Measles in Minnesota, 2011

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Outline

• Measles Epidemiology

• Minnesota Spring Outbreak Summary

• Public Health Response

• Vaccine Hesitancy in Minnesota

• Lessons Learned and Conclusions
Measles Epidemiology
Measles - United States, 1950-2005

Vaccine Licensed 1963

Endemic transmission interrupted 1989

Measles declared eliminated

Cases (thousands)

Reported Cases of Measles
Minnesota, 2000-2011

Number of Cases

Year of Disease


1 4 2 1 1 1 3 26
United States Measles Cases – 2011 (preliminary data)

• 222 confirmed cases
• 200 (90%) are import-associated
• 192 (86%) unvaccinated or undocumented vaccination status
• 17 outbreaks (≥3 cases that are linked in time or place) accounting for 50% of all 222 reported cases
Minnesota Measles Cases – 2011

• 26 confirmed cases
• All import-associated
• 23 (88%) unvaccinated or undocumented vaccine status
• 2 outbreaks (≥3 cases that are linked in time or place) accounting for 92% of all 26 reported cases
Minnesota Spring Outbreak Summary
Spring Outbreak Summary – February- April 2011

• March 2, measles confirmed in a nine-month old infant

• Source case found retrospectively, 30 month old, unvaccinated, US born, returning traveler from Kenya – rash onset on February 15

• Source case attended drop-in daycare; resulted in four cases including the first identified case

• Vaccine hesitancy in Minnesota Somali community coupled with exposures in homeless shelters fueled the outbreak

• 20 cases linked to the 30 month old (21 total)
Exposure Settings (n=21)

- Index case acquired infection in Kenya
- Drop-in daycare (3)
- Hospital (3)
- Household (4)
- Congregate living for the homeless (8)
- Daycare (1)
- Unknown (1)
Demographic Characteristics (n=21)

- **Age**
  - range 4 months – 51 years
  - Mean: 6.5 years
  - Median: 1 year

- **Sex**
  - 9/21 (43%) female
  - 12/21 (57%) male

- **Race (descent)**
  - Black (non-Somali) 9 (43%)
  - Black (Somali) 8 (38%)
  - American Indian 3 (14%)
  - White 1 (5%)

- **Shelter resident** – 9 (43%)
Hospitalizations (n=14)

- Hospitalization: 14/21 (67%)
- Average days in hospital: 4 days (range: 2-7 days)
- All 14 had dehydration that required IV fluids
  - 8 (57%) vomiting and 9 (64%) diarrhea
- 2 (14%) pneumonia, 2 (14%) bronchiolitis, 4 (29%) croup, 7 (50%) otitis media
- 3 (21%) reactive airway disease or asthma
Vaccination Status (n=21)

• Unvaccinated: 16 (76%)
  – Too young for vaccination: 7/16 (44%)
  – Of age but not vaccinated: 9/16 (56%)

• Vaccinated prior to recommended age: 1

• Unknown vaccine status: 4
Somali Descent Vaccination Status (n=8)

- Somali descent 8/21 (38%)
- All 8 were unvaccinated
- Too young for vaccination: 2
- Of age but not vaccinated: 6
Laboratory Confirmation and Genotyping (n=21)

- Confirmed at MDH PHL: 19
  - Measles IgM positive 11/19 (58%)
  - PCR positive 19/19 (100%)

- Epi-linked and met clinical case definition: 2

- Genotyping at CDC and MDH-PHL revealed index case and linked cases are B3, endemic in sub-Saharan Africa
Public Health Response
Case Identification

• **Clinical presentation:**
  - **RASH:** generalized and progressed from head to trunk and extremities
  - **FEVER:** temperature $\geq 101^\circ F$ or $38.3^\circ C$; and
  - **THREE Cs:** cough, coryza, or conjunctivitis

• **Exposure information:**
  - **TRAVEL:** International travelers (including transit through an international airport) or exposure to an international traveler 3 weeks prior to symptom onset
  - **LINKED:** Epidemiologic linkage to a confirmed measles case

• **Immune status:**
  - **Susceptible:** no or unknown vaccination or disease history and born after 1957
Immunity and Exposure Assessment

• Home

• Healthcare facility

• School and childcare

• Other possible exposures unique to outbreak
  • Shelter?
  • Public transportation?
  • Recent travel? Any air or mass transit travel?
  • Visitors in home?
  • Faith-based activities?
  • Other places visited while infectious?
Immunity and Exposure Assessment – Border States

- Out-of-state exposures were communicated via phone and fax to: IA, ND, SD and WI during the outbreak
- Each state used their own protocol of follow-up
- No formal report on outcomes was requested
- No national border situations
Vaccination and Immune Status Assessment Tools

• Minnesota Immunization Information Connection (MIIC)

• Immunity checks – testing at the MDH-PHL (measles specific IgG antibody testing)

• Documentation of MMR from medical records, schools, other state health departments

• Refugee health access to CDC’s Electronic Disease Network (EDN)

• IOM documents that refugees carry on person
Public Health Response: Contacts Flow Chart

Exposed & Susceptible

If within 3 days of exposure:
MMR

If within 6 days of exposure:
IG

No PEP

Symptom watch

Voluntary quarantine
Isolation, Quarantine and Symptom Watch

• Isolate 4 days before through 4 days after rash

• Quarantine or symptom watch* for susceptible contacts (21 days past exposure)

*Symptom watch used for those who had unknown immunity or received PEP but was not initiated until after first outbreak
Voluntary Quarantine Protocol

• “Day Zero Call”
  • Assess exposure + susceptibility of household contacts
  • Explain measles symptoms and give instructions for seeking medical attention
  • Monitoring calls every 3 days
Voluntary Quarantine Protocol (cont.)

- Local public health department (LPH) notified
- LPH asked to provide essential services if needed
  - No requests for essential services
- 24/7 contact number for MDH or LPH provided
Symptom Watch Protocol

• “Day Zero Call”
  • Assess exposure + susceptibility of household contacts
  • Explain measles symptoms and give instructions for seeking medical attention
  • Monitoring calls every 3 days
• NO RESTRICTIONS PLACED ON ACTIVITIES
Post-exposure Prophylaxis and Summary

- MMR within 3 days of exposure
- IG within 6 days of exposure
- Spring outbreak: 76 IG doses, 3 MMR
- August outbreak: 20 IG doses, 0 MMR
Spring Outbreak Exposure Summary

- 3,009 exposed over 10 weeks
- Median exposures per case = 45 (range 0-564)
- Exposure count affected by congregate settings (same people exposed multiple times but counted once)
- Three placed in quarantine with monitoring; no significant outcomes
August Outbreak Exposure Summary

• 3 cases and 160 exposures

• 28 susceptible contacts identified

• 20 placed in symptom watch (received IG); 4 tested and 1 confirmed measles case

• 8 placed in voluntary quarantine
Outbreak Vaccination Recommendations

Vaccination recommendations

- Children 6-11 months living in affected congregate living facilities receive 1 dose of MMR
- Children in Hennepin County and those of Somali descent receive “early” 2nd dose of MMR* (Somali descent recommendation was omitted in April)
- Nine community vaccination and IG clinics held

*MMR vaccine is not a booster, therefore, this recommendation does not alter the schedule.
Current Immunization Recommendations

• Assess MMR at every visit

• Offer MMR to those who will be traveling internationally

• Offer an early dose of MMR vaccine to children 6-12 months of age who will be traveling internationally
Global Measles Cases Cont.

Number of Reported Measles Cases with onset date from June to Dec 2011

Data source: surveillance DEF file
Map production: Immunization Vaccines and Biologicals, (IVB), World Health Organization
Data in HQ as of 11 January 2012
MMR Vaccine Hesitancy in Minnesota

Understanding Autism

Why More Kids & Families Are Facing the Challenge of 'Mindblindness'

By Geoffrey Cowley

Parents Wonder: Is it Safe to Vaccinate?

Many families of autistic kids blame the MMR shot for the disorder. Experts say they shouldn’t.
Autism and MMR in the Somali Community

Summer 2008
Initial issues about autism raised to public via news report

Spring 2009
Study completed

Early summer 2009
MDH conducted another daylong forum focused on provider resources

Fall 2008
MDH (MCYSHN) program initiated a study of the 3 and 4 year old ECSE enrollment data
MDH held a forum for the Somali community

2009
MDH immunization program started to receive inquiries from providers

Fall 2009
Issue of porcine gelatin

Fall 2010
Somali Autism Concerns Coalition (SACC) formed

Fall 2011 – Spring 2012
Supporting U of M prevalence study grant
Comparison of 24 Month Old Children Born in Minnesota of Somali Descent and Non-Somali Descent; MMR vs. Varicella Vaccinations in Hennepin County, Minnesota

![Graph showing the comparison of MMR and Varicella vaccinations for Somali and Non-Somali children over the years 2004 to 2009. The graph includes lines for Somali MMR (≥1), Somali Varicella (≥1), Non-Somali MMR (≥1), and Non-Somali Varicella (≥1) vaccinations. The x-axis represents the year of birth, and the y-axis represents the percent vaccinated. The sample sizes are listed for each group, with Somali children ranging from 645 to 739 and Non-Somali children ranging from 13,565 to 7,176.]
Lessons Learned and Conclusions
Lessons Learned

• PCR critical to rapid identification of cases and exposure follow-up

• Genotyping useful tool for vaccine-associated cases

• Minnesota Immunization Information Connection (MIIC) useful in identifying susceptible contacts to inform decisions on PEP and other follow-up activities
Lessons Learned (cont.)

• Quarantine challenging in congregate living facilities
• Detailed quarantine protocol necessary for success
• Symptom watch approach helpful for those who have unknown immunity or received PEP
• Healthcare “tool kit” development important (i.e. guidelines, template letters, and spreadsheets)
Lessons Learned (cont.)

• MDH refugee health staff access to CDC records helpful in documenting vaccine status

• Vaccination recommendations for those traveling internationally must be clearly communicated
Conclusions

- Measles cases due to importations will continue
- Potential for spread in communities where immunizations rates are low
- Vaccine hesitancy is important to address
- High immunization rates offer protection, but “pockets” of under or unvaccinated fuel small outbreaks that require resource intensive follow-up
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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.