DUHS Clinical Guidance for Outpatient, ED, and Inpatient
Measles: Symptomatic Adult Patient (>=19 years old)

Patient with confirmed measles OR signs/ symptoms suspicious for measles
(See **Box 1** & Duke IP measles toolkit for additional detail of whom to test)

- Mask patient + others present (i.e. caregiver, siblings)
- Place patient in a negative pressure room. If there is no negative pressure room immediately available, place the patient into an unoccupied private room, close door, and place HEPA filter in room (where available).
- Order airborne precautions
- Notify Infection Prevention (IP)(See **Box 2**); available 24/7

Obtain history and perform exam

Vaccine status (specify MMR, number of doses), contacts/exposures, travel history. Signs & symptoms (date of rash onset, rash pattern), vital signs, hydration, respiratory status. Consider alternate etiologies for illness.

Obtain approval & send measles testing

- Obtain approval for testing from Duke IP and State Epidemiologist on-call (call: 919-733-3419)
- After receiving approval from State Epidemiologist, call Duke Micro Lab (919-684-2089) before collection to coordinate specimen and collection requirements
- Place order for: Measles (Rubeola), Acute/Suspected Active Disease (LAB9933)

Assess illness severity
(see **Box 3**)

Mild
Symptomatic but not needing hospitalization for support

- Evaluate and treat any suspected complications based on symptoms

Moderate/Severe
Signs or symptoms requiring hospital admission

Call Duke Transfer Center (919-681-3440) to coordinate transfer if patient is in clinic or outside ED. Once patient arrives:

- Consult Adult infectious Diseases in Maestro (General ID or Transplant ID using contacts for your hospital)
- Consider consulting other specialists if indicated (i.e. ophtho if significant eye findings beyond conjunctivitis)
- Obtain labs: CBC/diff, CRP, and CMP
- IV fluids and/or consider NGT if oral lesions prevent PO intake
- CXR if respiratory symptoms to evaluate for infiltrate
- Evaluate and treat any suspected complications (i.e. PNA, encephalitis, sepsis, etc. **Box 9** on page 2)

Coordinate Follow Up

- Discuss guidance for home quarantine or isolation with IP (**Box 7** on page 2)
- See follow-up guidance (**Box 8** on page 2)

Box 1: Measles Signs/Symptoms

- **Prodrome (~2-4 days):** fever, malaise, and anorexia → conjunctivitis, coryza, and cough
- **Enanthem (~48h before rash, not seen in all patients):** Koplik spots which are 1-3mm white/gray/blue elevations with an erythematous base on buccal mucosa or palate
- **Exanthem (2-4 days after fever):** erythematous, maculopapular blanching rash, which classically begins on the face and spreads down. Begin as blanching, then do not blanch. Rash may not appear in immunocompromised patients.
- Fever beyond the third or fourth day of rash may suggest a measles-associated complication

Box 2: Infection Prevention Contact Information

- DUH-Durham and Clinics: 919-970-9721
- DUH-Raleigh: 919-206-3311
- Duke Regional: 919-970-7171
- Duke Primary and Urgent Care: 919-684-8289
- DHIP Clinics: 919-970-8699

Box 3: Severity of Illness Levels

- **Mild:** No respiratory distress or O_2 requirement; able to self-hydrate (may be after initial fluid support).
- **Moderate:** Requiring ongoing IVF support OR requiring respiratory support including nasal cannula for hypoxia or HFNC for increased WOB.
- **Severe:** Hypoxia or WOB requiring non-invasive or invasive ventilation or concern that patient status is worsening on HFNC OR SIRS/sepsis/rapidly worsening

DUHS Clinical Guidance for Outpatient, ED, and Inpatient
Measles: Asymptomatic Adult Patient (>=19 years old) with High-Risk Exposure

Asymptomatic patient with close exposure to a measles case

Mask patient & notify Infection Prevention (IP) (**Box 2**) to discuss next steps and precautions

Does the patient meet ALL of these criteria?

- Patient is **NOT** Immune to measles (**Box 4**)
- Is within **72 hours** of measles exposure
- No contraindication for live virus vaccine (MMR), such as moderate to severe immuncompromise (See **Box 5**, **Box 6**)

YES → **Give measles vaccine (MMR)**

NO → **Does the patient meet ALL of these of these criteria?**

- Patient of any age with **no** prior MMR doses **OR** moderate to severe immunocompromise (See **Box 6**)
- Within ~**6 days** of measles exposure
- **No** contraindication to immunoglobulin

YES → **Discuss Post-Exposure IVIG Prophylaxis (PEP) with Adult Infectious Diseases**
(General ID or Transplant ID consult in Maestro for your hospital, or Ambulatory E-comm to Infectious Diseases)

NO →

- Discuss guidance for home quarantine and isolation with IP (**Box 7**)
- Arrange telemedicine follow up if any symptoms begin to develop (**Box 8**)
- Complete MMR vaccination series if patient was eligible or when patient becomes eligible for live vaccine (Page 3)

Box 4: Measles Immune

At least 1 of the following:

- Born in US prior to 1957
- Lab confirmation of prior infection
- **Written** documentation of
  - 2 MMR vaccines at least 4 wk apart: 97% effective
  - 1 MMR vaccine: 93% effective
- Lab evidence of immunity (Measles IgG, LAB657)

Box 5: Contraindications to Live Virus (MMR) Vaccine

- Moderate to Severe Immunocompromise (**Box 6**)
- Pregnant
- Prior severe allergic reaction (e.g. anaphylaxis) after a previous dose of vaccine component.
- Immediately prior to transplant (<4wk)

Box 6: Moderate to Severe Immunocompromise

- Active treatment for solid tumor and heme malignancies
- Heme malignancies associated with poor responses to vaccines (e.g., chronic lymphocytic leukemia, non-Hodgkin lymphoma, multiple myeloma, acute leukemia)
- Receipt of solid-organ transplant or an islet transplant and on immunosuppression
- Receipt of chimeric antigen receptor (CAR)-T-cell therapy or hematopoietic stem cell transplant (within last 2 years or taking immunosuppression)
- Mod/severe primary immunodeficiency (e.g., common variable immunodeficiency disease)
- Advanced HIV (CD4 <200)
- Active high-dose corticosteroids (i.e., 20mg daily prednisone or equivalent >2 weeks), alkylating agents, antimetabolites, severely immunosuppressive chemotherapy, tumor necrosis factor (TNF) blockers, and other biologic agents

Box 7: Post-exposure Considerations

- Exposed Patients:
  - MMR within 72h: No Quarantine (except healthcare workers)
  - No MMR and No immunity: 21 days Quarantine
  - Immunocompromised hosts who received PEP with IVIg: 28 days Quarantine
- Patients who develop infection (**Airborne Precautions**):
  - Immunocompetance: Isolate for 4 days after they develop a rash
  - Immunocompromise: Isolate for full duration of illness. Discuss removal of isolation with Infection Prevention.
- Patients without immunity who do not receive PEP: Exclude from affected institutions in the outbreak area until 21 days after the onset of rash in the last case of measles.

Box 8: Follow Up

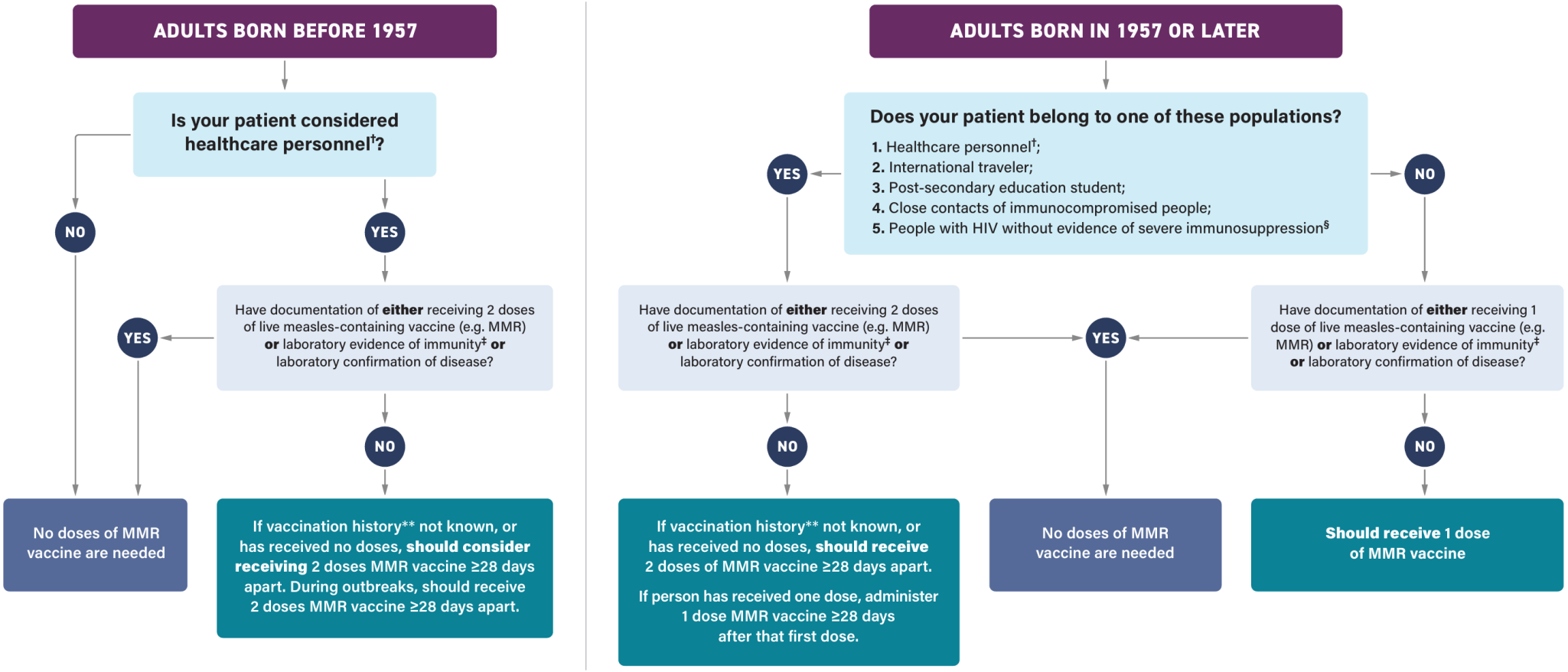
- Follow-up should be within 1–2 days of symptom onset (if managed as outpatient) or discharge (if hospitalized).
- Consider use of virtual care visits if possible
- Complete MMR vaccination series if patient was eligible or becomes eligible for live vaccine (Page 3)

Box 9: Complications from Measles

- 1 in 5 will require hospitalization
- 1 in 10 will acquire middle ear infection; 1 in 20 will develop pneumonia
- **Neuro:** Acute disseminated encephalomyelitis (~ week 2, 1 in 1000 cases) including risks of hearing loss and blindness. Subacute sclerosing panencephalitis (SSPE, years later). SSPE is a rare, but fatal degenerative CNS disease characterized by behavioral and intellectual deterioration and seizures that generally develop 7 to 10 years after measles infection.
- **Immune "amnesia":** Patients with measles are at higher risk for infectious diseases in the 2–4 years after measles infection, including for diseases they may have been previously immunized against or immune to. Maintain a lower threshold for testing/treating and refer to ID/immunology if there are concerns.

Measles vaccine recommendations for non-pregnant adults* aged ≥19 years by birth year—United States

This infographic for healthcare providers summarizes ACIP and CDC recommendations



*MMR vaccine should NOT be administered during pregnancy. Refer to Adult Immunization Schedule by Age | Vaccines & Immunizations | CDC (www.cdc.gov/vaccines/hcp/imz-schedules/adult-age.html) for more contraindications and precautions, and other details.

†Healthcare personnel include 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.

‡Acceptable laboratory evidence of immunity includes: measles IgG in serum (equivocal results should be considered negative).

§Refer to Prevention of Measles, Rubella, Congenital Rubella Syndrome, and Mumps, 2013 (www.cdc.gov/mmwr/preview/mmwrhtml/rr6204a1.htm) for details about absence of severe immunosuppression. In addition to the adults belonging to one of these population groups, health departments may consider a second dose for adults (including visitors) who have received one dose who are living in or traveling to domestic areas with sustained, community-wide measles transmission affecting adults where there is ongoing risk of exposure.
Refer to VPD surveillance manual (www.cdc.gov/surv-manual/php/table-of-contents/chapter-7-measles.html).

**A small number (<5%) of adults vaccinated between 1963–1967 received an inactivated (killed) measles vaccine. Check documentation to ensure that the adult did not receive inactivated vaccine. Adults who received killed vaccine, or do not know what type of vaccine they received between 1963–1967, should receive 1 or 2 doses of current MMR vaccine (i.e. those killed or unknown doses do not count).

https://www.cdc.gov/measles/downloads/adult-mmr-algorithm-508.pdf Accessed 7/1/2025