

# How You Can Prepare for Measles Webinar with Tennessee Department of Health Welcome

- Welcome! We will begin the webinar shortly.
- Please dial in using the conference call information provided with your registration confirmation.
- Please use the Question Box if you have any difficulty or have questions.
- Thank you!

# Webinar Information

- All participants lines are muted during the presentation
- Please type in questions or comments using the Chat Box feature
- Speakers will answer questions from the Chat box

# Webinar Recordings

- The webinar session is being recorded and will be available to registered participants.
- THA will send the link for the recording within 48 hours of the live event.
- Information will be posted to the THA website

# How You Can Prepare for Measles

- Tennessee Department of Health Speakers
  - Michelle Fiscus, MD Medical Director of Tennessee Immunization Program
  - Marion Kainer, MD Director of Healthcare Associated Infections and Antimicrobial Resistance Program



# Measles: What Hospitals Can Do to Prepare

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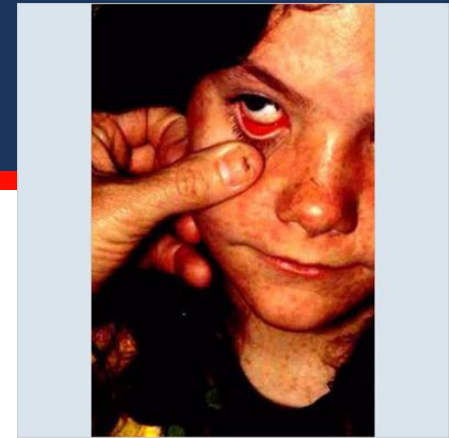
**Michelle Fiscus MD, FAAP**

Medical Director, Tennessee Immunization Program

# Current Situation as of April 19, 2019

- **One Confirmed Case of Measles in Eastern TN**
- **Multiple exposures in healthcare settings (Urgent care, ED's, hospitals, pathology services)**
- **Other exposures in other community setting**
  
- **This is an evolving situation...**
- **Expect additional cases...**

# Background: Measles



- **Acute viral respiratory illness**
  - Malaise
  - Fever (as high as 105 F)
  - 3 C's: cough, coryza (runny nose), conjunctivitis
  - Maculopapular rash starts 3-7 days *after* prodrome begins
    - Head → Trunk → Extremities
    - Immunocompromised patient may not have rash
  - Rash appears ~14 days after exposure (incubation period ranges from 7-21 days)
  - Infectious ~4 days before through 4 days after rash

# Measles Transmission

- **9 out of 10 exposed susceptible people will become ill after close contact**
- **$R_0 = 12-16$  (most contagious agent)**
- **Airborne spread when an infected person breathes, coughs, or sneezes.**
- **Virus can remain infectious in air up to 2 hours after an infected person leaves an area**
- ***"If you are susceptible, this virus will find you"***





# Measles by the Numbers

- **Rash +/- 4 days:** period of infectiousness

Day -4	Day -3	Day -2	Day -1	Day 0 RASH	Day +1 RASH	Day +2 RASH	Day +3 RASH	Day +4 RASH
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- **Incubation period: 7- 21 days** (average 14 days) from exposure to onset of rash
- **Quarantine/furlough: 5-21 days** from time of first exposure (5-28 days if given IG) if susceptible.
- **HCW given post exposure prophylaxis** require furlough (only IgG+ or MMRx2 acceptable to prevent furlough)
- **Post exposure prophylaxis (PEP):**



**up to 72 hours** since first exposure for (aged 6m+)

**up to 6 days** for IGIM/ IGIV (if <1 year, or pregnant & susceptible, or immunocompromised)

# Measles

- **Identify**
  - Triage/ Registration
  - Posters for providers/patients
- **Isolate**
  - Mask on patient
  - Path to AIIR should minimize exposures
  - AIIR [check if @ -ve pressure?]
  - Immune staff only, N95
- **Inform**
  - Public Health 24/7, 365
  - Infection Control
  - Do NOT wait for test results!

# A Suspect Measles Case Walks in

- **Swift airborne isolation (in AIIR if possible)**
  - **At least, place mask on patient (if tolerated), place in private room with door closed, wearing mask**
    - **Do not place in a positive pressure room!**
  - **Only staff with documented 2 MMRs or IgG+ contact patient (using airborne precautions)**
  - **Call your local health department or TDH (615-741-7247) 24/7 if measles is suspected once examined**
- **Throat swab (Dacron/ viral transport medium) for PCR**
- **Serum (IgM for measles) if rash present (IgM can be negative in 20-30% of measles cases up to 72h after rash onset)**
- **State public health lab**

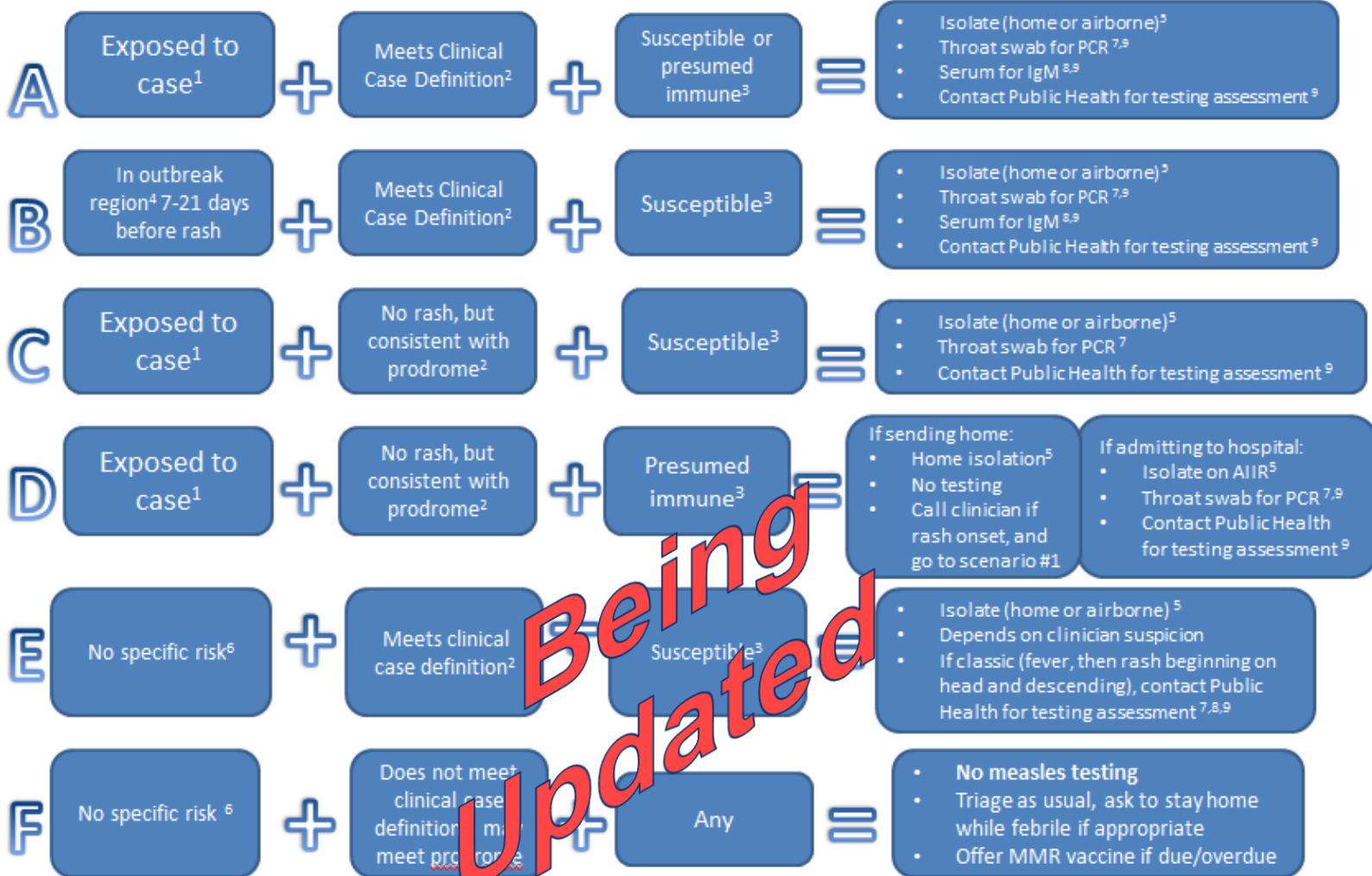
# Measles Screening Algorithm (2016) Being Updated

TN

Department of Health

## Measles Screening Algorithm *(last updated April 28, 2016)*

Testing based on meeting screening criteria + concurrence by local + state public health clinical consultation  
See Page 2 for definitions, Page 3 for specimen submission decision process following + screening algorithm



Being Updated

# Measles Exposure: Now What?

- If patient is being tested for measles, start gathering names/contact info of exposed NOW
- Do NOT wait until results of tests are back
- Must have sufficient staff/ resources to act rapidly. Cannot just be infection control/ employee health.



***72 hours***

# Be Able to Rapidly Identify All Exposed & Susceptible Persons: “Exposed List”

## WHO:

- Healthcare staff (employee/student/contract/LIP/EMS)
- Patients + relatives/friends/visitors [public health]

## WHERE:

- Location that infectious measles patient passed through (waiting room, corridor, elevator, radiology, phlebotomy)
- Same airspace (does not have to be direct contact)

## WHEN:

- Time infectious patient was there PLUS 2 hours (document time in/time out)

# Identifying Who Was Exposed & is Susceptible

## HOW:

- Patient kiosk/ registration desk
- ? Employee badges
- ? Hand-hygiene compliance systems (RFID)
- ? Security cameras
- Can this information be downloaded into a CSV file or Excel spreadsheet if needed?

Age	Name	DOB	Gender	Height (in)	Weight (lb)	Exposure Date	Exposure Location	Event Name	Event Time	Event Location	Event Status	Event Type	Event Category	Event Sub-category	Event Description	Event Notes	Event Comments	Event Tags	Event ID	Event Date	Event Time

## WHAT

- Name, DOB, contact details
- *Pregnant? Immunocompromised?*
- *Vaccine status: Immune or susceptible to Measles?*

# Prepare now: MASKS & N-95 RESPIRATORS

- **Provide mask (surgical) to patient and keep on patient if tolerated, even when in AIR room**
  - **Before entering (signage)**
  - **Registration desk**
  - **Triage desk**
- **If discharge patient (and possible that this is measles pro-drome or disease itself)– provide mask so that patient does not expose others in healthcare setting if seeks care again/ returns**
- **Ensure ready availability of N95 respirators for all that enter room of suspect measles patient**



# AIR (Negative Pressure Room Considerations)

- **Check that your AIR is in working order**
  - Negative pressure
  - Outside exhaust or HEPA filters (? Working)
  - Air exchange
- **Keep room empty for 2 hours after patient has left** (signage with time when able to be occupied)
- **Understand relative air-pressures of other single rooms with doors** (never place measles suspect into positive pressure room).
- **Understand air exchange/ how much outside air vs recirculated air for other rooms** (may be able to change to 100% outside air)

# Prepare Now: AIIR

- **Do you have enough AIIRs available in ED and Facility?**
  - “Consult IP before patient placement to determine the safety of alternative room that do not meet engineering requirements for an AIIR.”
  - “Use temporary portable solutions (e.g., exhaust fan) to create a negative pressure environment in the converted area of the facility. Discharge air directly to the outside, away from people and air intakes, or direct all the air through HEPA filters before it is introduced to other air spaces.”
  - <https://www.cdc.gov/infectioncontrol/pdf/guidelines/isolation-guidelines-H.pdf> section V.D.2 on Airborne precautions, pp88-89
- **Investigate if can convert existing rooms quickly to temporary portable solution as noted above & test them**
- **Additional guidance CDC/DHQP/NIOSH forthcoming...**
- **TDH interim guidance: Prioritize measles cases for AIIR room unless suspect multi-drug resistant TB or cavitary TB**

# Sample Questions to Assess ED Exposures

- **When/ where did patient enter the facility?**
- **When/ where did they get masked?**
  - (when was it taken off (prefer to keep mask on if tolerated)
- **Route to single room**
- **When did they enter a single room with a door?**
- **Characteristics of single room– negative pressure, air exhaust, HEPA filter, any air recirculation**
- **How many times was door opened**
- **Any movement outside that room?**
- **Who entered the room while patient was in (+ 2 hours)**
  - Immune status
  - Did they wear N95
- **Route of patient exit**
- **Was patient provided mask at discharge and advised to wear upon return/ call ahead**

# Prepare now: Health Care Personnel

- Know immune status of ALL healthcare personnel
  - Employees, students, volunteers, agency staff, contractors, licensed independent practitioners including physicians
  - Only acceptable documentation of presumed immunity:
    - Documented 2 doses of MMR,  $\geq 28$  days apart, after 1<sup>st</sup> birthday
    - Lab evidence of immunity (measles IgG), following MMR or measles
    - Do NOT do IgG titers on employees who fulfill the documented vaccine requirement: *CDC does not recommend additional doses for proper 2-dose recipients, regardless of IgG results. They are presumed immune.*

# Healthcare Personnel:

- **Give MMR now if cannot find documentation & not in immunization registry (TennIIS)**
  - **Ensure your hospital has an active TennIIS account with staff set up under that account with username/pwd to access and update the system**
  - **<https://www.tennesseeiis.gov/tnsiis/>**
- **Ensure current after hours contact details for any HCP (includes contractors, agency staff) in case they need to be contacted following an exposure... only have 72 hours post first exposure to provide MMR PEP**
- **If exposure occurred: & uncertain immune status:**
  - **Draw IgG for measles, give MMR (don't wait for result)**
  - **Furlough day 5-21; remove from furlough if immune (+ve IgG)**

# Prioritization



## Severe disease:

- Infants <1 (not immune due to vaccine schedule)
  - MMR PEP 6-11 months within 72h
  - IGIM PEP all <6m and 6-11m between 72h and 6 days
- Pregnant (ok if immune/ 1-2 doses MMR)
- Severely immunosuppressed: may need IGIV regardless of IgG/vaccine history. Advise clinical consult for decision

## Others to control outbreak/prevent disease:

- Healthcare worker- **MUST** be furloughed day **5-21** post exposure if not IgG+ or 2 doses MMR
- Furlough includes HCW who have had only one dose of MMR, no IgG test



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# Measles Resources

<https://www.tn.gov/content/tn/health/cedep/reportable-diseases/measles-rubeola.html>

## Measles (Rubeola)



**This is an immediately reportable condition.**

Please contact the Tennessee Department of Health at 615.741.7247 and ask to speak to the epidemiologist on call.



Providers and Laboratories

**Infectious agent:** *Measles virus*

**Description of illness:**

Measles is a vaccine-preventable, acute viral disease. Symptoms begin to appear about 8 to 12 days after exposure to the virus, with the rash starting about 14 days after exposure (range 7-21 days). Measles is characterized by a prodrome (lasting 2-4 days) of cough, coryza (runny nose), conjunctivitis and fever which gradually rises to 103°F or higher.



*The measles rash is a maculopapular eruption that usually lasts 5-6 days. It begins at the hairline, to the face and upper neck and spreads down the back and trunk, and then extends to the arms and hands, as well as the legs and feet. The maculopapular lesions are generally discrete, but may become confluent, particularly on the upper body. Acute complications include otitis media, diarrhea, pneumonia, cardiac manifestations, encephalitis and occasionally death. Subacute sclerosing panencephalitis (SSPE) is a rare, fatal, late complication of natural measles infection, occurring about a decade or more after illness.*

**Algorithm on “When to Test for Measles” is being Updated**



# Instructions for People Exposed to Measles Who Are Not Immune

## Instructions for People Exposed to Measles Who Are Not Immune

You were exposed to someone who has measles. Because you are not immune to measles, you could get sick or make other people sick.

This is what you need to know about measles:

- Measles is **spread** through respiratory secretions and by breathing the same air as a person with measles.
- Measles is **very contagious**. People with measles are contagious from four days before they get a rash until the fifth day after the rash starts.
- The **first symptoms** of measles are fever followed by cough, runny nose and red, watery eyes.
- **Later symptoms** are a rising fever and a rash all over the body.
- Measles can cause **other health problems**. They include ear infection, diarrhea, pneumonia, miscarriage, brain inflammation and hospitalization. Measles can even cause death.

This is what you should do:

- Because people can spread measles to others before the rash even begins, **you could be contagious now**.
- It is very important for you to **stay home and away from other people for 21 full days** after you were exposed. This is the time you could get sick and infect other people.
- **Avoid having visitors** for the full 21 days after you were exposed.
- **Do not go out** shopping or to work, school or religious services during this time.
- **Keep children home** and away from others through and including 21 days after exposure:

Exposure date: \_\_\_\_\_  
Date you may resume normal activities: \_\_\_\_\_

If you get sick and need to see a doctor, **call ahead** to tell the doctor's office that you may have measles so the office can schedule your appointment when other patients will not be exposed (for example, after hours). The doctor's office may ask you to use a different entrance.

Once the 21-day period has passed, talk to your doctor about getting the **measles vaccine** to prevent you from getting sick in the future.

# Template Notice to Healthcare Provider of Measles Exposure in Facility

## Template Notice to Healthcare Provider of Measles Exposure in Facility

Patient [INITIALS/DOB] were at your facility while contagious with measles on [DATE].

Patients there from the time the measles case arrived through 2 hours after they left or were put into a negative pressure room are considered exposed. Indications for prophylaxis are below.

MMR prophylaxis:

Must be given within 3 days of the initial exposure to measles.

A 1<sup>st</sup> or 2<sup>nd</sup> dose of MMR may be given to anyone aged 6 months and older who does not have a contraindication to vaccination and as long as it has been at least 28 days since the last dose of a live vaccine.

Immunoglobulin (IG) prophylaxis:

- Must be given within 6 days of the initial exposure to measles.
- IG is reserved for infants <6 months, infants aged 6 months to 11 months who didn't receive MMR within 72 h of exposure, pregnant women who are not immune to measles and severely immunocompromised people (regardless of their immunity to measles).
- If any pregnant patients were exposed, please call their obstetricians to see if they had measles IgG titers checked as part of a routine prenatal panel.
- We will call you to follow-up and to help coordinate IG prophylaxis if needed. Of note, IG for infants is given as an intramuscular (IM) injection (0.5 ml/kg) and for severely immunocompromised and pregnant people as intravenous (IV) IG.
- After receipt of IG, patients need to delay receiving MMR and varicella vaccine by 6 months. Patients who receive IG should be quarantined 7-28 days after exposure because they may still become ill with modified illness.

Let us know right away if anyone meets criteria for IG so we can assist with referrals as needed.

A few documents are attached:

- 1) A letter to mail to all exposed patients.
- 2) A script you can use when notifying patients (includes instructions for patients who you recall for prophylaxis and guidance for unvaccinated children aged >12m who missed the opportunity for MMR prophylaxis and need to home isolate for 21d).
- 3) A template to document the list of exposed patients (includes contact information and info about measles IG prophylaxis you administer). After you have finished administering prophylaxis to all patients who need it and the list is ready, please let us know and we'll send instructions to upload the list to us securely. This is important for the SCHD in case we receive calls about any of these exposed patients getting sick. The SCHD may subsequently follow-up with contacts to make sure they are compliant with home isolation, if needed.

Please ensure that all exposed healthcare workers have documented evidence of immunity to measles. Those who do not should be excluded from work through 21 days after exposure (see Prevention and Control Strategies section for additional guidance: [www.cdc.gov/vaccines/pubs/surv-manual/chpt07-measles.html](http://www.cdc.gov/vaccines/pubs/surv-manual/chpt07-measles.html) )

When you have a chance, please confirm the times the patient arrived and the time placed in a negative pressure room.

Thank you.

# Instructions for Parents/Guardians Whose Infant Was Exposed to Measles and Received Immune Globulin

## Instructions for Parents/Guardians Whose Infant Was Exposed to Measles and Received Immune Globulin

Your baby received immune globulin medicine because your baby is not immune to measles and was exposed to someone who has measles. Even though your baby was given medicine, your baby can still get sick or make other people sick.

This is what you need to know about measles:

- Measles is spread through respiratory secretions and by breathing the same air as a person with measles.
- Measles is very contagious. People with measles are contagious from four days before they get a rash until day five after the rash starts.
- The first symptoms of measles are fever followed by cough, runny nose and red, watery eyes.
- Later symptoms are a rising fever and a rash all over the body.
- Measles can cause other health problems. They include ear infection, diarrhea, pneumonia, miscarriage, brain inflammation and hospitalization. Measles can even cause death.

Your baby received immune globulin medicine:

- The immune globulin medicine you received will lower your baby's chance of getting measles.
- If your baby does get measles, the immune globulin may make your baby's symptoms less severe.

This is what you should do:

- Because people can spread measles to others before the rash even begins, your baby could be contagious now.
- It is very important for your baby to stay home and away from other people for 28 full days after your baby was exposed. This is the time when your baby could get sick and infect other people.
- Avoid having visitors for the full 28 days after your baby was exposed.
- Your baby should not attend daycare for full 28 days after your baby was exposed
- Keep your baby home and away from others through and including 28 days after exposure.

Exposure date: \_\_\_\_\_  
Date your baby may resume normal activities: \_\_\_\_\_

If your baby gets sick and need to see a doctor, call ahead to tell the doctor's office your baby may have measles so the office can schedule your appointment when other patients will not be exposed (for example, after hours). The doctor's office may ask you to use a different entrance.

Once the 28-day period has passed, talk to your doctor about getting the MMR vaccine for lifelong protection. Your baby will need to wait at least 6 months to receive the MMR vaccine.

# Instructions for People Exposed to Measles Who Are Not Immune and Received Immune Globulin

## Instructions for People Exposed to Measles Who Are Not Immune and Received Immune Globulin

You received immune globulin medicine because you are not immune to measles and were exposed to someone who has measles. Even though you took medicine, you can still get sick or make other people sick.

This is what you need to know about measles:

- Measles is **spread** through respiratory secretions and by breathing the same air as a person with measles.
- Measles is **very contagious**. People with measles are contagious from four days before they get a rash until day five after the rash starts.
- The **first symptoms** of measles are fever followed by cough, runny nose and red, watery eyes.
- **Later symptoms** are a rising fever and a rash all over the body.
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You received immune globulin medicine:

- The **immune globulin medicine** you received will lower your chance of getting measles.
- If you do get measles, the immune globulin may make your symptoms **less severe**.

This is what you should do:

- Because people can spread measles to others before the rash even begins, **you could be contagious now**.
- It is very important to **stay home and away from other people for 28 full days** after you were exposed. This is the time when you could get sick and infect other people.
- **Avoid having visitors** for the full 28 days after you were exposed.
- **Do not go out shopping, to work, school or religious institution or services** during this time.
- **Keep children home and away from others** through and including 28 days after exposure.

Exposure date: \_\_\_\_\_

Date you may resume normal activities: \_\_\_\_\_

If you get sick and need to see a doctor, **call ahead** to tell the doctor's office you may have measles so the office can schedule your appointment when other patients will not be exposed (for example, after hours). The doctor's office may ask you to use a different entrance.

Once the 28-day period has passed, talk to your doctor about getting the **MMR vaccine** for lifelong protection. You will need to wait until 6-8 months have passed (depending upon the type of immune globulin medicine you received) before you can receive the MMR vaccine.

**Contact:**

**Local Public Health**

**TDH: (615) 741-7247 (24/7, 365)**

**Report Measles & all Outbreaks**



**Thank You!**

