the process used for contact tracing and exposure management, if indicated.

---

10. Have any facility HCP been diagnosed with measles in the last 3 months?

☐ Yes ☐ No ☐ Unknown

If [YES],

10a. Number of HCP diagnosed with measles: \_\_\_\_\_

10b. Were any of these HCP exposed at work?

☐ Yes ☐ No ☐ Unknown

**If [YES],**

Describe situation(s) further.

---

HCP exposures to measles in a healthcare setting include “spending any amount of time while unprotected (i.e., not wearing recommended respiratory protection) in a shared air space with an infectious measles patient at the same time, or, in a shared air space vacated by an infectious measles patient for up to 2 hours. Measles virus is thought to be contagious to others in the air for up to 2 hours. In general, the time that the air in a room occupied by a measles patient is thought to remain infectious to others depends on several factors including the room’s air changes per hour, up to a maximum of 2 hours.” [Measles | Infection Control | CDC](#)

**10c.** Did any of these HCP work while contagious?

☐ Yes ☐ No ☐ Unknown

**If [YES],**

Describe the situation(s) further, including process used for contact tracing and exposure management.

---

People with measles “are considered to be contagious from 4 days before to 4 days after the rash appears.” The day of rash onset is considered Day 0. [Clinical Overview of Measles | Measles \(Rubeola\) | CDC](#)

**11.** Who is notified if a patient or a healthcare worker with suspected or confirmed measles is identified (Select all that apply)?

☐ Infection Prevention ☐ Occupational Health ☐ Health Department

☐ Other (specify): \_\_\_\_\_ ☐ Unknown ☐ None of the above ☐ Not assessed

“Implement mechanisms and policies that promptly alert key facility staff, including hospital leadership, infection control, healthcare epidemiology, occupational health, clinical laboratory, and frontline staff, about patients with suspected or known measles. Promptly notify public health authorities of patients with known or suspected measles. Designate specific persons within the facility who are responsible for communication with public health officials and dissemination of information to HCP.” [Interim Infection Prevention and Control Recommendations for Measles in Healthcare Settings | Infection Control | CDC](#)

**12.** What do you currently perceive to be the most significant barriers at your facility related to measles preparedness?

---

13. What resources does your facility need to improve measles preparedness and how can your public health partners assist?

---

### Section 3. Occupational Health

1. Within the last 3 months, has your facility provided job or task-specific measles IPC education and training to all HCP (e.g., signs and symptoms of measles, recommended IPC precautions for measles patients)?

☐ Yes ☐ No ☐ Unknown

Refresher training about signs and symptoms of measles and recommended practices to prevent transmission might be appropriate in facilities where a failure to implement appropriate precautions occurred or when a community outbreak is occurring. CDC has resources that can be used to provide brief, on the job education: [Measles Micro-Learn](#)

2. Does your facility document preplacement presence or absence of presumptive evidence of immunity to measles for *all* HCP?

☐ Yes ☐ No ☐ Unknown

If [NO],

2a. For which HCP groups (e.g., contact staff, licensed independent practitioners, students, volunteers) does your facility **not** document presence or absence of preplacement presumptive evidence of immunity to measles?

---

2b. How would this information be obtained if there is an exposure event?

---

3. Is vaccination offered to HCP without presumptive evidence of immunity?

☐ Yes ☐ No ☐ Unknown

4. How many HCP at your facility **do not** have documented presumptive evidence of immunity to measles?

Specify: \_\_\_\_\_ ☐ Unknown

**4a.** Is this information rapidly retrievable in circumstances of an exposure event?

☐ Yes ☐ No ☐ Unknown

CDC recommends that all people who work in healthcare facilities have documentation of adequate vaccination against measles or other acceptable evidence of measles immunity.

“Presumptive evidence of immunity to measles for HCP includes: (a) written documentation of vaccination with two doses of measles virus-containing vaccine (the first dose administered at age  $\geq 12$  months; the second dose no earlier than 28 days after the first dose); OR (b) laboratory evidence of immunity (measles immunoglobulin G [IgG] in serum; equivocal results are considered negative); OR (c) laboratory confirmation of disease; OR (d) birth before 1957. Consider vaccinating HCP born before 1957 who do not have other evidence of immunity to measles.”

During a measles outbreak, two doses of measles virus-containing vaccine separated by at least 4 weeks (28 days) are recommended for unvaccinated HCP, regardless of year of birth, who lack laboratory evidence of measles immunity or laboratory confirmation of disease.” [Interim Infection Prevention and Control Recommendations for Measles in Healthcare Settings | Infection Control | CDC](#)

Following an exposure event, many actions including need for work exclusion and eligibility for post-exposure prophylaxis are dependent on presumptive evidence of immunity to measles. Having complete information in a rapidly retrievable format helps ensure appropriate actions can be taken in a timely manner.

**5.** Do you have a respiratory protection program that includes providing medical clearance, training, and respirator fit testing for HCP who may be exposed to hazards warranting use of a respirator?

☐ Yes ☐ No ☐ Unknown

If [YES],

**5a.** Who is included in the program? (select all that apply):

☐ Employees who provide direct patient care

☐ Contractual staff who provide direct patient care

☐ Employees who work in clinical areas but do not provide clinical care (e.g., environmental services, dietary)

☐ Contractual staff who work in clinical areas but do not provide clinical care (e.g., environmental services, dietary)

☐ Other personnel (specify): \_\_\_\_\_

☐ Unknown

☐ None of the above

☐ Not assessed

**5b.** Are these HCP fit-tested on an annual basis?

☐ Yes ☐ No ☐ Unknown

If [YES],

Describe the process for ensuring annual fit-testing:

---

Per the Occupational Safety and Health Administration (OSHA): “A respirator shall be provided to each employee when such equipment is necessary to protect the health of such employee. The employer shall provide the respirators which are applicable and suitable for the purpose intended.” Respirator use must be in the context of a complete respiratory protection program in accordance with OSHA [Respiratory Protection Standard 29 CFR 1910.134](#)[external icon](#) and [Interim Infection Prevention and Control Recommendations for Measles in Healthcare Settings | Infection Control | CDC](#)

**6.** Describe the facility’s sick leave policies for HCP:

---

“Implement sick leave options for healthcare personnel that encourage reporting of potentially infectious exposures or illnesses, appropriate use of sick leave, and adherence to work restrictions.” [Infection Control in Healthcare Personnel: Infrastructure and Routine Practices for Occupational Infection Prevention and Control Services \(2019\)](#)

**7.** Describe the process for identifying and excluding from work HCP with signs or symptoms of measles or another contagious infectious disease (e.g., varicella, pertussis):

---

**8.** How do HCP report potentially infectious work-related exposures?

---

“Establish a timely, confidential, and non-punitive mechanism for healthcare personnel to report potentially infectious exposures and access exposure and illness management services 24 hours a day and 7 days per

## Section 4. Practices to Minimize Potential Measles Exposures

### ***Before Arrival***

1. When scheduling appointments (e.g., over the phone or online), does your facility ask if a patient has signs or symptoms of measles (i.e., fever, cough, coryza, conjunctivitis, maculopapular rash)?

☐ Yes ☐ No ☐ Unknown ☐ Not applicable

If [YES],

1a. What actions are taken if a patient reports they have signs or symptoms of measles? (Select all that apply)

☐ Non-urgent appointments are rescheduled

☐ Patients are directed to a specific entrance and location designated for patients with suspected or confirmed measles

☐ Patients are directed to wear a facemask while at the facility

☐ Other (specify): \_\_\_\_\_

☐ Unknown

☐ None of the above

☐ Not assessed

“When scheduling appointments by phone: for persons with signs or symptoms of measles, provide instructions for arrival, including which entrance to use and the precautions to take (e.g., how to notify hospital staff, don a facemask upon entry, follow triage procedures).” [Interim Infection Prevention and Control Recommendations for Measles in Healthcare Settings | Infection Control | CDC](#)

### ***Upon Arrival***

2. Does symptom screening occur at patient and visitor entrances?

☐ Yes, for patients only ☐ Yes, for patients and visitors ☐ No ☐ Unknown

If [YES], for each area (e.g., emergency department, urgent care, clinics) assess the following:

2a. Is screening performed on all shifts?

☐ Yes ☐ No ☐ Unknown



**2b.** Where does the screening occur?

---

**2c.** What routine personal protective equipment (PPE) is worn by HCP who perform screening?

---

**2d.** What actions are taken if an individual has signs or symptoms of measles?

---

“Utilize existing triage stations for rapid identification and isolation of patients with measles. Persons with signs or symptoms of measles should be identified, provided a facemask<sup>2</sup> to wear, and separated from other patients *prior to or as soon as possible after entry into a facility*. HCP should use respiratory protection (i.e., a respirator) that is at least as protective as a fit-tested, NIOSH Approved® N95® filtering facepiece respirator, regardless of presumptive evidence of immunity, upon entry to the room or care area of a patient with known or suspected measles.”

[Interim Infection Prevention and Control Recommendations for Measles in Healthcare Settings | Infection Control | CDC](#)

**3.** When a patient with suspected or confirmed measles is present, is appropriate signage posted outside the room advising that respiratory protection should be worn?

☐ Yes ☐ No ☐ Unknown

If [YES]

**3b.** Does the signage remain in place after the patient has left for a sufficient time to remove 99.9% of airborne contaminants (up to 2 hours)?

☐ Yes ☐ No ☐ Unknown

“In healthcare settings, persons potentially exposed to measles include patients, visitors, and HCP who are not wearing recommended respiratory protection\* (regardless of presumptive evidence of measles immunity) who are:

- In a shared air space with an infectious measles patient at the same time, or
- In a shared air space vacated by an infectious measles patient within the prior 2 hours\*\*.

\*Recommended respiratory protection is a respirator that is at least as protective as a fit-tested, NIOSH Approved N95 filtering facepiece respirator

\*\*Measles has been reported to remain infectious in air for up to 2 hours. For spaces with a defined rate of air changes per hour (ACH), see the following for additional considerations about estimating the time for 99.9% removal efficiency of airborne contaminants: Table B1 "Air changes/hour (ACH) and time required for airborne-contaminant removal by efficiency" from [Appendix B. Air | Infection Control | CDC](#)  
[Interim Infection Prevention and Control Recommendations for Measles in Healthcare Settings | Infection Control | CDC](#)

In general, signage outside the room signaling that Transmission-Based Precautions are in use should remain in place until after terminal cleaning has been completed by environmental services (EVS) personnel. This can help signal to EVS if there is additional PPE or specific disinfectants that should be used for terminal cleaning or if they need to wait for a specific number of air changes before entering the room (e.g., Airborne Precautions).

4. Which strategies do HCP use to minimize the risk of measles exposure when transporting a patient with suspected or confirmed measles within the facility? (Select all that apply)

- ☐ Limit transport to essential purposes that cannot be performed in the patient's room
- ☐ Patient wears a facemask during transit
- ☐ Transportation routes selected to minimize contact with persons not essential to the patient's care
- ☐ Notify staff in the receiving area of the impending arrival of the patient and of the precautions necessary to prevent transmission.
- ☐ Transporter wears N95 respirator during transport
- ☐ Other (specify): \_\_\_\_\_
- ☐ Unknown
- ☐ None of the above
- ☐ Not assessed

5. When transporting a patient with suspected or confirmed measles to another facility, do you inform both the receiving facility and transport vehicle staff (e.g., emergency medical services) in advance about Airborne Precautions being used?

- ☐ Yes ☐ No ☐ Unknown

If [YES],

5a. How is the information regarding suspect or confirmed measles status shared?

"Limit transport of patients with known or suspected measles to essential purposes, such as diagnostic and therapeutic procedures that cannot be performed in the patient's room or in the facility. When transport within the facility is necessary,

- The patient should wear a facemask if tolerated.
- The transporter should use respiratory protection (i.e., a respirator) that is at least as protective as a fit-tested, NIOSH Approved N95 filtering facepiece respirator.
- Use a transportation route and process that includes minimal contact with persons not essential for the patient's care.
- Notify HCP in the receiving area of the impending arrival of the patient and of the precautions necessary to prevent transmission.

When transport outside the facility is necessary, inform the receiving facility and the transport vehicle HCP in advance about airborne precautions being used."

[Interim Infection Prevention and Control Recommendations for Measles in Healthcare Settings | Infection Control | CDC](#)

6. What duration of Airborne Precautions is used for a patient with measles?

- ☐ Until 4 days after rash onset (rash onset is day 0) and for the duration of illness for severely immunocompromised individuals
- ☐ Other (specify): \_\_\_\_\_
- ☐ Unknown
- ☐ Airborne Precautions not used
- ☐ Not assessed

"Patients with measles should remain in Airborne Precautions for 4 days after the onset of rash (with onset of rash considered to be Day 0). Immunocompromised patients with measles should remain in Airborne Precautions for the duration of illness due to prolonged virus shedding in these individuals."

<https://www.cdc.gov/infection-control/hcp/measles/index.html>

### Visitors

7. Are visitors without presumptive evidence of immunity allowed to enter the room of a patient with known or suspected measles?

☐ Yes ☐ No ☐ Unknown

"Visitors without acceptable presumptive evidence of immunity should not enter the room of a patient with known or suspected measles." [Interim Infection Prevention and Control Recommendations for Measles in Healthcare Settings | Infection Control | CDC](#)

**8.** Are visitors without presumptive evidence of immunity who have been exposed to someone with measles allowed to enter the facility?

☐ Yes ☐ No ☐ Unknown

In general, individuals who do not have presumptive evidence of immunity and who have been exposed to someone with measles in the prior 21 days should be considered potentially infectious from the 5th day after their first exposure through the 21st day after their last exposure and managed accordingly.

**HCP**

**9.** Do HCP use respiratory protection (e.g., fit-tested N95 respirator) when entering the shared air space of a patient with suspected or confirmed measles?

☐ Yes ☐ No ☐ Unknown

**10.** Do HCP (e.g., triage staff) use respiratory protection (e.g., fit-tested N95 respirator) in areas that are high risk for measles exposure (e.g., areas where screening for signs and symptoms of measles is performed)?

☐ Yes ☐ No ☐ Unknown

“HCP should use respiratory protection (i.e., a respirator) that is at least as protective as a fit-tested, NIOSH Approved N95 filtering facepiece respirator, regardless of presumptive evidence of immunity, upon entry to the room or care area of a patient with known or suspected measles.”

[Interim Infection Prevention and Control Recommendations for Measles in Healthcare Settings | Infection Control | CDC](#)

**11.** Does the facility audit adherence to recommended selection and use of PPE by HCP when a patient with suspected or confirmed measles is in the care area?

☐ Yes ☐ No ☐ Unknown

Monitor adherence to infection prevention practices and infection control requirements. Audits are an important means of noting when additional training in response to lapses may be needed. Audits include direct observation or monitoring of healthcare personnel adherence to job-specific IP measures. Formal audits include collection and aggregation of data to determine what proportion of time personnel are adhering to facilities policies and processes. Train performance monitoring personnel and use standardized tools and definitions.

<https://www.cdc.gov/infection-control/hcp/core-practices/index.html> and <https://www.cdc.gov/healthcare-associated-infections/php/toolkit/icar.html>

Audits should include assessment of critical practices. CDC does not recommend a certain number of observations be collected. However, small sample sizes may result in bias and may not allow for valid assessment of improvements. In general, efforts should be made to assess the practices of all HCP who perform the particular practice being audited; such observations could count as their annual competency assessment.

**12.** How long are HCP with known or suspected measles excluded from work?

☐ Until 4 days after the rash appears and, if immunocompromised, for the duration of their illness.

☐ Not excluded from work

☐ Other (specify): \_\_\_\_\_

☐ Unknown

☐ Not assessed

“For HCP with known or suspected measles, exclude from work for 4 days after the rash appears. For immunocompromised HCP with known or suspected measles, exclude from work for the duration of their illness.” [Measles | Infection Control | CDC](#)

## Section 5. Management of Measles Exposures

**1.** Is there a process to identify the following individuals who have been exposed to measles in your healthcare facility:

**1a.** HCP?

☐ Yes ☐ No ☐ Unknown

**1b.** Admitted patients?

☐ Yes ☐ No ☐ Unknown ☐ Not applicable

**1c.** Outpatients?

☐ Yes ☐ No ☐ Unknown ☐ Not applicable

**1d.** Visitors?

☐ Yes ☐ No ☐ Unknown ☐ Not applicable

**If [YES], to any groups,**

Describe the process, including if/when public health might be engaged:

“In healthcare settings, persons potentially exposed to measles include patients, visitors, and HCP who are not wearing recommended respiratory protection\* (regardless of presumptive evidence of measles immunity) who are:

- In a shared air space with an infectious measles patient at the same time, or
- In a shared air space vacated by an infectious measles patient within the prior 2 hours\*\*.

\*Recommended respiratory protection is a respirator that is at least as protective as a fit-tested, NIOSH Approved N95 filtering facepiece respirator

\*\*Measles has been reported to remain infectious in air for up to 2 hours. For spaces with a defined rate of air changes per hour (ACH), see the following for additional considerations about estimating the time for 99.9% removal efficiency of airborne contaminants: Table B1 "Air changes/hour (ACH) and time required for airborne-contaminant removal by efficiency" from [Appendix B. Air | Infection Control | CDC](#)

**2. How does the facility determine if exposed individuals have presumptive evidence of immunity to measles? (Select all that apply)**

- ☐ Ask the individual
- ☐ Review medical records
- ☐ Review employee health records
- ☐ Review the State Immunization Information System and/or City Immunization Registry
- ☐ Other (specify): \_\_\_\_\_
- ☐ Unknown
- ☐ None of the above
- ☐ Not assessed

Exposed individuals who do not have presumptive evidence of immunity to measles and are within 6 days following their exposure should be offered post-exposure prophylaxis. [Prevention of Measles, Rubella, Congenital Rubella Syndrome, and Mumps, 2013](#)

**3. Would your facility be able to determine which exposed individuals are at highest risk for severe disease or complications (< 1 year of age, pregnant and non-immune, severe immunosuppression)?**

- ☐ Yes ☐ No ☐ Unknown

Though all persons with exposure to measles should be notified, this information may be used to prioritize those at highest risk for severe disease or complications.

“Severely immunocompromised patients include, but are not limited to, patients with severe primary immunodeficiency; patients who have received a bone marrow transplant until at least 12 months after finishing all immunosuppressive treatment, or longer in patients who have developed graft-versus-host disease; patients on treatment for acute lymphocytic leukemia within and until at least 6 months after completion of immunosuppressive chemotherapy; and patients with a diagnosis of AIDS or HIV-infected persons with severe immunosuppression defined as CD4 percent <15% (all ages) or CD4 count <200 lymphocytes/mm<sup>3</sup> (aged >5 years) and those who have not received MMR vaccine since receiving effective ART. Some experts include HIV-infected persons who lack recent confirmation of immunologic status or measles immunity. The treating physician for the exposed individual should be consulted to determine if the patient is immunocompromised.”

[Interim Infection Prevention and Control Recommendations for Measles in Healthcare Settings | Infection Control | CDC](#)

**4. Would your facility be able to determine which exposed individuals had the highest risk exposures (e.g., prolonged or close contacts with an unrecognized measles patient in a waiting area or clinical space)?**

- ☐ Yes ☐ No ☐ Unknown

Though all persons with exposure to measles should be notified, this information may be used to prioritize those with more direct and sustained exposure to measles.

- Examples of higher risk exposures to measles include, but are not limited to:
  - Susceptible HCP who are unprotected (i.e., not wearing recommended respiratory protection) and are providing face-to-face care to an unmasked patient
  - Persons in the waiting room with an unmasked measles patient for an extended period of time

[Appendix A: Considerations when Evaluating a Person for Exposure to Measles in a Healthcare Setting | Infection Control | CDC](#)

5. How would patients be notified if they were exposed to measles at your facility?

---

6. How would visitors be notified if they were exposed to measles at your facility?

---

7. How would HCP be notified if they were exposed to measles at your facility?

---

8. Does your facility have a process for the daily monitoring of the following individuals who have an unprotected exposure to measles?

**8a. HCP?**

☐ Yes ☐ No ☐ Unknown

**8b. Admitted patients?**

☐ Yes ☐ No ☐ Unknown ☐ Not applicable

**8c. Outpatients?**

☐ Yes ☐ No ☐ Unknown ☐ Not applicable

**8d. Visitors?**

☐ Yes ☐ No ☐ Unknown ☐ Not applicable

**If [Yes], to any groups,**

Describe how monitoring is performed (e.g., self-monitoring, active monitoring, health department involvement):

---

Exposed individuals should be notified and monitored for symptoms from the 5th day after their first exposure through the 21st day following their last exposure (28 days if immune globulin is administered for post-exposure prophylaxis). [Interim Infection Prevention and Control Recommendations for Measles in Healthcare Settings | Infection Control | CDC](#)

Rapid notification is important so that post-exposure prophylaxis can be administered to eligible individuals. Facilities should have a plan for how notifications and monitoring will be performed, including how and when the health department should be engaged and what role they will play in the process.

**9. Does your facility offer the Measles, Mumps, and Rubella (MMR) vaccine for post exposure prophylaxis (PEP) for the following individuals, if eligible?**

**9a. HCP?**

☐ Yes ☐ No ☐ Unknown

**9b. Admitted patients?**

☐ Yes ☐ No ☐ Unknown ☐ Not applicable

**9c. Outpatients?**

☐ Yes ☐ No ☐ Unknown ☐ Not applicable

**9d. Visitors?**

☐ Yes ☐ No ☐ Unknown

**If [NO], to any groups,**

**9e. How would these eligible individuals get the MMR vaccine?**

**10. Does your facility offer immune globulin for post exposure prophylaxis (PEP) for the following individuals, if eligible?**

**10a. HCP?**



☐ Yes ☐ No ☐ Unknown

**10b. Admitted patients?**

☐ Yes ☐ No ☐ Unknown ☐ Not applicable

**10c. Outpatients?**

☐ Yes ☐ No ☐ Unknown ☐ Not applicable

**10d. Visitors?**

☐ Yes ☐ No ☐ Unknown

**If [NO], to any groups,**

**10e. How would these eligible individuals get immune globulin?**

---

“MMR vaccine, if administered within 72 hours of initial measles exposure, might provide some protection or modify the clinical course of measles. For vaccine eligible persons aged  $\geq 12$  months exposed to measles, administration of MMR vaccine is preferable to using IG, if administered within 72 hours of initial exposure...

If administered within 6 days of exposure, IG can prevent or modify measles in persons who are nonimmune. IG is not indicated for persons who have received 1 dose of measles-containing vaccine at age  $\geq 12$  months, unless they are severely immunocompromised. Any nonimmune person exposed to measles who received IG should subsequently receive MMR vaccine, which should be administered no earlier than 6 months after IGIM administration or 8 months after IGIV administration, provided the person is then aged  $\geq 12$  months and the vaccine is not otherwise contraindicated.” [Prevention of Measles, Rubella, Congenital Rubella Syndrome, and Mumps, 2013](#)

**11. What duration of Airborne Precautions is used for an *asymptomatic* measles-exposed patient in the facility who is either severely immunocompromised or does not have presumptive evidence of immunity to measles?**

☐ From the 5th day after their first exposure through the 21st\* day after the last exposure, or until discharge, if earlier

☐ Exposed asymptomatic patients are not placed on Airborne Precautions

☐ Other (specify): \_\_\_\_\_

☐ Unknown

☐ Airborne Precautions not used

☐ Not assessed

“Place the exposed patient without presumptive evidence of measles immunity on Airborne Precautions from the 5th day after the first exposure through the 21st day after the last exposure, or until discharge, if earlier.

- This time period is based on [the typical incubation period](#) for measles and is consistent with [work exclusion recommendations](#) for asymptomatic healthcare personnel without presumptive evidence of immunity who have an exposure to measles. If the patient in a healthcare setting develops symptoms of measles earlier than the 5th day after their exposure, they should be immediately placed on Airborne Precautions pending further evaluation. For ease of implementation or if the timing of the first exposure is uncertain (e.g., in a community outbreak), healthcare facilities could choose to implement Airborne Precautions earlier in the suspected incubation period (e.g., at admission).

Administer postexposure prophylaxis in accordance with CDC and ACIP recommendations. [IG might prolong the incubation period for measles](#); for patients who have received IG for PEP, extend the monitoring period through the 28th day after the last exposure. Consider extending the isolation period through the 28th day after the last exposure, or until discharge, if earlier.” [Interim Infection Prevention and Control Recommendations for Measles in Healthcare Settings | Infection Control | CDC](#)

**12.** How long are *asymptomatic* HCP who lack presumptive evidence of immunity to measles or who are severely immunocompromised excluded from work following an unprotected exposure to measles?

- ☐ From the 5th day after their first exposure through the 21st\* day after their last exposure
- ☐ Not excluded from work
- ☐ Other (specify): \_\_\_\_\_
- ☐ Unknown
- ☐ Not assessed

“For asymptomatic HCP without presumptive evidence of immunity to measles who have an exposure to measles:

- Administer postexposure prophylaxis in accordance with CDC and ACIP recommendations.
- Exclude from work from the 5th day after their first exposure through the 21st day after their last exposure, regardless of receipt of postexposure prophylaxis.
- Work restrictions are not necessary for healthcare personnel who received the first dose of MMR vaccine prior to exposure.

[Measles | Infection Control | CDC](#)

"In addition to recommendations in the [Measles | Infection Control | CDC](#), for the management of asymptomatic healthcare personnel **without** presumptive evidence of immunity to measles who have an exposure to measles:

- Extend daily monitoring for signs or symptoms of measles from the 5th day after their first exposure through the 28th day after their last exposure if IG was administered as postexposure prophylaxis.
- Consider extending exclusion from work from the 5th day after their first exposure through the 28th day after their last exposure if IG was administered as postexposure prophylaxis.
- Healthcare personnel who develop symptoms of measles earlier than the 5<sup>th</sup> day after their exposure should be excluded from work pending further evaluation.

**13.** What specimen type(s) are collected at your facility for individuals with suspected measles? (Select all that apply)

☐ Blood/Serum serology ☐ Throat/Nasopharyngeal Swab PCR ☐ Urine PCR ☐ Other (specify): \_\_\_\_\_

☐ Unknown ☐ None of the above ☐ Not assessed

**If [YES] to any above,**

Describe the process from collection to shipping/hand-off, including specimen storage, where that sample is processed, and turnaround time.

\_\_\_\_\_

“CDC recommends that either a nasopharyngeal swab, throat swab, or urine specimen as well as a blood specimen be collected from all patients with clinical features compatible with measles. Nasopharyngeal or throat swabs are preferred over urine specimens.” [Laboratory Testing for Measles | Measles \(Rubeola\) | CDC MM and Test Types Typically Available to Clinicians and Descriptions for Measles, Mumps, Rubella, and Varicella](#)

## Section 6. Patient Tracer

For this section, the facilitator should review the layout of the healthcare facility, including following the path from where patients with suspected or confirmed measles enter the facility to where they could be placed. This would include a guided tour through the potential spaces and rooms. A simple facility layout (e.g., fire egress map, facilities management blueprint, or simple sketch) can also help with visualizing spaces and identifying alternative spaces that might be better suited to care for patients. If a patient on Airborne Precautions is currently in the facility, the facilitator should observe signage, access to PPE supplies, and how the airborne infection isolation room is monitored to ensure it is functioning correctly.

**The questions noted with an asterisk are best answered in consultation with an individual familiar with air handling in the facility; this person might be referred to as Heating Ventilation Air Conditioning (HVAC) engineer/technician, facility engineer, maintenance technician, or repair technician.**

**CDC recommendations are referenced where applicable. However, state-specific ventilation requirements should also be consulted.**

**1.** Is signage about measles and relevant infection control expectations (e.g., respiratory hygiene, triage procedures) currently posted in the facility?

☐ Yes ☐ No ☐ Unknown

**If [YES],**

**1a.** Where is the measles signage posted? (Select all that apply)

☐ Check-in desk/triage

☐ Waiting room

☐ On door or outside facility

☐ Other (specify): \_\_\_\_\_

☐ Unknown

☐ Not assessed

“Post visual alerts (e.g., signs, posters) in appropriate languages about respiratory hygiene, cough etiquette, and hand hygiene at the facility entrance and in common areas (e.g., waiting areas, elevators, cafeterias).” [Interim Infection Prevention and Control Recommendations for Measles in Healthcare Settings | Infection Control | CDC](#)

**2.** Are patients with suspected measles and their visitors' provided facemasks in the facility?

☐ Yes ☐ No ☐ Unknown

**If [YES],**

**2a.** Where are facemasks and other infection control supplies (e.g., hand sanitizer) available? (Select all that apply)

☐ Check-in desk/triage

☐ Waiting room

☐ Before entering the facility

☐ Other (specify): \_\_\_\_\_

☐ Unknown

☐ Not assessed

“Persons with signs or symptoms of measles should be identified, provided a facemask to wear, and separated from other patients prior to or as soon as possible after entry into a facility.” [Interim Infection Prevention and Control Recommendations for Measles in Healthcare Settings | Infection Control | CDC](#)

**3.** Are respirators in appropriate sizes/models readily available to HCP at the point of care?

☐ Yes ☐ No ☐ Unknown

***Airborne infection isolation room availability***

**4.** \*Does your facility have any airborne infection isolation rooms (AIIRs)?

☐ Yes ☐ No ☐ Unknown

If [YES],

4a. How many AIIRs are available? \_\_\_\_\_

4b. List all units where they are located (e.g., inpatient, labor and delivery, ED):

\_\_\_\_\_

4c. Which individual(s) are responsible for evaluating and maintaining AIIRs?

4d. When were the AIIRs last assessed to confirm they meet current standards for air handling and monitoring?

\_\_\_\_\_

Refer to existing state requirements for AIIRs. AIIRs should:

- Be at negative pressure relative to adjacent spaces
- Provide at least 12 air changes per hour unless a different number is allowed by the state based on the year the room was constructed or renovated.
- Directly discharge exhaust air safely to the outside (refer to state requirements for location of discharge outlets) or, if exhaust air is not directly discharged to the outside, it may be returned to the air handling system or adjacent spaces if all air is directed through high efficiency particulate air (HEPA) filters.

4d. When is a patient with suspected or confirmed measles placed in an AIIR?

☐ As soon as measles is suspected or recognized ☐ Only after confirmation of measles ☐ After admission ☐ Never ☐ Other (specify): \_\_\_\_\_ ☐ Unknown ☐ Not Assessed

"Immediately place patients with known or suspected measles in an airborne infection isolation room (AIIR). The patient's facemask could be removed as long as they remain in the AIIR." [Interim Infection Prevention and Control Recommendations for Measles in Healthcare Settings | Infection Control | CDC](#)

### ***Characterizing and mitigating risk from shared air spaces***

\*5. What air spaces are shared with areas where patients with suspected or confirmed measles might be screened, examined, or cared for?

\_\_\_\_\_

“Defining what constitutes a shared air space:

- Smaller spaces, such as the patient compartment of an ambulance, a single patient room, or a clinic waiting area, are shared air spaces
- Different areas in a larger space or rooms that share a common air handling system, such as a large emergency department with patient waiting, triage, HCP work areas, or multiple individual patient rooms that share a common unfiltered air source (i.e., ventilation return air is recirculated without passing through HEPA filtration, are also shared airspaces).” Interim Infection Prevention and Control Recommendations for Measles in Healthcare Settings | Infection Control | CDC

Part II. Recommendations for Environmental Infection Control in HealthCare Facilities Guidelines for Environmental Infection. Control in Health-Care Facilities (2003) [Part II. Recommendations for Environmental Infection Control in Health-Care Facilities | Infection Control | CDC](#)

6. If an AIIR is not available, is the patient with suspected or confirmed measles routinely placed in a separate, dedicated exam room with a closed door?

☐ Yes ☐ No ☐ Unknown

If [YES],

6a. Has the space been identified?

☐ Yes ☐ No ☐ Unknown

If [YES],

6a1. What factors were considered in the selection of this space? (Select all that apply)

- ☐ Placement maximizes distance from other clinical areas in unit
- ☐ Accessible via separate entrance that minimizes contact with others in healthcare setting
- ☐ Limited shared air with other areas of the facility (as determined by consultation with facility engineering)
- ☐ Exhaust able to be directed safely outdoors (as determined by consultation with facility engineering)
- ☐ Bathroom available in room
- ☐ Other (specify):
- ☐ Unknown
- ☐ None of the above
- ☐ Not assessed

\*6b. Does your facility implement any of the following measures to limit transmission from this room?

**6b1.** Create a negative pressure environment? ☐ Yes ☐ No ☐ Unknown

If **[YES]**, describe:

---

**6b2.** Externally discharge all exhaust air? ☐ Yes ☐ No ☐ Unknown

If **[YES]**, describe (e.g., how many feet from outdoor air intakes and openable windows and doors):

---

If **[NO]**, what rooms or areas share the same air handling system and may receive exhausted air from this room?

---

**6b3.** Filter all air that is exhausted from the room and supplied to other room(s) by a shared air handling system? ☐ Yes ☐ No ☐ Unknown

If **[YES]**, what is the minimum efficiency reporting value (MERV) of the filter:

---

**6b4.** Increase outdoor airflow intake? ☐ Yes ☐ No ☐ Unknown

If **[YES]**, describe:

---

**6b5.** Use portable HEPA filters? ☐ Yes ☐ No ☐ Unknown

If [YES], describe type, where they are placed, how they are maintained:

---

**6b6.** Other strategies (specify and describe):

---

**7.** Is there a policy for the patient to wear a mask for the duration of time spent outside of an AIIR?

☐ Yes ☐ No ☐ Unknown

**8.** Is there a policy to keep the exam room vacant for the appropriate amount of time to remove 99.9% of airborne-contaminants after the patient leaves (2 hours when air change rate is unknown)?

☐ Yes ☐ No ☐ Unknown

"If an AIIR is not available, transfer the patient as soon as possible to a facility where an AIIR is available.

- Pending transfer, place the masked patient in a private room with the door closed. If feasible, the patient should continue to wear the mask for the duration of time spent in the non-AIIR room.
  - In advance of such a situation, work with facility engineers to identify a room that minimizes shared air space with other locations. Investigate options to make the room negative pressure and safely exhaust air outdoors or recirculate exhaust with in-duct high-efficiency particulate air (HEPA) filtration. Additional information about possible ventilation mitigation strategies is available. (See [Ventilation Mitigation Strategies | Ventilation | CDC](#))
- After the patient leaves the room, it should remain vacant for the appropriate time (up to 2 hours) to allow for 99.9% of airborne-contaminant removal. (See [Appendix B, Table B.1.: Air changes/hour and time required for airborne-contaminant removal by efficiency](#)).

In the event of an outbreak or exposure involving large numbers of patients who require Airborne Precautions:

- Consult infection control professionals before patient placement to determine the safety of alternative rooms that do not meet engineering requirements for an AIIR.
- Place together (cohort) patients who have confirmed measles in areas of the facility that are separated from the rest of the patient population which is important for protecting patients who are at increased risk for infection (e.g., immunocompromised patients).



- Use temporary portable solutions (e.g., exhaust fans) to create a negative pressure environment in the converted area of the facility to create [expedient patient isolation rooms](https://www.cdc.gov/infection-control/hcp/measles/index.html):
  - Discharge air directly to the outside, away from people and air intakes, OR
  - Direct all air through HEPA filters before it is introduced to other air spaces”

<https://www.cdc.gov/infection-control/hcp/measles/index.html>

“**Minimum Efficiency Reporting Values, or MERVs**, report a filter's ability to capture larger particles between 0.3 and 10 microns (µm). This value is helpful in comparing the performance of different filters. The rating is derived from a test method developed by the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) [see [www.ashrae.org](http://www.ashrae.org)]. The higher the MERV rating the better the filter is at trapping specific types of particles.” [What is a MERV rating? | US EPA](#)

“**HEPA filters** are usually fixed into the HVAC system; however, portable, industrial grade HEPA units are available that can filter air at the rate of 300–800 ft<sup>3</sup> /min. Portable HEPA filters are used to

- temporarily recirculate air in rooms with no general ventilation,
- augment systems that cannot provide adequate airflow, and
- provide increased effectiveness in airflow.

The effectiveness of the portable HEPA unit for particle removal is dependent on:

- the configuration of the room,
- the furniture and persons in the room,
- the placement of the units relative to the contents and layout of the room, and
- the location of the supply and exhaust registers or grilles.

If portable, industrial-grade units are used, they should be capable of recirculating all or nearly all of the room air through the HEPA filter, and the unit should be designed to achieve the equivalent of ≥12 ACH.<sup>4</sup> (An average room has approximately 1,600 ft<sup>3</sup> of airspace.) The hospital engineering department should be contacted to provide ACH information in the event that a portable HEPA filter unit is necessary to augment the existing fixed HVAC system for air cleaning. HEPA units that are not ducted do not provide pressure management for appropriate air flow.”

<https://www.cdc.gov/infection-control/hcp/environmental-control/air.html>

**\*9.** Does your facility implement any of the following measures to limit transmission in other areas where patients with suspected or confirmed measles may be present (e.g., waiting room, open bay ER or PACU)?

**9a.** Create a negative pressure environment? ☐ Yes ☐ No ☐ Unknown

If [YES], describe (including for which areas):

---

**9b.** Externally discharge all exhaust air? ☐ Yes ☐ No ☐ Unknown

**If [YES],** describe, including for which areas (e.g., how many feet from outdoor air intakes and openable windows and doors):

---

**If [NO], what** rooms or areas share the same air handling system and may receive exhausted air from this room or area?

---

**9c.** Filter all air that is exhausted from the room or area and supplied to other areas by a shared air handling system? ☐ Yes ☐ No ☐ Unknown

**If [YES],** which areas are included and what is the minimum efficiency reporting value (MERV) of the filters in each area: \_\_\_\_\_

**9d.** Increase outdoor airflow intake? ☐ Yes ☐ No ☐ Unknown

**If [YES],** describe (including for which areas):

---

**9e.** Use portable HEPA filters? ☐ Yes ☐ No ☐ Unknown

**If [YES],** describe type, where they are placed, how they are maintained:

---

**9f.** Other strategies (specify and describe):

---

## Recap/ Overall Impressions

**1. For Individual(s) Conducting Assessment:** Can this healthcare facility *currently* perform the necessary steps to appropriately manage a patient with measles?

☐ Yes ☐ No

If **[NO]**, why?

---

### Recommendations for Facility

If multiple gaps are identified, recommendations may need to be prioritized to help the facility focus initial efforts on the most impactful interventions to prevent exposures. For example:

1. Prioritizing efforts to vaccinate HCP who do not have presumptive evidence of measles immunity and ensuring HCP have ready access to fit-tested respirators at the point of care.
2. Strengthening triage procedures so that potentially infectious patients are identified and isolated quickly.
3. For facilities that do not have an AIIR, identifying the best space for patient placement that minimizes exposures to others.

N95 and NIOSH Approved are certification marks of the U.S. Department of Health and Human Services (HHS) registered in the United States and several international jurisdictions.

### Notes and Additional Comments

---