NC Measles Response Planning

NC Communicable Disease Branch

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June 20, 2019 CD Branch Webinar

OBJECTIVES

- Review assessment of suspected measles cases
- Describe U.S. situation
- Discuss adult MMR recommendations
- Summarize key lessons learned from other states' responses

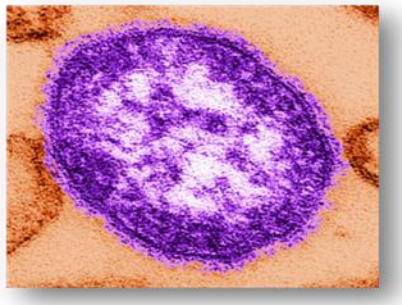
ASSESSMENT OF SUSPECTED MEASLES CASES

MEASLES RESPONSE PLANNING

MEASLES

- Acute viral illness

- Transmitted via airborne particles or droplets
- Airborne virus can remain infectious for up to 2 hours after a case occupied that space

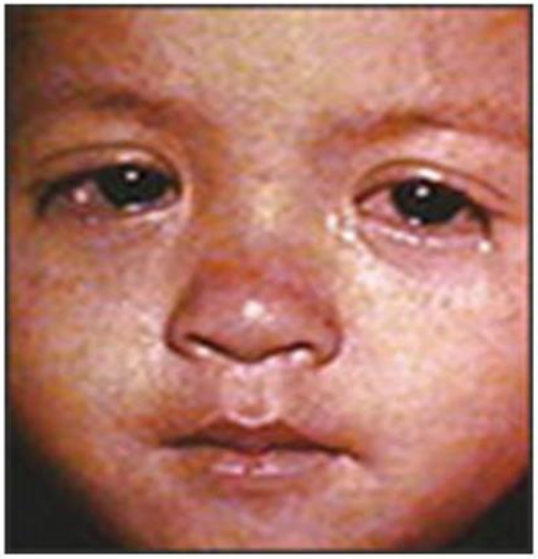


- Incubation period: 7-21 days (average 14 days)
- Infectious period: 4 days before and after rash onset

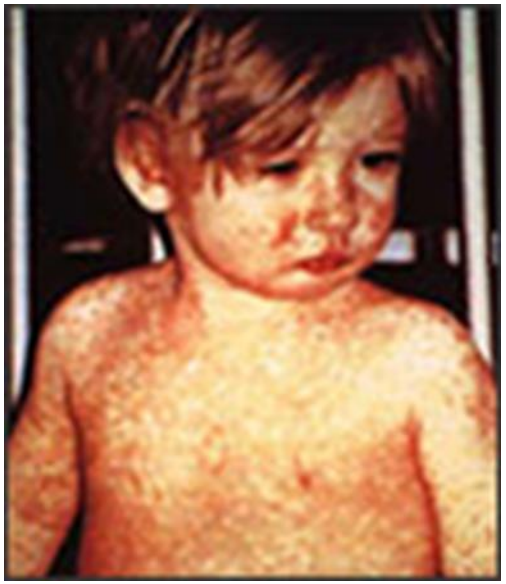
CLINICAL PICTURE

- Prodrome (typically lasts 2-4 days)
  - High fever (up to 105°), cough, coryza (runny nose), conjunctivitis
  - Koplick spots

- Rash (typically lasts 4-7 days)
  - Begins a few days after prodrome
  - Maculopapular (flat lesions and small, solid raised lesions)
  - Begins on head and face
  - Spreads to trunk and extremities
  - Fades in order of appearance



Eyes of a child with measles



CDC Image Library

MEASLES COMPLICATIONS

Diarrhea	8%
Otitis media	7 – 9%
Pneumonia	1 – 6%
Hospitalized	1 in 4 cases
Encephalitis	1 per 1,000 cases
Death	1 – 3 per 1,000 cases
Subacute Sclerosing Panencephalitis (SSPE)	1 per 100,000 cases

Complications are more common in children <5 years and adults.

Source: May 2019 COCA Call

OTHER FEVER / RASH CAUSES

- Fifth Disease (parvovirus)
- Hand, Foot and Mouth Disease (coxsackie virus)
- Roseola (human herpesvirus 6, 7)
- Scarlet fever (strep)
- Rocky Mountain Spotted Fever
- Recent antibiotic use
- Contact dermatitis
- Heat rash
- Recent MMR vaccination
- Syphilis (in sexually active adults)
- Kawasaki syndrome

3 BASIC VPD QUESTIONS

Measles testing at SLPH requires prior approval from the Communicable Disease Branch with consideration of the following:

1. ***I***mmune Status
   - Shot record, other evidence of immunity?
   - Vaccine effectiveness
2. ***C***linical Presentation
   - Onset date of each symptom
   - Presentation of rash- is it classic or could it be modified?
   - Other potential causes of rash, other lab results
3. ***E***pidemiology
   - Demographics, travel, employment, activities, school, congregate settings

MEASLES LAB TESTING

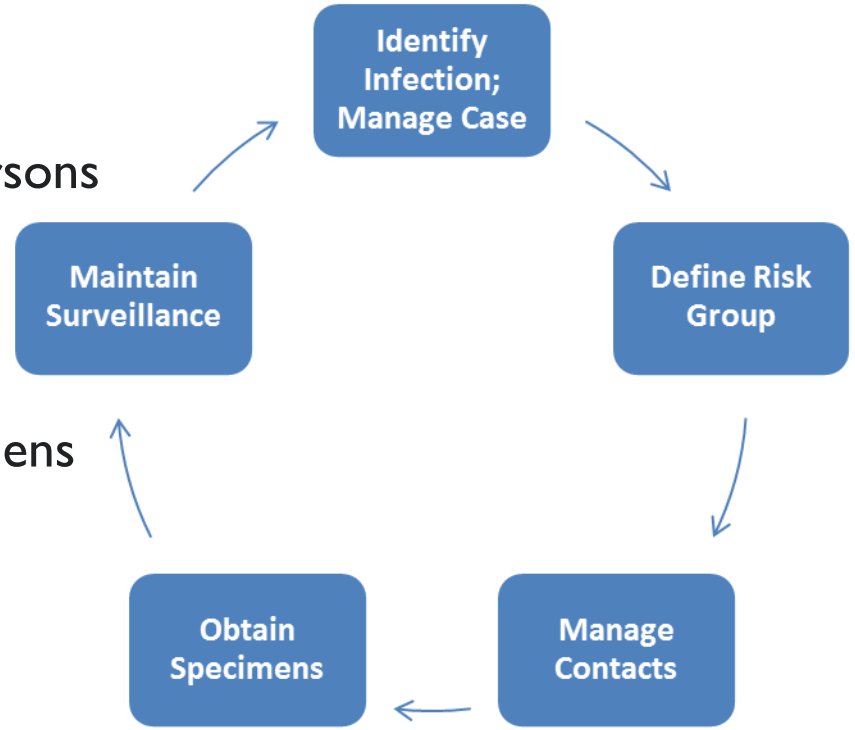
- PCR (NC SLPH **with CD Branch approval**; call Epi On Call 919-733-3419)
  - Throat or nasopharyngeal swab
  - Urine (paired with swab)
  - Preferable to collect within 3 days of rash onset
  - NC SLPH able to perform measles PCR

- IgM (any commercial lab)
  - Serum specimen
  - Preferable to collect 3 days or later after rash onset
  - In vaccinated persons, there is often a blunted and/or transient production of IgM
  - Negative IgM in vaccinated persons suspected of having measles should not be used to rule out the case

- Viral culture (LabCorp)

5 VPD CONTROL STRATEGIES FOR PUBLIC HEALTH

1. Identify infection; manage case
2. Define population at risk
3. Manage non-immune exposed persons
   - Vaccinate?
   - Exclude?
4. Obtain appropriate clinical specimens
5. Maintain surveillance



SITUATION UPDATE

MEASLES RESPONSE PLANNING

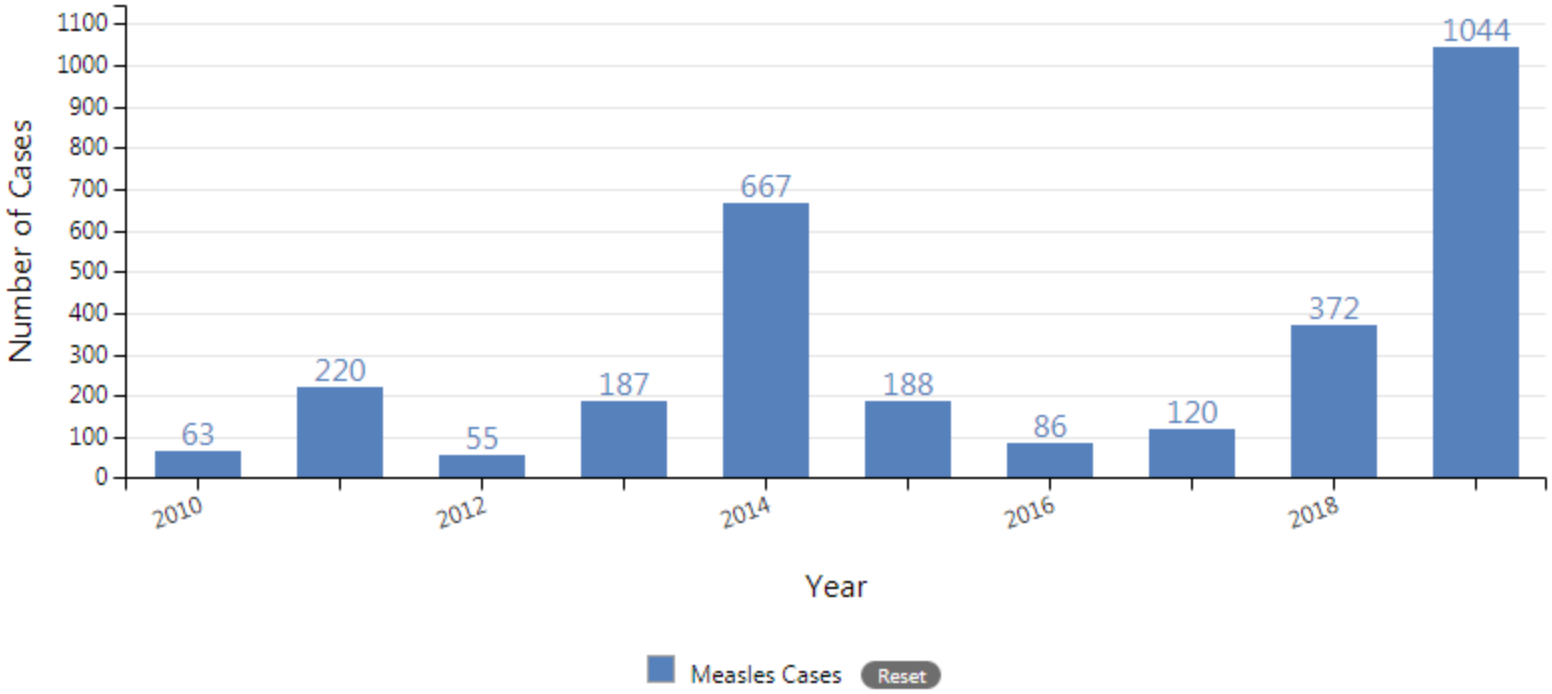
MEASLES IN THE U.S.

- Still common in Europe, Asia, the Pacific, and Africa
- Travelers with measles continue to bring disease into U.S.
- Measles spreads in a community where groups of people are unvaccinated
- Large majority of people who get measles are unvaccinated

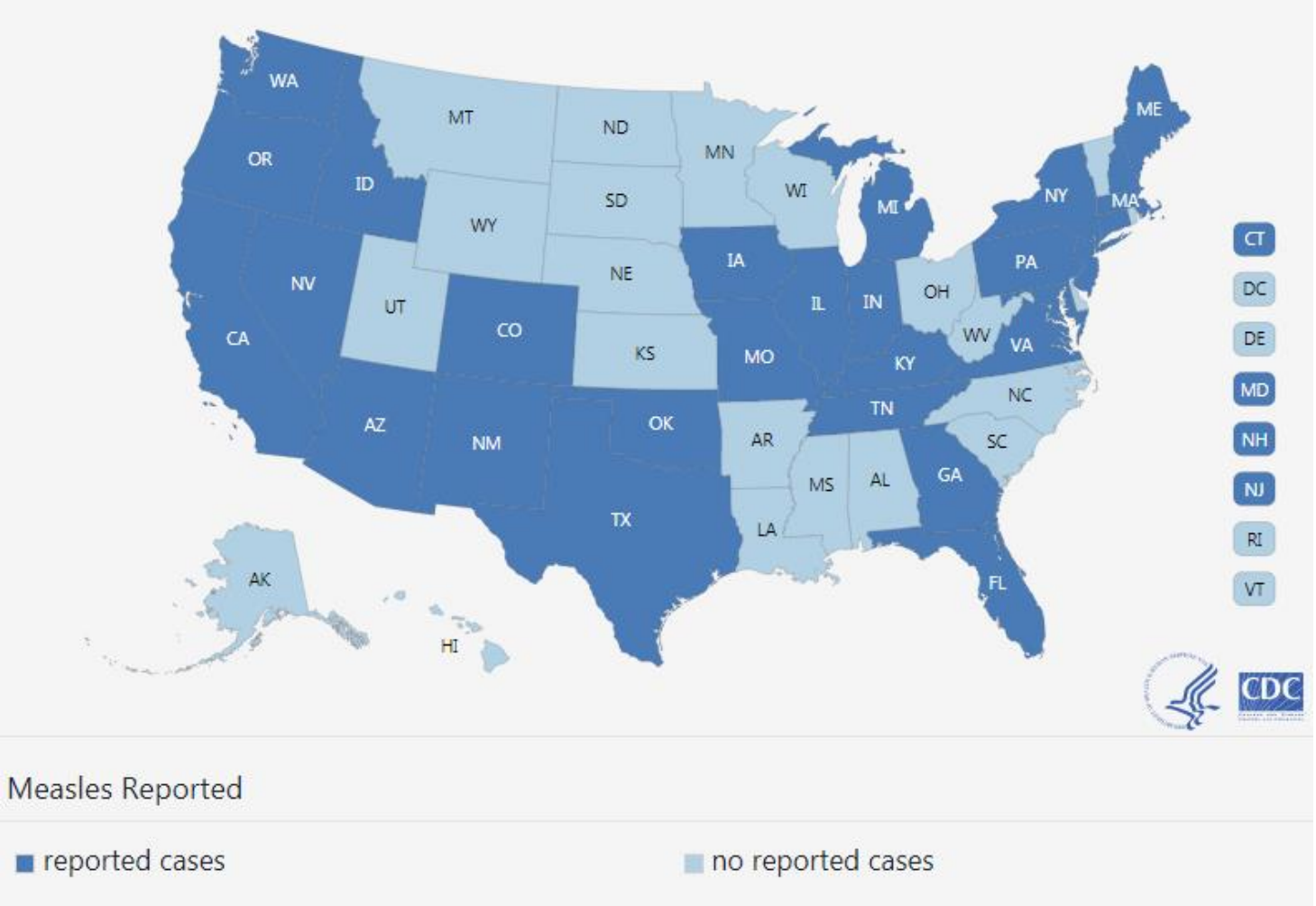
https://www.cdc.gov/measles/cases-outbreaks.html

MEASLES IN THE U.S.

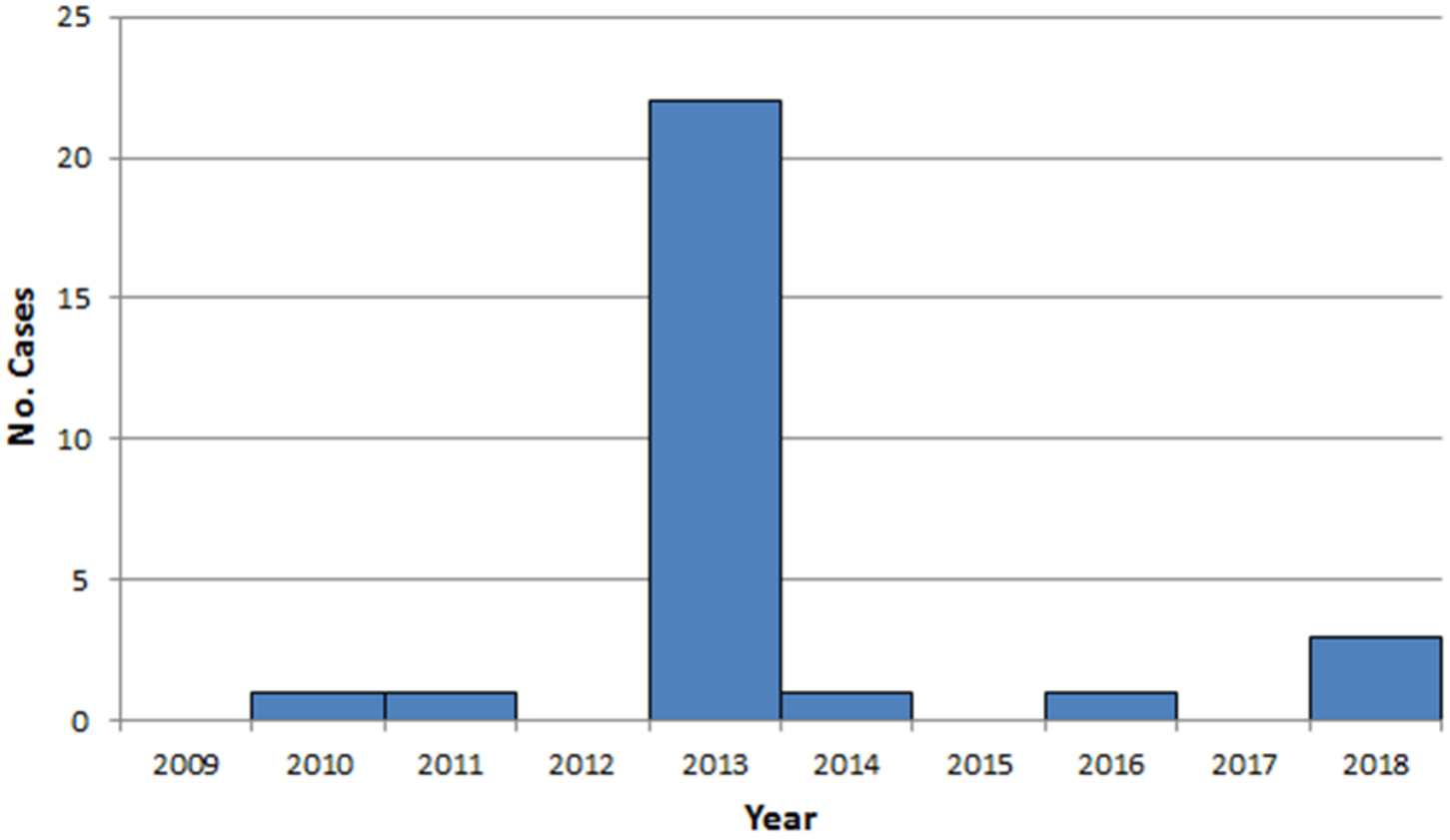
2010-2019**(as of June 13, 2019)



STATES WITH REPORTED MEASLES CASES

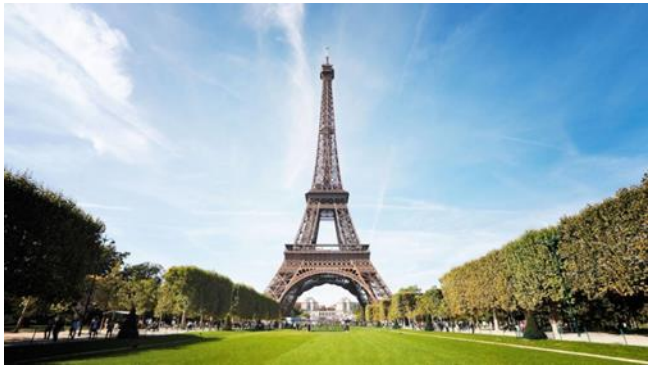


MEASLES IN NORTH CAROLINA, 2009-2018



WAKE – JOHNSTON COUNTY MEASLES CASE: JUNE 2018

- Unvaccinated index case returned from vacation in France on 6/2/18
- Rash onset 6/10/18; infectious 6/6 to 6/14
- Exposed persons in 3 different healthcare settings on 5 separate visits from 4 other states and 15 counties
- Over 300 contacts investigated; 2 family members infected
- Genotype D8A; associated with outbreak strain in Europe



HEALTH CARE SETTINGS IMPACT

- Presumptive immunity
  - 2 valid doses MMR
  - Lab evidence of immunity or previous disease

- Furlough non-immune exposed staff
- Notification of exposed persons in facility
- Public information and media communication

DURHAM COUNTY 2019

- Infant < 1 yr. immunized a few days prior to travel to measles outbreak area
- Developed symptoms within expected timeframe for BOTH expected MMR reaction and exposure to wild type virus
- NC SLPH PCR, IgM, IgG all positive; further testing needed to differentiate virus
- Parent had alerted healthcare facility; no exposures
- Unintentional exposures almost always happen due to asymptomatic/mildly symptomatic infectious period prior to rash onset
- Public health response centers on identifying at-risk population (infants, pregnant women, immunocompromised persons)

CHILD CARE SETTING IMPACT

- Challenge to gather staff immunity status; NC does not require
- No CDC guidance beyond ACIP adult immunization recommendations
- NC has guidance for attendees but not staff
- NC does not require child care settings to report coverage rates
- Staff exclusions adversely impact facility operations

ACIP RECOMMENDATIONS

MEASLES RESPONSE PLANNING

MMR VACCINATION IN ADULTS

- Recommendations have not changed from ACIP recommendations (2013)
- 2 doses of MMR vaccine are recommended as part of the routine childhood immunization schedule
  - The first dose at 12-15 months of age
  - The second dose at 4-6 years of age
- Most adults in the United States are at low risk for measles
  - Annual reported incidence adults aged ≥18 years: <0.5 cases/million population (2001-2015)
  - Seroprevalence among persons aged 20-49 years: 88% to 93% (2009-2010)
  - Of 839 measles cases reported to CDC (January 1-May 10, 2019), 218 (26%) were adults ≥18 years of age
- In general, providers do not need to actively screen adult patients for measles immunity

ACIP MMR RECOMMENDATIONS

One dose of MMR vaccine, or other presumptive evidence of immunity, is sufficient for most U.S. adults

- Other presumptive evidence of measles immunity includes:
  - Birth before 1957 in the U.S.
  - Laboratory evidence of immunity
  - Laboratory confirmation of disease
- No recommendation for an adult catch-up program for persons born before 1989
- Some adults received a killed measles, revaccinate with one dose of MMR vaccine
  - Killed measles vaccine was administered between 1963 to 1967 (<5% of birth cohorts those years)

ACIP MMR RECOMMENDATIONS

- Certain adults are considered to be **high risk:**

  Two doses of MMR vaccine (each dose separated by at least 28 days), or other presumptive evidence of immunity

- **High risk** adults include:
  - Students at post-high school education institutions
  - Healthcare personnel
  - International travelers

ACIP MMR RECOMMENDATIONS

During outbreaks affecting adults with community-wide transmission and ongoing risk of exposure to adults:

- A second dose is considered for adults who have previously received one dose in these affected areas
- In health-care facilities: Two doses of MMR vaccine are recommended for health-care personnel regardless of birth year who lack other presumptive evidence of measles immunity

At-risk population is defined by local and state health departments, depending on epidemiology of outbreak

ACIP RECOMMENDATIONS

- Serologic screening for measles immunity before vaccination is not necessary

- Post-vaccination serologic testing to verify immune response is not recommended
  - Documented age-appropriate vaccination supersedes the results of subsequent serologic testing

INFANTS VISITING OUTBREAK AREAS

- Infant aged 6-11 months residing in outbreak area: Consider 1 dose of MMR vaccine
  - Infants <12 months of age are affected
  - Sustained, community-wide transmission with ongoing exposure risk to infants
- Benefit of early protection during a period of increased transmission vs. risk of decreased immune response following subsequent MMR doses
- Infants aged 6-11 months visiting an outbreak area: Consider 1 dose of MMR vaccine
  - Local recommendation was made to vaccinate infant residents
  - Visiting infant will have direct contact with affected community and be at risk of being exposed
- Two more doses should be given according to routine schedule:

  One dose at 12-15 months and another dose at 4-6 years of age, or at least 28 days later

WORKING WITH CLOSE KNIT COMMUNITIES

MEASLES RESPONSE PLANNING

KEY CONCERNS AND BARRIERS

- Historic distrust of government
- Poor experiences with vaccines
- Language barriers
- Reliance on traditional healers, folk medicine

WASHINGTON STATE

WASHINGTON STATE RESPONSE BACKGROUND

- Began working on vaccine hesitancy in Russian-speaking community in 2012
  - Literature review
  - Key informant interviews
  - Parent focus groups

WHAT WORKED IN WASHINGTON

- Community leaders
- Social Networks and Community Health Workers
- Language specific resources
- Partnerships

http://www.withinreachwa.org/wp-content/uploads/2013/04/Russian-Toolkit.pdf

COMMUNITY MEETING CHECKLIST

Conduct formative research to learn about the population, immunization trends, and potential key allies	☐
Secure any possible funding for the event	☐
Find a speaker and determine possible presentation dates and location	☐
Find recruiter, determine ways to recruit, and any key target populations	☐
Scout and confirm locations	☐
Determine and confirm incentives for meeting	☐
Develop promotional materials and reach out to key allies	☐
Construct or update the presentation power point	☐
Construct an evaluation form for participants	☐
Work out event details of food and childcare	☐
Confirm with speaker and recruiter 2 weeks before the event, and 2 days before the event to go over details	☐
After the event, review evaluation findings, disseminate findings and update future event planning efforts	☐

OHIO

OHIO MEASLES RESPONSE BACKGROUND

- ODH encouraged local health departments to find persons with established relationships and knowledge of Amish in their communities
- Areas with poor relationships with Amish leaders (i.e. Bishops) had a difficult time with communication and with MMR vaccine clinics
- Old Order Amish (least modern) remained highly resistant to MMR vaccine

CDC NCIRD, 05/24/2019 Conference Call, Trust-building with Close-knit Communities

OHIO LESSONS LEARNED

- Effective communication with Amish communities was best performed by known health professionals
  - (doctors, nurses, midwifes, public health professionals) with existing relationships with Amish families and leaders
- LHDs with established relationships with midwives or Amish Schools were able to do health screenings or provide vaccines

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MINNESOTA

MINNESOTA RESPONSE BACKGROUND

- Home to large Somali-American community
- Social life centered around family, community and faith
- Information and advice is shared orally
- Belief of staying healthy through practice of their faith; illness in God's hands

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MINNESOTA OUTBREAK RESPONSE SUCCESSES

- Use of exclusion
- Community engagement prior and during
  - Faith leaders
  - Health professionals
- Growing community ownership

NEW YORK CITY

NYC RESPONSE BACKGROUND

- Vaccine hesitancy and delay in vaccination
  - Conducted focus groups in 2011
- Overall vaccination rates are high in yeshivas
  - Some schools have high religious exemption rates
- Recent increased influence of anti vaxx movement, deliberately targeting Orthodox Jewish community

NYC LESSONS LEARNED

- Identify population and communities at risk
  - Sources: school immunization compliance, IIS
  - Geography, religion or ethnicity
- Establish relationships before an outbreak
  - Providers
  - Health department liaison
  - CBOs providing services
  - Community leaders
  - Community engagement
- Cultural sensitivity, translations

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NEW YORK STATE

NYSDOH RESPONSE BACKGROUND

- The NY orthodox community has been targeted by anti vaccine and pro measles movements for years
- Fear on both sides
- Low vaccination rates, high religious exemption rates
- During outbreak, pro measles groups encouraged people to not receive vaccine or PEP, to not engage with public health, to have measles parties and purposely go into community while infectious
- Reaching mothers as important source of information
- Communication methods- lack of internet, social media

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NYSDOH RESPONSE

Health Care Providers:

- Advisories
- Clinical support
- Epi X
- Letters to providers
- Fact sheets
- Meetings with pediatricians, provider offices and urgent care centers

NYSDOH RESPONSE

Community Outreach:

- Door hangers
- Posters
- Postings in local journals
- Meetings with Rabbis and community leaders
- Meetings with school officials
- School visits
- Conference call with moms
- Vaccination (over 21,000 since fall 2018)

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45,000 Door Hangers

HEALTHCARE SETTINGS

MEASLES RESPONSE PLANNING

MEASLES PREVENTION STRATEGIES FOR HEALTHCARE SETTINGS

Community vaccination is the main prevention strategy for ALL settings

- Proactively ensure that HCP have presumptive evidence of immunity
- Rapidly identify and isolate measles patients (known or suspected)
- Adhere to Standard and Airborne precautions
- Appropriately manage exposed and ill HCP

3 BASIC RESPONSE STEPS FOR HEALTHCARE SETTINGS

- **Screen**
  - Immune status
  - Clinical information
  - Epi, demographics, travel, exposure history, activities
- **Isolate**
  - Airborne precautions for measles
  - 2 hour timeframe even after patient leaves
- **Call public health immediately**
  - Assure control measures are initiated
  - Arrange for appropriate testing
  - Begin contact investigation

SCREEN, ISOLATE, CALL

- Minimize Potential Exposures Before Arrival
  - By phone
  - By medical transport
- Minimize Potential Exposures upon Arrival
  - Post visual alerts and instructions at entry points
  - Prepare triage stations to rapidly identify patients with measles

SCREEN, ISOLATE, CALL

- Immediately place the masked patient in an airborne infection isolation room (AIIR)
- If AIIR not available
  - ✓ Place the masked patient in a private room with the door closed
  - ✓ Transfer as soon as possible to a facility with an AIIR
  - ✓ Preferably, avoid placement where room exhaust is recirculated without high efficiency particulate air (HEPA) filtration
  - ✓ Room may not be used for ***2 hours*** after patient leaves

https://www.cdc.gov/infectioncontrol/pdf/guidelines/isolation-guidelines-H.pdf

MEASLES REPORTING WITHIN FACILITIES AND TO PUBLIC HEALTH

- Promptly communicate with key facility staff, including leadership, infection control, hospital epidemiology, occupational health

- Immediately notify public health authorities about new cases, including suspected healthcare-associated transmission

Measles cases continue to be identified in returning international travelers and travel related to U.S. outbreaks. Measles is highly contagious. Please help protect patients, visitors and staff.

Consider measles in people with:

☒ Compatible illness

PRODROME

- Fever, often high
- Cough, coryza, conjunctivitis
- Koplik spots

RASH ONSET (usually 14 days after exposure)

- Begins a few days after onset prodrome
- Maculopapular rash begins on face and head
- Spreads to trunk then extremities (down and out)
- Fades in order of appearance

☒ Potential Source of Exposure in 3 Weeks Prior

- International travel
- Travel to outbreak-affected area
- Contact with people with similar symptoms

☒ No history of vaccination or evidence of immunity

Note: Not all people with measles will meet all of these criteria.

If you suspect measles, act immediately:

Implement airborne precautions; mask and isolate patient-negative pressure room if available.	Permit only staff with written documented immunity to measles to be near the patient.	Contact your local health department or the North Carolina Division of Public Health **(919-733-3419; 24/7)** immediately to discuss testing and control measures.	Notify receiving facilities before referring or transferring patients to avoid exposures.	Do not use any regular exam room for at least 2 hours after a suspected measles patient has left the room.

Visit
http://epi.publichealth.nc.gov/cd/diseases/rubeola.html
for more information.

State of North Carolina | Pat McCrory, Governor
Department of Health and Human Services | Aldona Z. Wos, M.D., Secretary
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LESSONS LEARNED FROM PREVIOUS INVESTIGATIONS

- Most clinicians have never seen a true case of measles
- Immune status, clinical presentation and epi (travel history) need to be assessed for every patient presenting in an urgent care setting
- Most adults do not have ready access to their shot records
- Unvaccinated returning travelers continue to be a source of measles spread in the U.S.

NC PLANNING

To Date

- May 7 Provider Memo from Immunization Branch and State Epidemiologist
- Immunization Branch Provider posters
- CD Manual guidance documents
- TTX exercises with partners
- Ongoing communication with CDC, other states' contact investigation follow up
- Use of social media messaging

Upcoming

- CD Program Alert
- Cross Division and Branch response planning

NC PLANNING CHALLENGES

- Childcare data
- Provider knowledge
- All gaps are local; all response is local
- Multitasking with limited resources
- Secure electronic communication

NC BEST PRACTICES

- Buncombe County Immunization Action Coalition-community outreach
- Chatham County-child care vaccination coverage reporting data
- Haywood County Board of Education-policy review and guidance

FINAL THOUGHTS FROM OTHER STATE EPIDEMIOLOGISTS

- Fear is easy. Education takes time.
- Don't wait-know where your gaps are.
- Plan with partners
  - `Nothing about us without us!`

ACKNOWLEDGMENTS

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- Debra Blog MD, MPH; Director, Division of Epidemiology, NYSDOH

QUESTIONS?

VISITING ANOTHER COUNTRY? PROTECT YOUR FAMILY.

THINK MEASLES.

Measles is widespread in places like Europe, Africa, Asia, India, and the Philippines.

BEFORE YOU TRAVEL

Tell your doctor where you are traveling. Babies and children may need measles protection at a younger age than usual.

AFTER YOU TRAVEL

Call your doctor if anyone gets a fever and rash within 3 weeks of returning from your trip. Describe where you traveled.

Talk with your doctor if you are planning an international trip.

For more information go to **www.cdc.gov/travel**.

California Department of Public Health, Immunization Branch IMM-1046 (5/11)

THANK YOU!