


Measles Update for Clinicians: Recognition, Reporting and Response

March 20, 2024





Today's Presenters

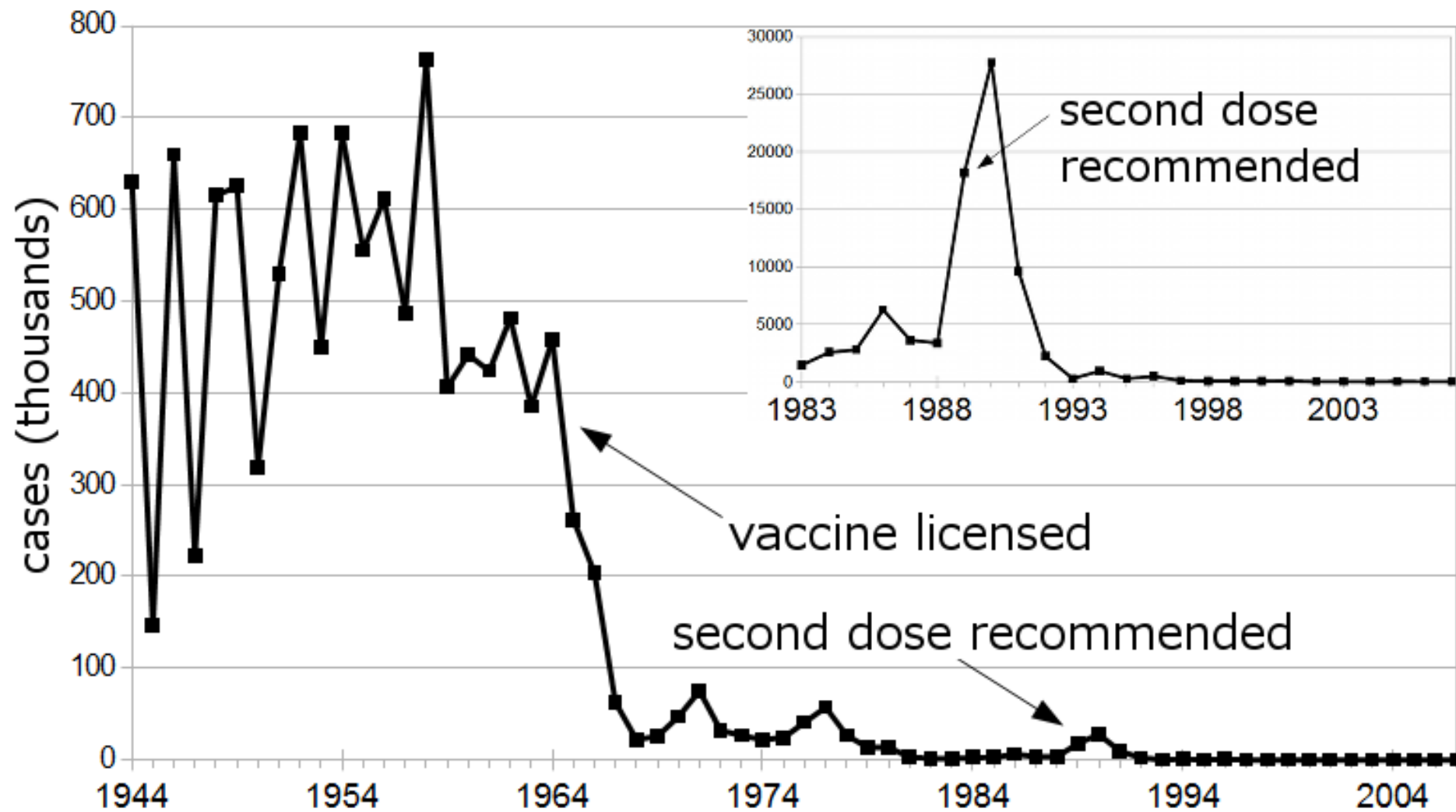
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Objectives

1. Understand recent epidemiology and transmission of measles in US and Illinois
2. Review clinical presentation of measles
3. Review prevention of measles through vaccination
4. Identify proper measles specimen collection, storage, and shipment procedures for testing at IDPH lab.
5. Appreciate the connection between clinical cases and public health response

Measles Epidemiology and Transmission

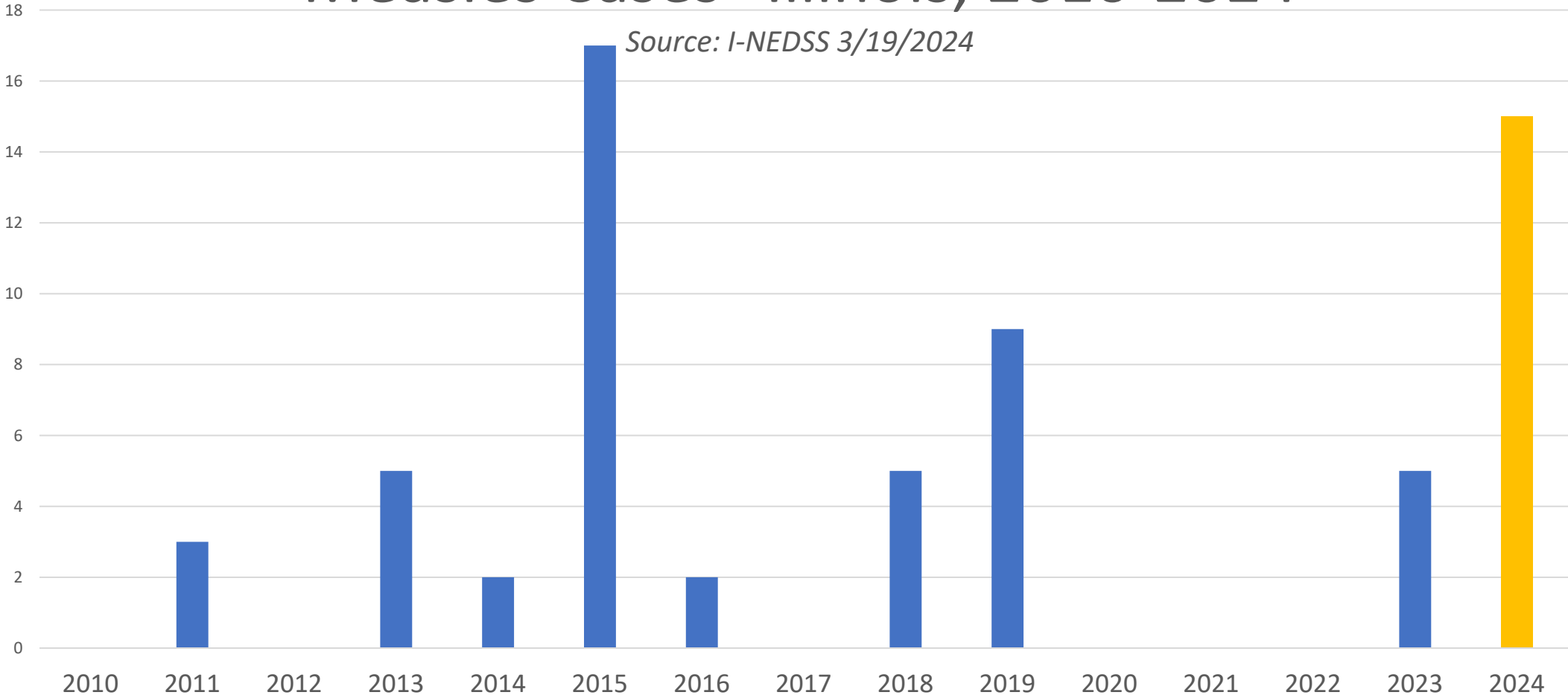
Measles cases in the United States, 1944-2007



Measles Cases--Illinois, 2010-2024

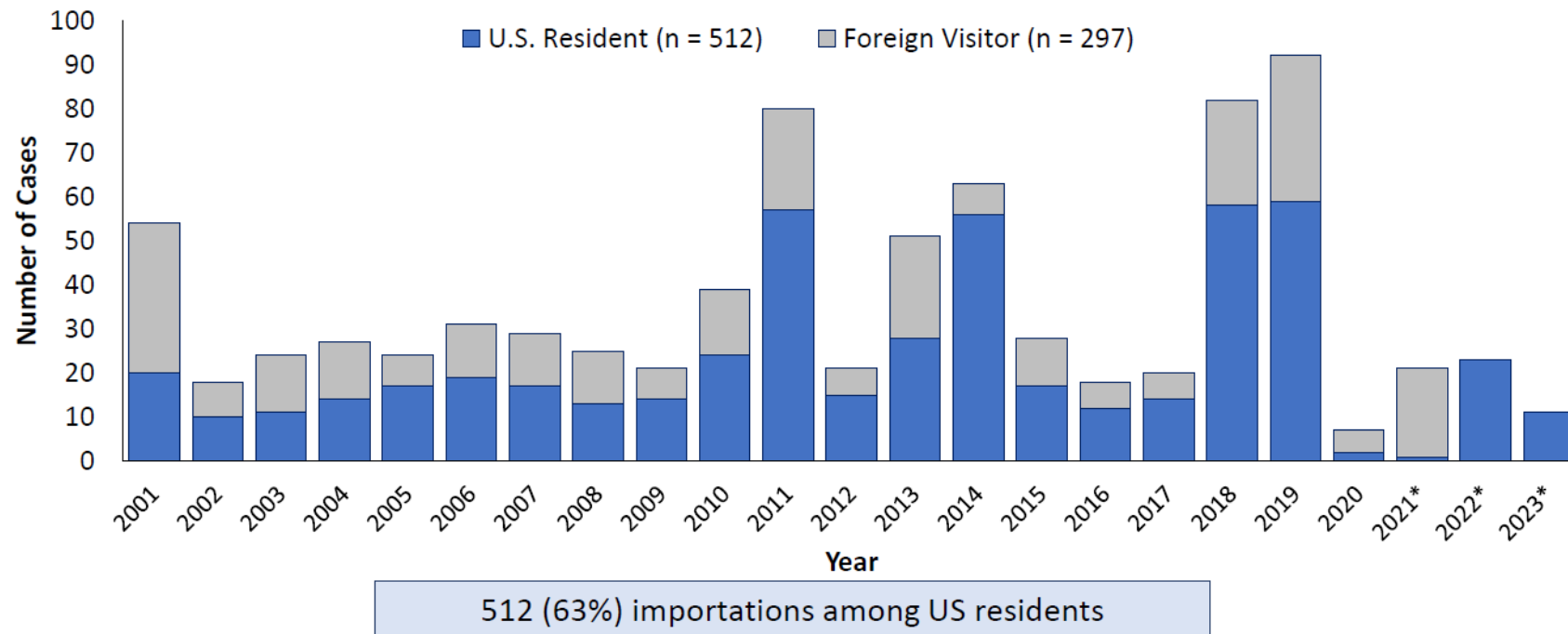
Source: I-NEDSS 3/19/2024

Number
of cases



Measles cases are imported primarily by unvaccinated U.S. residents traveling abroad

- Median 26 importations per year (range: 7–92)



*2023 data as of August 3, 2023. Data are preliminary and subject to change

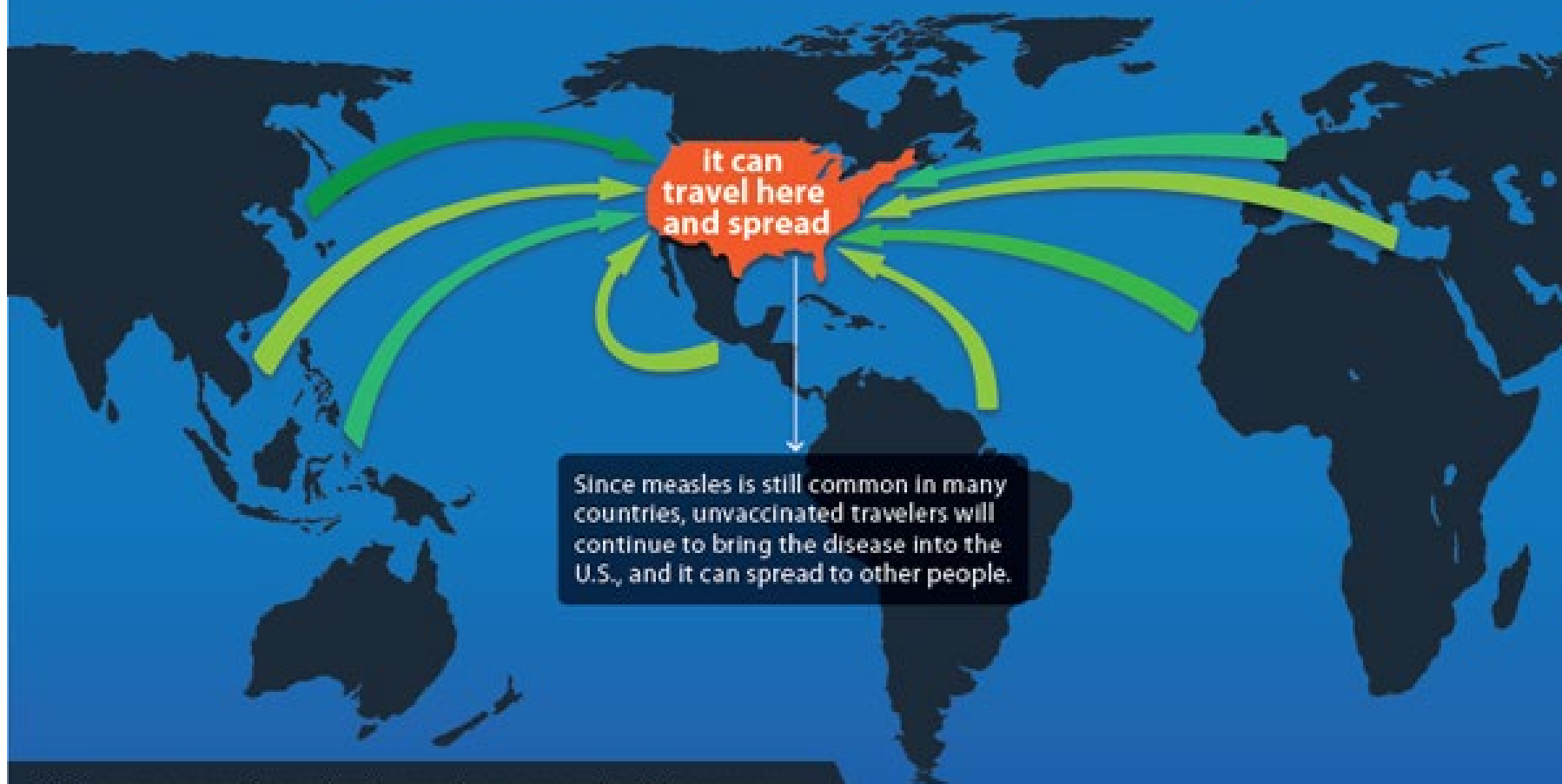
Measles Facts

- In 2000, measles elimination was documented and verified in the United States.
- Measles is still common in many parts of the world including some countries in Europe, the Middle East Asia, the Pacific, and Africa.
- Travelers with measles continue to bring the disease into the U.S.
- The majority of people who get measles are unvaccinated.
- Measles can spread when it reaches a community in the U.S. where groups of people are unvaccinated.



Get Vaccinated: Prevent and Stop Measles Outbreaks

When measles happens anywhere in the world...



Make sure you and your family members are up-to-date on your measles-mumps-rubella (MMR) vaccine, including before traveling internationally. Ask your doctor if everyone has received all recommended doses of MMR for best protection against measles.

NCPCig-405 | Last updated: June 2, 2014

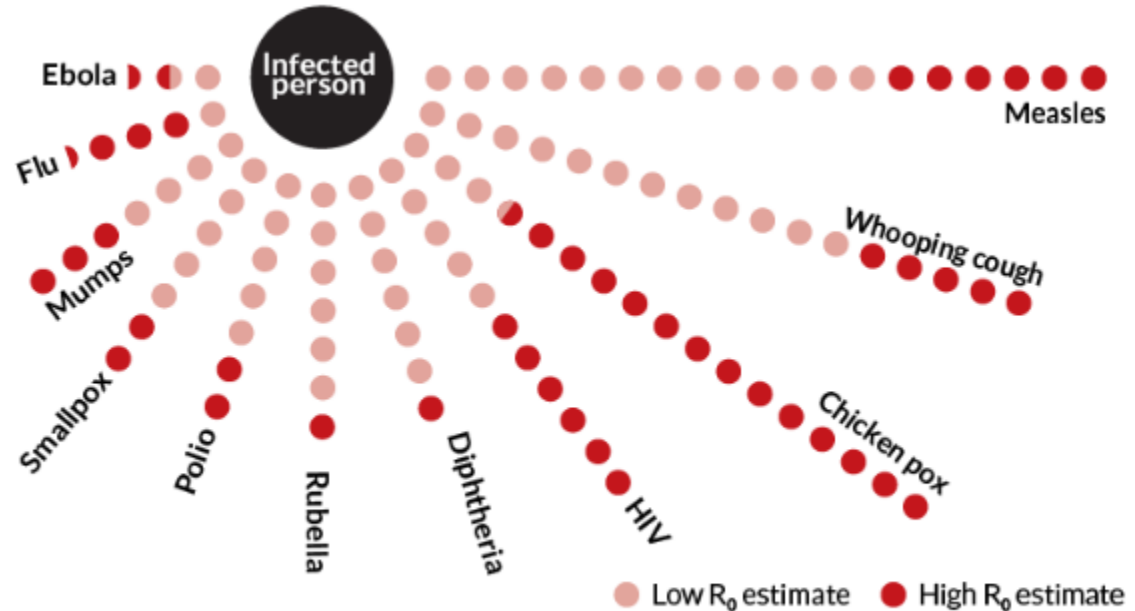
www.cdc.gov/features/measles/



U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

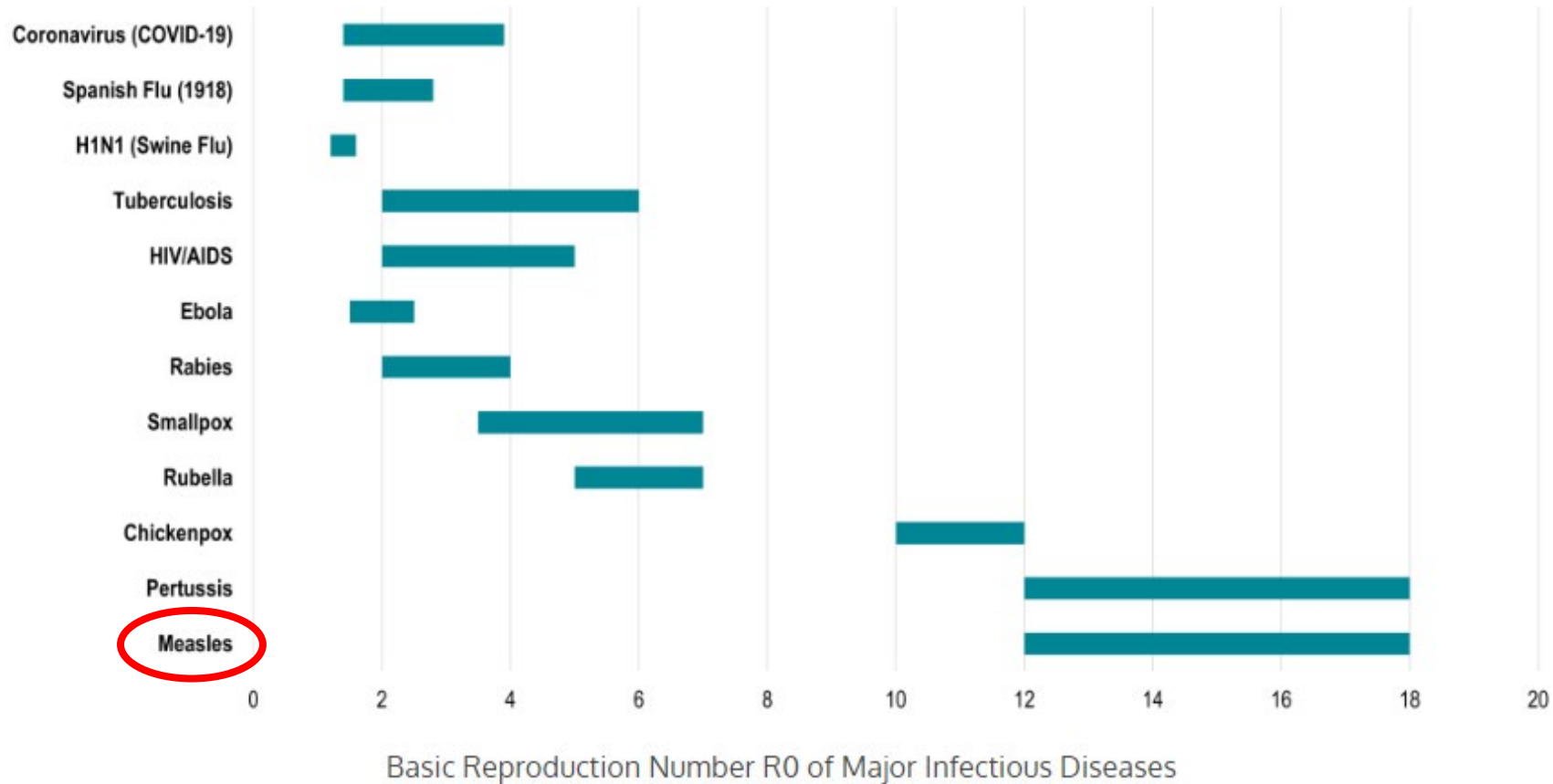
Transmission

- Transmitted via airborne route by droplet spread or direct contact with nasal or throat secretions of an infected person.
 - Coughing, sneezing
 - Contaminated surfaces
 - Airborne droplets can be present up to 2 hours after case has left the room.
 - Highly contagious; approximately 9 out of 10 non-immune persons with close contact to a measles patient will develop measles.



CREDIT: T. TIBBITS; SOURCES: P. FINE/EPIDEMIOL. REV. 1993; S. HAY ET AL./PHILOS. T. R. SOC. B 2013; G. CHOWELL AND H. NISHIURA/BMC MED. 2014

Basic Reproduction Number (R0) of Major Infectious Diseases



Source: CDC and WHO.

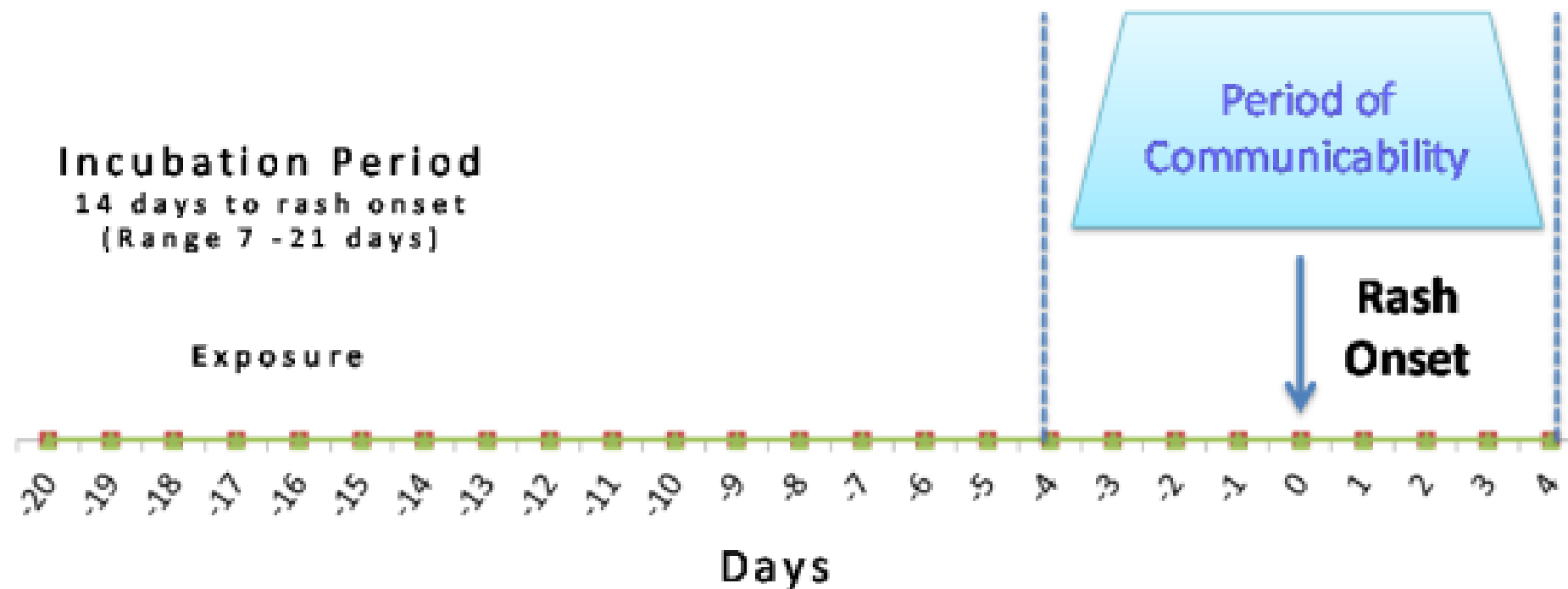
Period of Communicability

Typically, about 4 days before rash onset to 4 days after rash appearance.

- (Rash onset is day 0)

Immunocompromised patients are considered infectious for the duration of their illness.

Measles Disease Progression



CLINICAL PRESENTATION OF MEASLES

Measles

- Symptoms:
 - prodrome of fever (often exceeds 102°F),
 - Cough, coryza, or conjunctivitis (3 C's),
 - may have Koplik spots,
 - maculopapular rash (usually begins at hairline and moves downward)



Measles – Clinical Case Definition

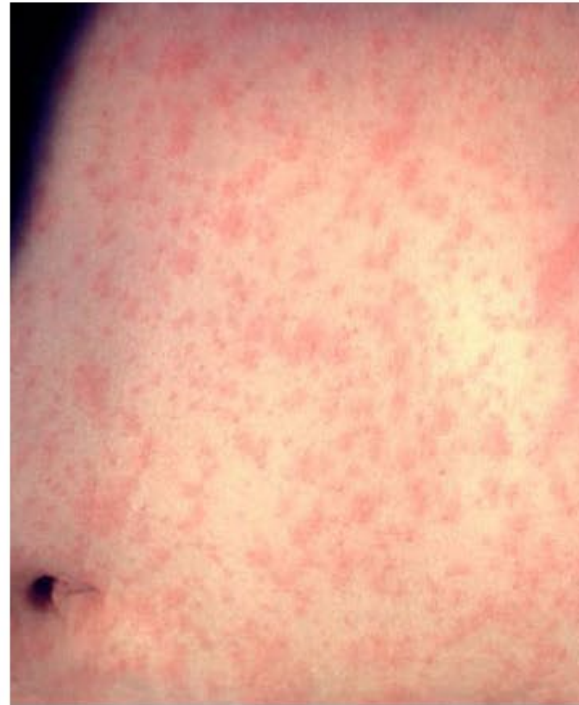
- Fever (up to 105°F)

AND

- Rash

AND

- At least 1 of “The 3 C’s”
 - Cough
 - Coryza (runny nose)
 - Conjunctivitis

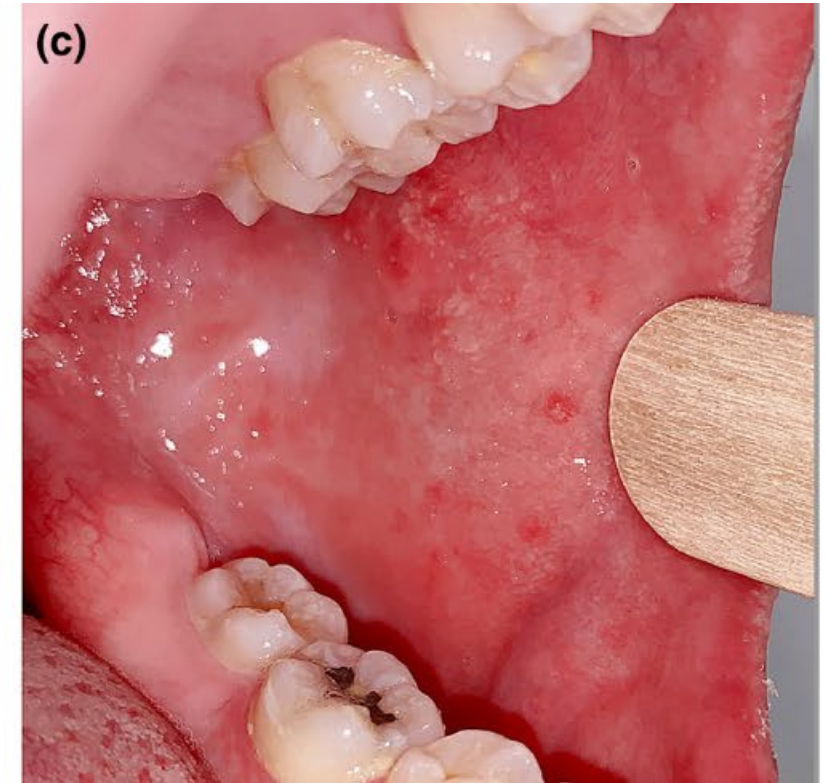
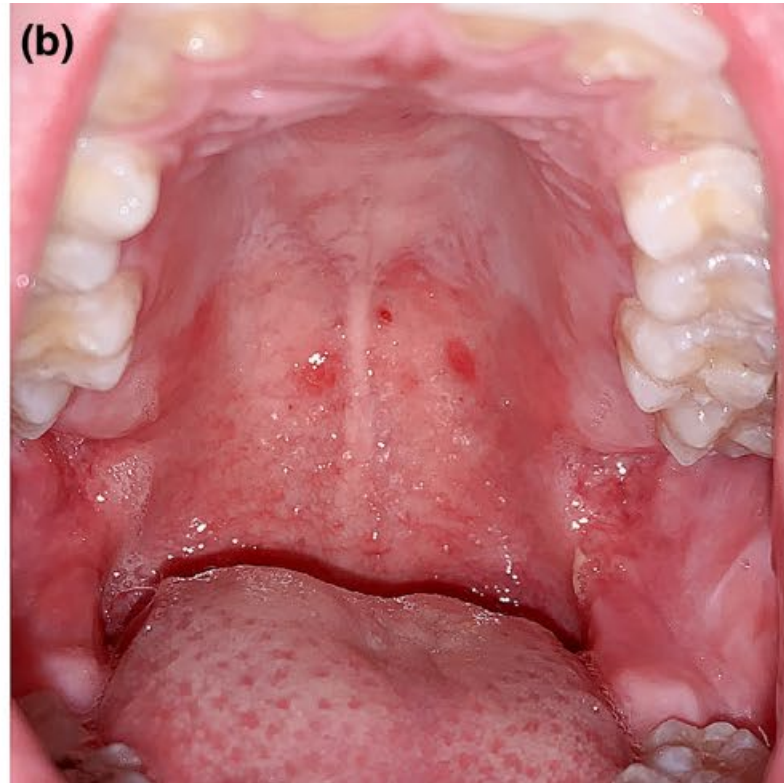
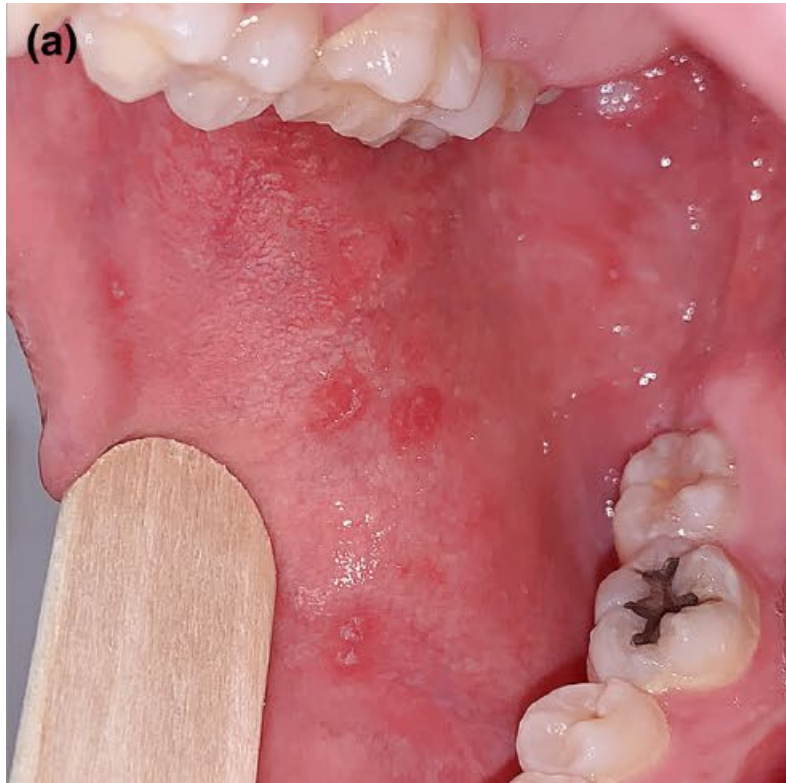


Measles rash



Measles conjunctivitis

Koplik spots in buccal mucosa, but can be on palate too!



Measles Rash

- Typical presentation:
 - Starts on face, at hairline, or behind ears
 - Spreads downwards to neck, trunk, extremities
 - Maculopapular
 - › Small raised or flat red bumps
 - › Spots may join together as the rash spreads
 - Not usually itchy
 - Koplik spots may be present on buccal mucosa



**May be a
little itchy!**



Koplik Spots

<https://www.nhs.uk/conditions/measles>

Measles Rash



CDC, COCA Call, Aug. 2023

Measles rash on more pigmented skin



Measles rash on more pigmented skin



**Rash may
slough**

Many measles mimics



Scarlet fever

<https://www.nhs.uk/conditions/scarlet-fever/>



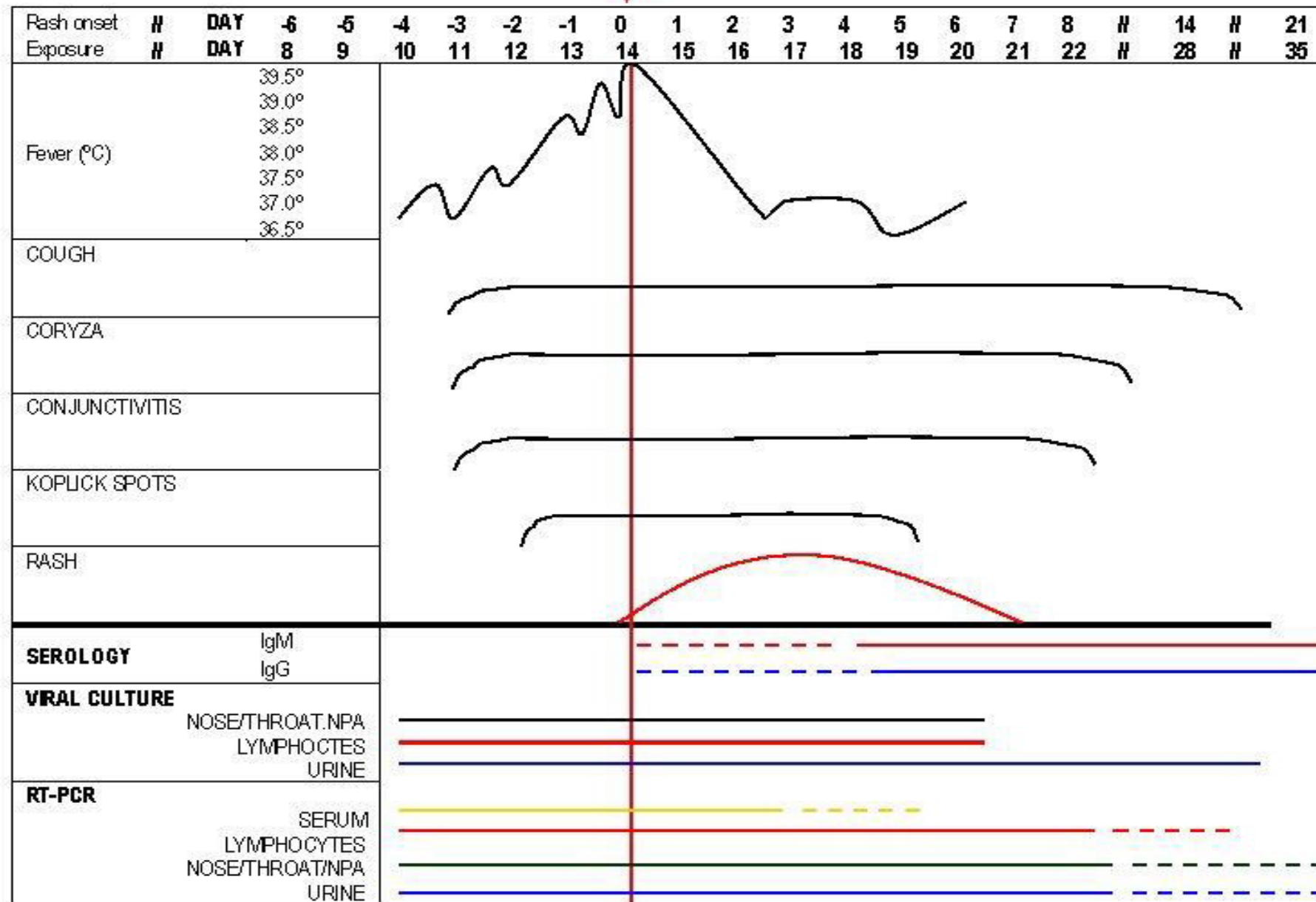
Fifth disease

<https://health.clevelandclinic.org/when-your-childs-chapped-cheeks-may-actually-be-fifth-disease-slap-cheek/>

Coxsackie virus-not always just hand/foot/mouth

Roseola

MMR vaccine reaction- 7-12 days after MMR



Modified
measles in
someone who
had been
immunized

Fever may not be as high

May or may not have all 3 Cs

Rash may not descend as
much as usual

Vaccine Reactions

- Rash that occurs days 5-12 post vaccination with MMR
- Patients can have symptoms comparable to those associated with wild type measles
- PCR on the patient's throat swab will likely be positive for measles
- Additional testing (genotyping/MeVA) is needed to discriminate between vaccine strain and wild type strain
 - Vaccine strain is genotype A
 - Additional testing is done at CDC (Atlanta)
- Not infectious

Complications of Measles Infection

Common complications

- Ear infections (7-9%)
- Diarrhea (8%)

Severe complications

- Hospitalization (25%)
- Pneumonia (1-6%)
- Encephalitis (1 per 1000)
- Death (1-3 per 1000)

PREVENTION THROUGH VACCINATION

Measles Vaccine

- Schedule: 2 doses at age 12 months and older, doses separated by 28 days.
 - 1st dose recommended between 12-15 months of age
 - 2nd dose recommended at 4-6 years of age
 - May give at 6-11 mo for travel/outbreak
- Available vaccines
 - MMR: measles with mumps, and rubella
 - MMRV: measles with mumps, rubella and varicella

Contraindications

People with a contraindication for MMR vaccine should not receive MMR vaccine, including anyone who:

- Had a severe allergic reaction after a previous dose or to a vaccine component
- Has a known severe immunodeficiency
- Is pregnant
- Has a history of anaphylactic reactions to neomycin

PUBLIC HEALTH RESPONSE

Preparing your clinic



Ensure clinic staff up to date on immunization/proof of immunity



Last appointment



Call before you come in



Signage



Goal to limit exposure



drive by testing

Investigation

- Case investigations should begin as soon as possible:
 - do not delay due to pending laboratory results.
 - Control measures should be initiated as soon as possible and within the first 24 hours of initial report.
 - REMEMBER: All suspect cases, including those being tested at a commercial lab or those for whom IDPH testing is requested, should be reported.

Case Investigation

- Investigate epi-links among cases
- Is the source of infection or current case a major public health concern?
 - Daycare setting
 - Healthcare setting
 - Under-immunized population
- Contact medical provider who diagnosed measles
 - Review history and vaccine status

Symptomatic Persons and Healthcare

- If measles is suspected:
 - Patient should wear a mask for entry into facility and until placement under airborne precautions
 - Immediate Airborne precautions:
 - All room, or if not available, exam room with closed door
 - Also: respiratory etiquette and standard precautions
 - All healthcare staff entering the room should use respiratory protection consistent with airborne infection control precautions. (N95 or higher level of respiratory protection)
 - Only allow staff with evidence of measles immunity to care for patients.

Education: Cases

- Education provided to cases should include:
 - Stay home and avoid childcare facilities, workplaces, school, crowded settings, public places or social activities.
 - Avoid exposing susceptible individuals, e.g. children, pregnant women, and immunosuppressed individuals
 - Avoid exposing others at healthcare facilities by calling ahead to make special arrangements.
 - REMEMBER: measles can stay in the air for up to two hours after an infectious case has left the area

Contact Investigation – main steps

1. Identify those exposed in all settings
2. Determine immune status of contacts
3. Make recommendations for PEP as needed
4. Determine need for exclusion from work/school/childcare
5. Determine need for symptom monitoring and set up in REDCap
6. If these are identified flight contacts, follow up and guidance is the same but LHD should return completed CDC form asap

Identifying Contacts

- Identify and record all of the case's activities while infectious (reference back of measles investigation form)
 - Infectious period: 4 days before to 4 days after onset of rash (rash onset is day zero)
- Prepare a contact list for each setting
 - Identify and record potential contacts in each setting

Determine Measles Immunity Status

- Assess level of risk of measles illness for contacts identified
- Assess susceptibility (immune status) for each contact identified
- Verbal history of measles illness or vaccination is NOT adequate proof
- School aged children should have
 - 2 doses of MMR
- Preschool aged children and adults not at high risk should have at least 1 dose of MMR
- Healthcare workers should have 2
 - doses of MMR

Presumptive Evidence of Immunity

- Documentation of adequate vaccination
 - 1 dose of MMR vaccine for preschool-aged children and for adults not at high risk of exposure
 - 2 doses for school-aged children (i.e., grades K-12) and for adults at high risk of exposure
- Serologic evidence of immunity
- Lab confirmation of disease
- Birth before 1957

Recommend PEP to Susceptible

- MMR vaccine or Immune globulin (IG)
- Those with one MMR dose can get a second dose
- Those with zero MMR doses should get a dose within 72 hours to provide the best protection
- Consider IG within 6 days to those for whom vaccination is contraindicated including pregnancy

Pregnancy- CHECK **

- No MMR- though registry hasn't found adverse outcomes
- Poor outcomes with infection- not teratogenic, but increased risk of still birth, preterm, LBW...?
- Immunoglobulin option
- If born to mom with active infection—IG for baby? Talk with ID

Management of exposed HCW

- For HCP **with** presumptive evidence of immunity to measles who have had an exposure to measles:
 - Implement daily monitoring for signs and symptoms of measles for 21 days after the last exposure;
- For HCP **without** presumptive evidence of immunity to measles who have had an exposure to measles:
 - Administer PEP per recommendations
 - Exclude from work from the 5th day after the first exposure until the 21st day after the last exposure, regardless of receipt of postexposure prophylaxis.
 - HCP who received the first dose of MMR vaccine prior to exposure may remain at work and should receive the second dose of MMR vaccine, at least 28 days after the first dose.
 - Implement daily monitoring for signs and symptoms of measles infection for 21 days after the last exposure.

Contact Management Algorithm

Measles Contact Management Algorithm

Immunization Status →	Birth before 1957	2 doses	1 dose ⁶	0 doses		Unknown ⁹	
Risk assessment:	Presumed immune	Presumed immune	~95% effective	Susceptible!		Presume susceptible	
Prophylaxis:	None	None	MMR within 72 hours of exposure	MMR within 72 hours of exposure; Consider IG (if indicated ¹) within 6 days of exposure [*]		MMR within 72 hours of exposure; Consider IG (if indicated ¹) within 6 days of exposure [*]	
Recommendations:	No recommendations or restrictions HCF should consider vaccinating HCW born before 1957 with two doses of MMR. ¹⁰	No recommendations or restrictions	Second MMR recommended even if >72 hours after exposure (MMR within 72 hours preferred). Preschool aged children with one dose are considered immune. ⁸	Close Contacts⁶ (Asymptomatic) Get a dose of MMR regardless of time since exposure. ² Ig should not be given if longer than 6 days since exposure.	Public Callers⁶ (Asymptomatic) Get a dose of MMR	Close Contacts⁶ (Asymptomatic) Draw blood for serum IgG titer and then give a dose of MMR.	Public Callers⁶ (Asymptomatic) Get a dose of MMR. Strongly encourage drawing blood for serum IgG titer.
Symptom Watch:	Yes-self monitor ⁶ Discuss exposure, symptoms, and symptom watch timeframes. (for 21 days after exposure) Explain what to do if symptoms: i.e. stay home. Call PH/HC provider before going to HCF; active daily monitoring by LHD not necessary.	Yes-self monitor ⁶ Discuss exposure, symptoms, and symptom watch timeframes. (for 21 days after exposure) Explain what to do if symptoms: i.e. stay home. Call PH/HC provider before going to HCF; active daily monitoring by LHD not necessary.	Yes-self monitor ⁶ Discuss exposure, symptoms ^{3,5} and symptom watch timeframes. (for 21 days after exposure) Explain what to do if symptoms: i.e. stay home. Call PH/HC provider before going to HCF; active daily monitoring by LHD not necessary.	Yes Discuss exposure, symptoms ^{3,5} and symptom watch timeframes. (for 21 days after exposure) Explain what to do if symptoms: i.e. stay home. Call PH/HC provider before going to HCF; Consider active daily monitoring by LHD. ⁷	Yes-self monitor⁶ Discuss exposure, symptoms and symptom watch timeframes. (for 21 days after exposure) Explain what to do if symptoms: i.e. stay home. Call PH/HC provider before going to HCF; active daily monitoring by LHD not necessary.	Yes Discuss exposure, symptoms ^{3,5} , and symptom watch timeframes. (for 21 days after exposure) Explain what to do if symptoms: i.e. stay home. Call PH/HC provider before going to HCF; Consider active daily monitoring by LHD ⁷ unless determined to be immune.	Yes-self monitor⁶ Discuss exposure, symptoms and symptom watch timeframes. (for 21 days after exposure) Explain what to do if symptoms: i.e. stay home. Call PH/HC provider before going to HCF.
Exclusion:	None unless symptoms develop. Exclusion of HCW in this group not required.	None unless symptoms develop.	None unless symptoms develop. HCW with one dose of MMR who have a measles exposure should receive 2 nd dose and can return to work ⁸	Yes! Quarantine ⁴ at home with no non-immune visitors and avoidance of all public settings from day 7 - day 21 (day 5-21 for HCW) after exposure if no MMR given within 72 hrs. Those given Ig still need isolated. HCW with no prior doses are excluded until 21 days after exposure regardless of PEP.	None unless symptoms develop If becomes symptomatic, between day 7 through day 21 after exposure, isolate ⁴ and test for measles if rash develops.	Yes: with exceptions Stay home from day 7 (day 5 for HCW) after exposure until titer results available. If titer positive: no further restrictions and no MMR needed. If titer negative or not done: Quarantine at home ⁴ from day 7 through day 21 after exposure. (days 5-21 for HCW)	None unless symptoms develop If becomes symptomatic, between day 7 through days 21 after exposure, isolate ⁴ and test for measles if rash develops. If titer positive: no further restrictions.
Follow-up:	None	None	None	None	None	None	None

View the complete form on the IDPH webportal measles page.

Symptom Monitoring of Contacts

- Actively monitor susceptible contacts for symptoms for 21 days
- Identify any contacts experiencing measles-like symptoms through symptom monitoring
 - Identify suspect cases for follow-up and reporting
 - Initiate control measures
 - Initiate any work, school, or childcare restrictions
- REDCap
 - Useful for contact management/monitoring
 - Automated daily email monitoring can be set up

Reminder

Post-exposure immunization and IG administration are not 100% effective; susceptible contacts may still be infectious from days 5 to 21 post-exposure.

- Recommend exclusion from highly susceptible populations.
- Avoid public settings during the potential infectious period.
- Keep in mind that public health authorities may need to modify/use more stringent measures to stop the spread.
- Active daily monitoring is recommended.

High-Risk Contacts

- May require special referral to their provider
 - Pregnant women: refer to their obstetrician
 - Immunosuppressed individuals: refer to their healthcare provider.
 - Infants <12 months of age: refer to their pediatrician.

Healthcare Facilities:

Case and Contact Management (patients)

- Hospitalized patients with Measles
 - Airborne + Standard precautions
 - Caregivers are presumptively immune to measles
- Hospitalized patients who are susceptible and have exposure to measles case:
 - Airborne precautions until day 21 after exposure, regardless of whether they receive MMR or IG prophylaxis (exposure day = Day 0)
 - Discharge as soon as possible

Education: Contacts

- Educate exposed individuals to:
 - Information on any required exclusion from work/school/childcare.
 - Avoid contact with susceptible children, pregnant women, and immunocompromised persons during infectious period
 - Watch for symptoms of measles from 5 to 21 days after contact with infectious person
 - Active daily monitoring process
 - Report any symptoms to the local health department
 - If symptoms develop, avoid exposing others at healthcare facilities by calling ahead to make special arrangements.

OUTBREAKS

Outbreak Investigation

- **A single case of measles is considered a potential outbreak!**
- **Measles had been eliminated in 2000**
- **As many cases (58 as of 3/14) in 2024 then all of 2023**
- **Requires prompt investigation and implementation of control measures**

Measles Outbreak

1. Define the at-risk population
2. Identify and vaccinate persons without presumptive evidence of immunity as per ACIP recommendations
 - Provide IG to those most at risk of severe complications from acquired measles and who have a contraindication to MMR
3. Exclude persons without presumptive evidence of immunity from the setting to prevent potential exposure and/or further transmission of measles
4. Organize & Maintain all data related to outbreak
5. Enhance surveillance and perform active case finding
6. Implement control measures
7. Increase public awareness of measles infection symptoms, treatment, and prevention.

Ongoing Outbreak Response

- Prepare for more cases
- Inventory resources available for response; determine what is still needed
 - Plan ahead with public health and healthcare partners
- Plan for all communications and assessments of response
- Coordination between agencies on messaging

Outbreak Response: Vaccination

- Consider offering a targeted vaccination clinic for exposed susceptible persons
 - IDPH Immunization Section will assist with information on vaccine availability and ordering
 - 217-785-1455
 - Please also discuss this with the CD section
- Can also consider offering a vaccination clinic for unvaccinated or to catch-up MMR status
 - Not known to be exposed but susceptible

Outbreaks among Young Children

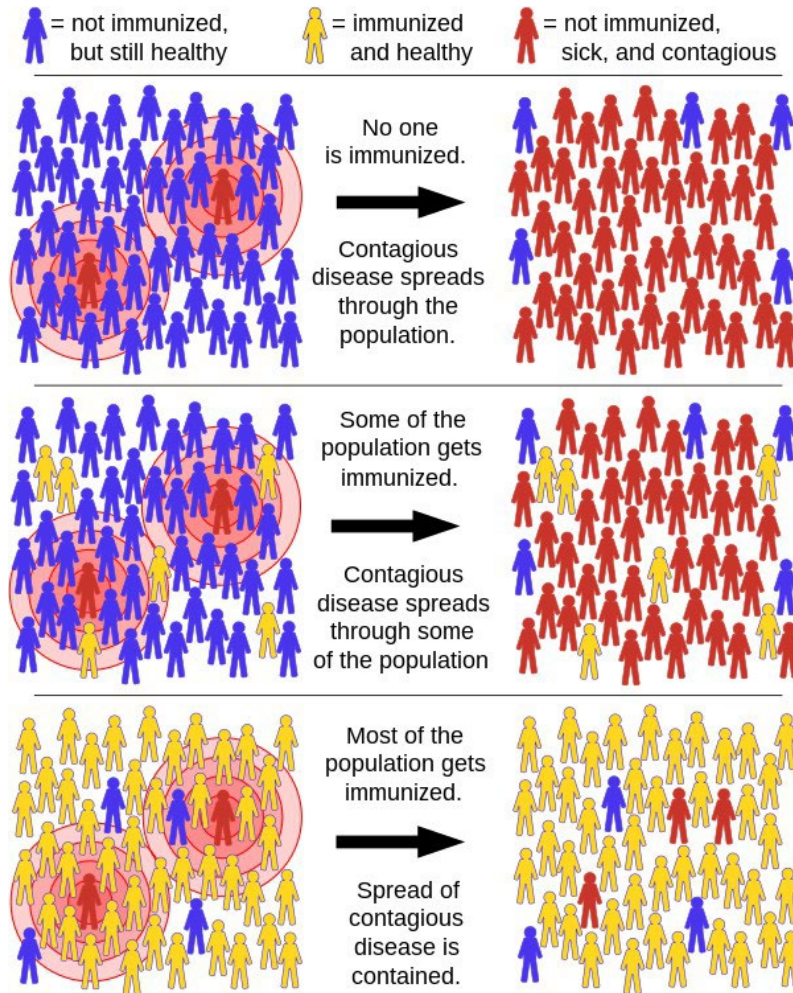
- Infants are at higher risk for severe measles and complications
- If cases are occurring in infants under 12 months of age:
 - Measles vaccination of infants ages 6-12 months can be undertaken
 - Only vaccinate those infant populations at risk because of measles exposure
 - Children vaccinated before their first birthday will still require two doses of MMR given after age 1 and at least 28 days apart.
- Passive immunization with IG may be preferred for infants <12 months of age if it has been >72 hours since exposure

Outbreak Closure

- Maintain active surveillance for at least two incubation periods (42 days) from last confirmed case
 - The outbreak is considered over when there have been no new cases for two incubation periods

Outbreak Prevention Strategies

- Community vaccination: prevention for ALL settings
 - What are the MMR coverage rates in your community?
 - Work to achieve high coverage levels
- Proactively determine measles immunity status of HCW, and childcare/school attendees; consider school and daycare workers
- Rapidly identify and isolate measles patients; report to public health
- Appropriately manage exposed contacts



Chicago New Arrivals Shelter Outbreak Response

- Case identified 3/7/24
 - Contracted measles in Chicago.
- 3/8-3/10: Initiated a mass vaccination operation at the shelter.
 - Around 900 MMR vaccines administered and verified others.
 - Achieved 95% vaccination/verification coverage of over 1800 shelter residents.
 - Collaborative effort of CDPH staff, local healthcare partners, CBOs, shelter staff, City of Chicago employees, volunteers, and shelter residents.
 - Appreciate new arrivals shelter residents engaging with us in trying to control Measles outbreak.

Chicago New Arrivals Shelter Outbreak Response

- Initiated similar vaccine campaigns since then at other new arrivals shelters where they have received transfers from initial shelter during prior exposure period.
 - Over 3,000 MMR doses have been administered across new arrivals shelters thus far.
 - Continue to verify vaccination status during these events.
 - 3-5 MMR vaccine events a day at new arrivals shelters since 3/11.
 - Also vaccinating all those new arrivals coming through the landing zone.
 - Also, symptom screening and testing.

Healthcare and Community Effort

- Reach out to patients behind on MMR series.
- Use as learning opportunity about importance of vaccines to prevent outbreaks of vaccine preventable diseases.
- Work with your local community and schools to educate about the importance of MMR and routine childhood vaccines and set up community vaccination events.

Preparing your clinic



Ensure clinic staff up to date on immunization/proof of immunity



Last appointment



Call before you come in



Signage



N95 fit testing for clinic

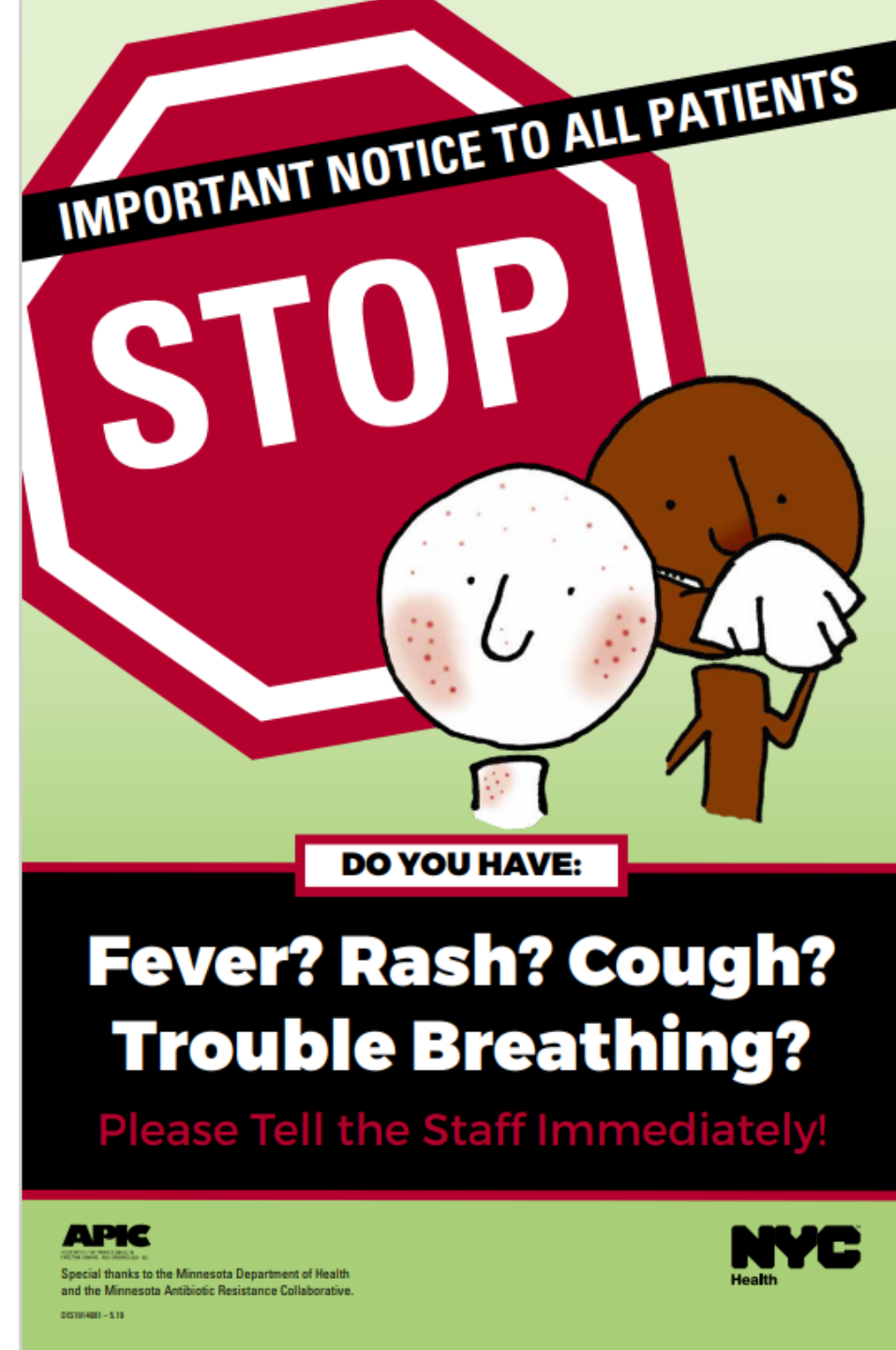


drive by testing

Signage

- Put a sign at every patient entrance
 - Consider other languages
- Include phone number for patients to call before entering
- Provide masks at every entrance

<https://www.nyc.gov/assets/doh/downloads/pdf/imm/cd-stop-triage-poster.pdf>




The visit

- If patients need to be seen in office:
 - Schedule for end of day (avoid appointment times with other unimmunized patients)
 - Have them come in a backdoor (infrequently used door)
 - Have them mask (tent a blanket/facecover for very young children)
 - Take them immediately to a room (AIIR if available)
 - If a regular room (not AIIR) is used, room MUST be closed for 2 hours after use before cleaning and use for next patient
- Put a sign on the door: STOP LEAVE DOOR CLOSED
- If a regular room, patient needs to be masked
- Use your usual EPA-registered disinfectant to clean the room afterwards

Measles Testing

IDPH Testing Criteria

Basic Measles Testing Decision Algorithm

- Reference Testing Algorithm 
- Consult with IDPH
- Ask questions about the suspect case:
 - Symptoms
 - Travel/Flights
 - International visitors
 - Exposure to ill
 - Exposure to an outbreak
 - Exposure to other states experiencing cases
 - Vaccination status

All PCR testing at IDPH laboratories must be pre-authorized by the local health department.					
	Exposure History	Symptom History	Immunity Status	Testing recommendations	Other Control measures
1	Contact to index case/exposure to confirmed or probable case ¹	Meets clinical case definition ²	Susceptible ⁴ OR presumptively immune ⁵	Swab for PCR ⁶ Serology: measles IgM and IgG	*Isolate (home or airborne ⁷) *Notify Local Health Department at time of testing a suspect case¹⁰
2	Contact to index case/exposure to confirmed or probable case ¹	No rash but symptoms consistent with prodrome ³	Susceptible ⁴	Swab for PCR ⁶ Serology: measles IgM and IgG	*Isolate (home or airborne ⁷) *Notify Local Health Department at time of testing a suspect case¹⁰
3	Contact to index case/exposure to confirmed or probable case ¹	No rash but symptoms consistent with prodrome ³	Has evidence of presumptive immunity ⁵	Only if admitting to hospital: then collect PCR ⁶ and serology	*Isolate (home or airborne ⁷) *Notify Local Health Department at time of testing a suspect case¹⁰ *If rash onset, go to #1
4	In outbreak region ⁸	Meets clinical case definition ²	Susceptible ⁴	Swab for PCR ⁶ Serology: measles IgM and IgG	*Isolate (home or airborne ⁷) *Notify Local Health Department at time of testing a suspect case¹⁰
5	In outbreak region ⁸	No rash but symptoms consistent with prodrome ³	Susceptible ⁴ OR presumptively immune ⁵	Only if admitting to hospital: then collect PCR ⁶ and serology	*Isolate (home or airborne ⁷) *Notify Local Health Department at time of testing a suspect case¹⁰ *If rash onset, go to #4
6	No specific risk factor	Meets clinical case definition ²	Susceptible ⁴	Consult with public health.	*Isolate (home or airborne ⁷) *Notify Local Health Department at time of testing a suspect case¹⁰
7	No specific risk factor	Does not meet clinical case definition ¹ , may meet prodrome ³ .	Susceptible ⁴ OR presumptively immune ⁵	None	*Triage as usual. *Advise to stay home and avoid others while febrile if appropriate. *Offer MMR if indicated and no contraindications.

Provider Measles Authorization Process

- Providers need to get approval from their LHD prior to submitting a specimen for testing.
- The Provider's needs to complete the Communicable Disease Requisition Form and include the Authorization Number provided by the LHD.
- Links for Information is Here:
 - <https://dph.illinois.gov/topics-services/lab-testing-services/clinical-testing/measles-submission-instructions.html>

Chicago Measles Authorization Process

New Measles Suspect Case Reporting And Testing Authorization Process

Publish Date: 03/15/2024 11:51:01 am | Alert Id: 46682993 | Topic: Measles | Level of Alert: **HIGH**

Abstract

New Measles Suspect Case Reporting and Testing Authorization Process

Full Details

Summary and Action Items

- Chicago Department of Public Health (CDPH) is implementing a new process for Measles suspect case testing approval and authorization.
- To report a suspected case of measles to CDPH and to request testing, complete this online form: <https://redcap.link/reportmeasles>
- If indicated by the **Measles Screening Algorithm for the General Community**, collect a nasopharyngeal or oropharyngeal swab according to [instructions](#) and store pending CDPH authorization.
- This system replaces provider reporting of suspected cases to 311. **DO NOT CALL 311 or 312-743-9000 TO REPORT.**
- Measles is a highly contagious virus that lives in the nose and throat mucus of an infected person. It can spread to others through coughing and sneezing. Measles can live for up to 2 hours in an airspace where the infected person coughed or sneezed.

Please see the attachment for more information.



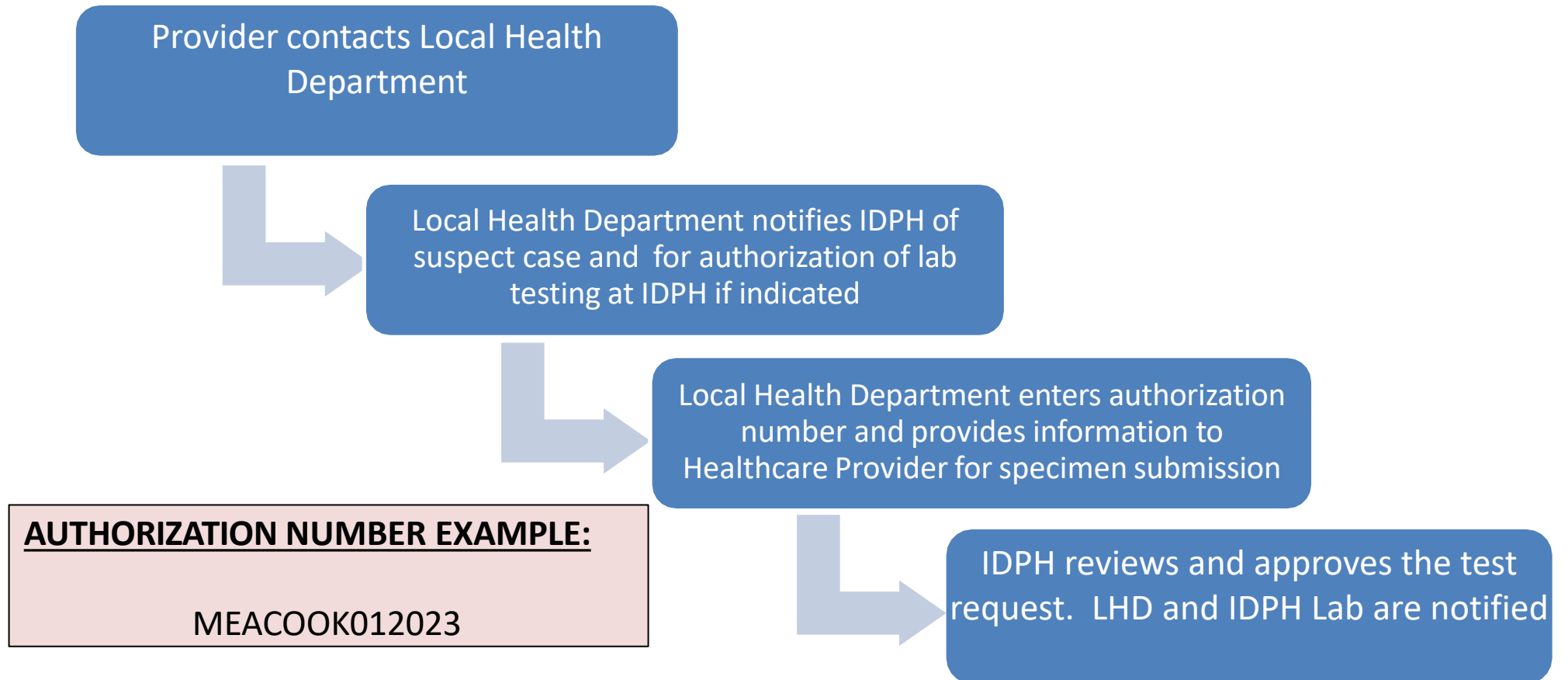
FINAL_HAN_MeaslesTesting_05152024.Pdf

Size: 203 KB | Type: application/pdf

LHD Measles Authorization Process

- All specimens sent to IDPH lab require pre-authorization from IDPH.

<https://dph.partner.illinois.gov/communities/communicabledisease/default.aspx>



LHD Measles Authorization Process

<https://dph.partner.illinois.gov/communities/communicabledisease/CDAZ/Pages/Measles.aspx>



[Home](#) > [Communities](#) > [Communicable Disease Control](#) > [CD Topics A-Z](#)

Communicable Disease Topics from A to Z

[A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Y](#) [Z](#) - [All](#)

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...

Find a file

✓ Name	Checked Out To
Malaria	...
Marburg Virus Hemorrhagic Fever	...
Mass Fatality	...
Measles	...
Medical Equipment Infection Control Information	...
Medical Waste Human Tissue	...
Melioidosis	...
Meningitis, Aseptic	...
Meningitis, Bacterial (NOT Meningococcal Disease)	...
Meningococcal Disease (Neisseria Meningitidis)	...
Methicillin-Resistant Staphylococcus Aureus (MRSA)	...
Middle East Respiratory Syndrome Coronavirus (MERS-CoV)	...
Molluscum Contagiosum	...
Monkey Issues	...
Mononucleosis Epstein-Barrvirus	...

LHD Measles Authorization Process



[Home](#) > [Communities](#) > [Communicable Disease Control](#) > [CD Topics A-Z](#)

Measles

Measles is a highly contagious infectious disease caused by the measles virus. *Measles morbillivirus*, formerly *Measles virus* (MeV), is a single-stranded, negative-sense, enveloped, non-segmented RNA virus of the genus *Morbillivirus* within the family *Paramyxoviridae*.

ALL [Measles](#) suspect cases are reportable by telephone as soon as possible to IDPH within 24 hours.

[Measles Global Watch](#) [CDC](#)

[Rules of the Illinois Department of Public Health](#)

[National Case Definition](#)

[IDPH Measles Informational Slideshow](#)

Basic Investigation Procedure	Laboratory Analysis	Outbreaks
Sample Letters	Measles Response	
<div>Measles Update - IDPH Health Advisory - March 8, 2024</div> <div>Measles Update for Daycares and Schools - IDPH - March 8, 2024</div> <div>Stay Alert for Measles Cases - COCA - January 2024</div> <div>March 2024 - REDCap Basic Instructions - Measles Assessment & Contact Monitoring</div>		

[Measles Webinar 04122023](#)

Investigating a Measles Case:

Measles Testing by IDPH Labs

- [Testing Authorization for IDPH Labs \(testing request link\)](#)
- [Instructions for Measles Virus Submission 4/2023](#)
- [CD Test Requisition Form](#)

LHD Measles Authorization Process

IDPH Communicable Diseases Test Authorization Form

Returning?

AAA

THIS FORM IS TO BE COMPLETED BY LOCAL HEALTH DEPARTMENT STAFF ONLY

Approval must be obtained from IDPH by local health departments prior to specimen submission. Completing the request form below will provide the local health department and IDPH the specimen ID number as well as information regarding the specimen being submitted.

IF IT IS AFTER HOURS OR A HOLIDAY, ENTER A REQUEST FOR LAB TESTING AUTHORIZATION ON THIS FORM AND CALL THE AFTER HOURS NUMBER (217-782-7860).

For questions about specimen collection or specimen shipping, please contact the IDPH Lab.

IDPH Laboratories
Carbondale 618-457-5131
Chicago 312-793-4760
Springfield 217-782-6562

Have you discussed submitting a specimen to the IDPH lab with IDPH staff?

* must provide value

☐ Yes

☐ No

reset

Submit

Save & Return Later

Additional Information and Instructions Can be Found Here:

<https://dph.partner.illinois.gov/communities/communicabledisease/CDAZ/Documents/Lab%20Testing%20Authorization%20For%20Communicable%20Disease/Instructions%20for%20Lab%20Testing%20Authorization%20of%20a%20Communicable%20Diseases%20Specimen.pdf>

Specimen Procedures (IDPH lab)

- IDPH lab guidance for detailed instructions:
<http://dph.illinois.gov/sites/default/files/resources/OHP-Labs-Measles-Collection-Instructions-05072018.pdf>
- Should be collected and stored at 2-8°C
- Ship on multiple cold-packs, or dry ice (only if specimen is frozen)
- Must be received within 8 days of collection and should arrive at $\leq 25^{\circ}\text{C}$.
- Use Dacron- or Nylon-tipped swabs, flocked swabs preferred
- **Do not use cotton-tipped, wooden-shafted, or calcium alginate swabs**
- **The submitter's laboratory should submit the specimen to the IDPH lab and include the lab FAX number on the Requisition Form...not the provider fax number.**
- **Send with demographic and provider info, completed test requisition form, and authorization number**
- **Ship guaranteed overnight delivery, obtain tracking number, and ensure no weekend delivery unless arranged prior**

Laboratory Analysis

- RT-PCR—Respiratory specimen (preferred method for confirmation)
 - Detection of measles RNA
 - Throat, nasal, or NP swabs (NP or Nasal preferred)
 - Viral Transport (VTM), Viral Carrier (VCM), or Universal Transport Medium (UTM)
 - For best sensitivity collect specimen within 5 days of rash onset (optimally within 3 days, and no more than 10)
 - IDPH Chicago and Springfield labs offer PCR testing
 - Requires authorization from IDPH prior to specimen submission.
 - Ensure authorization number and submitting Lab FAX number are on requisition form

Test Results

- Specimens are tested within 24 hours of arrival
- Results will be reported back to the submitter's LAB FAX number.
- IDPH and LHD epidemiologists also receive official results
- Results should be entered into INEDSS by LHD

ILLINOIS DEPARTMENT OF PUBLIC HEALTH DIVISION OF LABORATORIES 2121 W. Taylor St. Chicago Illinois 60612 312-793-4760 CLIA No. 14D0691828		
REPORT OF LABORATORY RESULTS		
Submitter: [REDACTED]	Accession #: [REDACTED] Authorization Code: Date Received: 03/11/2024 Date Collected: 03/11/2024 Date Onset:	
Patient Name: [REDACTED] Patient's Identification Number: [REDACTED] Patient Address: [REDACTED] Patient City, State, Zip: [REDACTED] Physician Name:	Patient DOB: [REDACTED] Patient Age: 4 Y Race: Ethnicity: Sex: Male	
Specimen Source: Nasopharyngeal Swab		Report Status: Final
Analyte/Assay Measles by rRT-PCR	Result Measles virus RNA Detected***	Date Reported 03/11/2024
Comments: rRT-PCR: Real Time Reverse Transcriptase Polymerase Chain Reaction		

Measles Serology

- Not performed by IDPH lab

IgM antibody

- Indicates acute infection (false positives can occur)
- May be undetectable during 1st 3 days of rash
- Present for about 30 days: may be useful if too late to do PCR

IgG antibody

- In the absence of IgM antibody, indicates prior infection or immunity
- Four-fold rise in titers or conversion from IgM → IgG indicates an acute infection

IDPH Laboratory Contacts

- Chicago Lab
 - Division of Laboratories
 - 2121 W. Taylor St. Chicago, IL 60612
 - 312-793-4760**
- Springfield Lab
 - Division of Laboratories
 - 825 N. Rutledge St. Springfield, IL 62702
 - 217-782-6562**

Knowledge Check

The preferred method of testing for measles confirmation is RT-PCR?

TRUE OR FALSE

Knowledge Check Answer

True



Take home points



Be on lookout for measles



Report suspected cases immediately and address infection control (isolation)



NP/OP swabs for PCR are best and specimens go to IDPH lab



Contact your local health department



THANK YOU!

Webinar topic:

LHD New CD Staff Office Hours Date and time:

Tuesday, May 16, 2023 1:00 PM | (UTC-05:00) Central Time (US & Canada)

Register link: <https://illinois.webex.com/weblink/register/r1f97c8742f4f339506de367fdc1fc864>

LHD New CD Staff Office Hours Date and time:

Tuesday, July 18, 2023 1:00 PM | (UTC-05:00) Central Time (US & Canada)

Register link: <https://illinois.webex.com/weblink/register/r5179905e77c09c877bfdaccab22fcb3c>

LHD New CD Staff Office Hours Date and time:

Tuesday, September 12, 2023 1:00 PM | (UTC-05:00) Central Time (US & Canada)

Register link: <https://illinois.webex.com/weblink/register/rf14a1d4824ffc3e407c4a91eb4277377>

LHD New CD Staff Office Hours Date and time:

Tuesday, November 14, 2023 1:00 PM | (UTC-05:00) Central Time (US & Canada)

Register link: <https://illinois.webex.com/weblink/register/r1298605f7a635afa384acd0f0fb6dcdbd>

Webinar topic:

LHD CD Staff Surveillance Check In

Date and time: Thursday, April 20, 2023 1:00 PM | (UTC-05:00) Central Time (US & Canada)

Register link: <https://illinois.webex.com/weblink/register/r5fc7ca634e8a3db7daca52bb1aa8a4ed>

LHD CD Staff Surveillance Check In

Date and time: Thursday, July 27, 2023 1:00 PM | (UTC-05:00) Central Time (US & Canada)

Register link: <https://illinois.webex.com/weblink/register/rfeccd16ae5e6f4733c8f114dacbb175b>

LHD CD Staff Surveillance Check In

Date and time: Thursday, October 26, 2023 1:00 PM | (UTC-05:00) Central Time (US & Canada)

Register link: <https://illinois.webex.com/weblink/register/r4f1f854037e44780d69d3032c7b81494>

Collection, Storage,
and Preservation of
Specimen Prior to
Shipping

Detection of measles RNA is most successful when samples are collected on the first day of rash through the 3 days following onset of rash. Detection of measles RNA by RT-PCR may be successful as late as 10-14 days after rash onset. Collect throat or nasopharyngeal swab samples as soon as measles disease is suspected. RT-PCR has the greatest diagnostic sensitivity when samples are collected at first contact with a suspected case.

Nasopharyngeal swabs and throat swabs should be collected with commercial swab products designed for the collection of throat/nasopharyngeal specimens or flocked polyester fiber swabs. Cotton swabs are not acceptable. Swabs should be placed in 2 mL of standard viral transport medium (VTM) and should not be allowed to dry out. Ream the swab around the rim of the tube to retain cells and fluid in the tube. The swab should be broken off and left in the tube. Immediately after collection, throat and nasopharyngeal swab specimens can be refrigerated at 2-8°C for up to 72 hours. After 72 hours, these specimens should be frozen at -20°C or lower. Prior to being shipped to CDC, throat and nasopharyngeal swab specimens should be frozen at -20°C or lower and shipped overnight to CDC on dry ice. Throat and nasopharyngeal swab specimens should arrive at CDC within 30 days of being frozen -20°C or lower.

Urine: 50 mL of urine should be collected in a sterile, leakproof container. Urine specimens should be stored refrigerated at 2-8°C immediately after collection and shipped to CDC overnight on cold packs. Urine specimens must arrive at CDC within 7 days after specimen collection. Urine cannot be frozen.

Webinar topic:

Vector-Borne Diseases

Date and time: Wednesday, May 17, 2023 1:00 PM | (UTC-05:00) Central Time (US & Canada) Register link: <https://illinois.webex.com/weblink/register/r3f4cc319617482987deefbda16280c00>

Rabies

Date and time: Wednesday, June 14, 2023 1:00 PM | (UTC-05:00) Central Time (US & Canada) Register link: <https://illinois.webex.com/weblink/register/rc501db7b00becc9a65c67101d2dcda3c>

Year in Review 2022

Date and time: Thursday, August 23, 2023 1:00 PM | (UTC-05:00) Central Time (US & Canada) Register link: <https://illinois.webex.com/weblink/register/rfb655352cd947d24207fcab45669cea4>

Flu

Date and time: Wednesday, September 20, 2023 1:00 PM | (UTC-05:00) Central Time (US & Canada) Register link: <https://illinois.webex.com/weblink/register/r4328c94e507bb2354d0ad7e070eff3d0>

Laboratory Information

Date and time: Wednesday, October 18, 2023 1:00 PM | (UTC-05:00) Central Time (US & Canada) Register link: <https://illinois.webex.com/weblink/register/re6896d247baca7c903d6a8c78ea33a89>

References/Resources

- Gastanaduy, PA, Redd, SB, Clemmons, NS, et al. Centers for Disease Control & Prevention Manual for the Surveillance of Vaccine Preventable Diseases. (2019). Available at <https://www.cdc.gov/vaccines/pubs/surv-manual/chpt07-measles.html>
- CDC. Interim Infection Prevention and Control Recommendations for Measles in Healthcare Settings. July, 2019. Available at <https://www.cdc.gov/infectioncontrol/guidelines/measles/index.html>
- Ortega-Sanchez, I., Vijayaraghavan, M., Barskey, A., Wallace, G. (2014) The economic burden of sixteen measles outbreaks on United States public health departments in 2011. *Vaccine*. V.32, #11, 1311-1317. Available at <https://www.sciencedirect.com/science/article/pii/S0264410X13013649?via%3Dihub>
- Marx GE, Chase J, Jasperse J, et al. Public Health Economic Burden Associated with Two Single Measles Case Investigations — Colorado, 2016–2017. *MMWR Morb Mortal Wkly Rep* 2017;66:1272–1275. DOI: Available at <http://dx.doi.org/10.15585/mmwr.mm6646a3>
- Shakoor, S., Mir, F., Zaidi, A. K. M., & Zafar, A. (2015). Hospital preparedness in community measles outbreaks—challenges and recommendations for low-resource settings. *Emerging Health Threats Journal*, 8, 10.3402/ehth.v8.24173. Available at <http://doi.org/10.3402/ehth.v8.24173>
- Utah Department of Health. Infectious Disease Emergency Response Plan. (2016). Available at http://health.utah.gov/epi/IDER_2016.pdf.

Plan Ahead: Preparing Your Clinic

- Advance planning is critical to avoiding additional healthcare exposures!
- Ensure all staff (not just healthcare providers) have proof of immunity:
 - Presumptive evidence of immunity to measles for HCP includes:
 - Written documentation of vaccination with 2 doses of measles virus-containing vaccine (the first dose administered at age ≥ 12 months; the second dose no earlier than 28 days after the first dose); OR
 - Laboratory evidence of immunity (measles immunoglobulin G [IgG] in serum; equivocal results are considered negative); OR
 - Laboratory confirmation of disease; OR
 - Birth before 1957.
 - Consider vaccinating HCP born before 1957 who do not have other evidence of immunity to measles.
 - During a measles outbreak, 2 doses of measles virus-containing vaccine are recommended for all HCP, regardless of year of birth.
 - Recommendations on immunization of HCP for measles are maintained by CDC and ACIP (<https://www.cdc.gov/mmwr/preview/mmwrhtml/rr6204a1.htm>)
- Consider having dedicated staff; ensure all staff caring for patients with suspect measles are immune

Respiratory Protection Program

- All healthcare workers should be fit tested
 - Have appropriate sized N95 masks available
- Applies to more than measles! COVID, chickenpox, TB

Triage

- Create a protocol for nurse triage
- Call patients with febrile rash ahead of time
 - Inquire about travel and/or exposure history
- Plan for parking lot/drive by testing for those with febrile rash or symptoms + high risk exposure
 - Make sure you have PPE and testing supplies ready to go (consider need for cold storage)
 - Have staff ready to go: easier to have a team of 2 (one to test, one to label)
 - Designate a spot: Consider location and traffic management of the space you are working in
 - Complete registration, intake, and history by phone