Imported Measles Case Investigation
Louisville, KY
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Kentucky
UNBRIDLED SPIRIT
Measles

• Measles is a respiratory disease also called Rubeola
• Measles virus normally grows in the cells that line the back of the throat and lungs
• Causes fever, runny nose, cough, and a rash all over the body
• Often confused with Roseola and Rubella
Rash is described as:

- Red or Reddish Brown
- Blotchy
- Usually begins on face at hairline
- Spreads downward to neck, trunk, arms, legs, and feet
Complications

- 10% of children also get an ear infection
- 5% get pneumonia
- One out of 1,000 get encephalitis
- Kills nearly 200,000 people each year in the world
- Causes miscarriage or premature birth in pregnant women
Transmission and Incubation

• Measles is transmitted by direct contact with infectious droplets or, less commonly, by airborne spread
  – One of the most highly communicable infectious diseases

• Incubation Period
  – 8 to 12 days from exposure to onset of symptoms
Period of Communicability

• Infected persons are infectious from 1 day before the beginning of the prodromal period (usually 4 days before rash onset) to 4 days after rash appearance
Epidemiology

• Measles is rare in areas with high vaccination coverage

• Worldwide, approximately 20 million cases occur yearly
  – 164,000 deaths
  – More than half occurring in India
  – Sporadic cases occur due to travelers becoming infected before/during travel and infect unvaccinated persons
Epidemiology continued

- 44 measles cases have been reported to MMWR this year
- AR (1), CA (8), CT (1), DE (1), IN (15), KS (6), MI (1), NJ (1), NM (2), NYC (3), OR (1), PA (2), UT (2).
- 42 (89%) confirmed cases this year were import-associated
- To date, 3 measles outbreaks have occurred (≥3 cases that are linked in time or place), accounting for 52% of cases
Epidemiology continued

- 76% were unvaccinated or had undocumented vaccination status
- Of the 38 cases among US residents, 52% were unvaccinated, 21% had undocumented vaccination status, 13% had received 1 MMR, 10% had received 2 MMR, and 2% had received 3 MMR doses
  - Unvaccinated US residents with measles: 1 was foreign born, 1 was missed opportunity, 15 were PBEs, and 3 were too young.
Vaccination

• MMR: Measles, Mumps, and Rubella
  – 1\textsuperscript{st} dose: 12-15 months of age
    • Can be given to infants 6 mo-11mo but not counted as valid dose towards 2-dose series recommendation
      – (i.e. travel related purposes)
  – 2\textsuperscript{nd} dose: at school entry
    • Can be given earlier; 28 days after 1\textsuperscript{st} dose (non-routine use)

• MMRV: MMR + Varicella
  – 2 years-12 years of age
  – 28 day interval for measles/90 day interval for varicella
Testing and Immunity

• Diagnosed by:
  – Positive serologic test result for measles immunoglobulin IgM antibody
  – Isolation of measles virus from clinical specimen (urine, blood, throat, or nasopharyngeal secretions)
  – Sig. increase in IgG antibody in paired acute and convalescent serum specimen
Outbreak Control

- Confirm suspect measles case via laboratory testing
- Promptly immunize people at risk of exposure or those already exposed w/o documented immunity
- Exclude people unimmunized or exempt from school, child care, and health care settings for 21 days after the onset of rash in the last case
April 25, 2011

16 year old Foreign Exchange Student
Presents to Kosair Children’s Medical Center in Louisville

- Rash around face and neck began that morning
- Cough and sore throat began day before
- No fever, coryza, or conjunctivitis
- Patient’s brother dx 3 weeks before with measles
- Patient’s antibody testing done in France showed immunity
Clinical History (continued)

- Patient believes she did not receive the measles vaccine (not required in France)
- Patient left France 11 days before
- Last saw her brother 11 days before
- Students are returning to France in 2 days
- Measles IgG and IgM drawn and strep screen taken
- Discharged home-suspect measles
  - No immunocompromised or infants under 1 in guest home
Contact Investigation

- Louisville Metro HD notified: April 25th
- Infectious Period: April 21-29
- Case isolated after diagnosis: April 25
- April 26th DLS reported a confirmed positive measles IGM antibody
  - Reports from France were found to be incorrect
  - Negative Measles IgG antibodies
- Exposure period for investigation: April 21-25
Contacts

- School Contacts
- Host Family
- Christian Church Congregation at April 23rd Easter Service
- Gatherings on 4/23 and 4/24 in private residences
- Patient did not travel during the infectious period and did not return until after her infectious period was over (4/29)
Care of Exposed Persons

• Measles vaccine (MMR or MMRV), given within 72 hours of exposure, may provide protection

• Immune globulin can be given intramuscularly to prevent infection in susceptibles within 6 days of exposure
  – Recommended for close contacts under age of 1, pregnant women, and immunocompromised
Recommendations

• 2 immunocompromised contacts referred to their physicians

• 17 year old in host family home received 2 MMRs but first dose was given before 1 year of age
  – Per CDC: exclude, titer, vaccinate

• S/S screen for 17 exchange students prior to returning home. All but case patient returned home as scheduled.
Recommendations continued

• KY School Investigation
  – 193 total faculty/staff
    • 83 had antibody testing
      – 6 w/o proof of vaccination and negative tests were excluded until end of infectious period
      – 3 pregnant teachers referred to their OBs
  – 917 students enrolled
    • 910 had documentation demonstrating vaccination
    • 7 students had antibody testing
      – 3 w/o proof of vaccination and negative tests were excluded until the end of the infectious period