

Managing Measles on Two NYS  
Campuses, or “What part of quarantine  
don’t you understand?”

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# Disclosures

- Neither of us has figured out how to make any money on measles.
- If anyone has suggestions (legal and ethical ones, especially), please let us know.
- Ralph had the measles (as a child).
- We have almost nothing to say about Ebola virus.

# Learning Objectives

1. Describe the typical presentation of measles in adolescents and young adults.
2. List some key steps to take when a case of measles is identified on a college campus.
3. Discuss how to work with local and state public health officials when dealing with a case of measles.

# Overview

- Review of measles
- RPI case
- Rochester case
- Lessons learned
- Discussion/Q&A

# Virology

- DNA viruses
  - Double stranded (I)
    - Herpes
    - HPV
    - Pox
    - Adeno
  - Single stranded (II)
    - Parvo
- Retroviruses
  - HIV (ss RNA – VI)
  - Hep B (partial ds DNA – VII)
- RNA viruses
  - Double stranded (III)
    - Rotavirus
  - Single stranded + (IV)
    - Enterovirus, hep A
    - Hep C
    - Rubella
  - Single stranded – (V)
    - Ebola
    - Measles
    - Influenza

# Epidemiology

- 1950's: > 3 million cases/yr in USA, 48k hospital admissions, 500 deaths
- 2000: endemic measles eliminated in USA
- Now: 20 million cases/yr worldwide with over 150k deaths (half in India)
- 150/yr in USA (50% imported from Europe)
- Higher incidence in states that allow for “philosophical objection” to vaccination

# Clinical Issues

- Droplet transmission starting 4 days before the rash and lasting about 8 days
- 90% attack rate among susceptibles
- 7-21 day incubation
- Fever, cough, coryza and conjunctivitis
- Rash typically starts on head
- Koplik spot is pathognomonic

# Typical Measles Rash



# Koplik Spot



# Measles Vaccine

- 1954: measles virus grown in human kidney cell culture by Peebles and Enders in Boston
- 1963: first vaccine developed by Peebles and Enders (Enders - Nobel prize for work on polio)
- 1968: improved version
- 1971: MMR
- 1989: ACIP recommends 2 doses (99.7% effective)
- 2005: MMRV

# CDC: Evidence of Immunity

- Acceptable presumptive evidence of immunity against measles includes at least one of the following:
  - written documentation of adequate vaccination:
    - one or more doses of a measles-containing vaccine administered on or after the first birthday for preschool-age children and adults not at high risk
    - two doses of measles-containing vaccine for school-age children and adults at high risk, including college students, healthcare personnel, and international travelers
  - laboratory evidence of immunity
  - laboratory confirmation of measles
  - birth in the United States before 1957

# Post-exposure Prophylaxis

- Per CDC:
  - People exposed to measles who cannot readily show that they have evidence of immunity against measles should be offered post-exposure prophylaxis (PEP) or be excluded from the setting (school, hospital, childcare). MMR vaccine, if administered within 72 hours of initial measles exposure, or immunoglobulin (IG), if administered within six days of exposure, may provide some protection or modify the clinical course of disease.

## **Managing Measles on Two NYS Campuses**

- At Rensselaer (RPI) we had a case of Measles in 2011. This previous case had helped us prepare some of our Measles communications in our 2014 case
- Student from 2011 case made sure to communicate to me that his case proved that college students don't really need vaccination for Measles.

## Managing Measles on Two NYS Campuses

- Student had traveled from Hawaii to Albany NY on January 17<sup>th</sup> via ?LAX? in Los Angeles
- Began with H/A, body aches, runny nose and chills along with Abd. cramping and diarrhea on 1/26
- Sore throat and extreme fatigue developed by 1/28
- Mild conjunctivitis by 1/29
- High fevers and beginning of rash started 1/30 and continuing to 2/1/14 which prompted ER visit

# Managing Measles on Two NYS Campuses

- On 2/1/14 began work on communications and exclusion plan
- List (Evacuation List) of fifteen (15) unvaccinated students pulled
- Emails sent to fifteen students suggesting vaccination, leaving campus or staying at their own risk
- Posted posters across campus warning public to leave if unvaccinated
- On 2/2/14 after discussion with NYS Health Department, we adjusted our message to vaccinate or be excluded to the 15 unvaccinated or under-vaccinated students

# Managing Measles on Two NYS Campuses

- Case confirmed by NYS Health Department on 2/3/2014
- Campus wide email sent notifying campus of case and what their response, if any, should be
- Unvaccinated students who remained on campus asked to come to Student Health for vaccination or to prove they are immune
- Recognition that another group of students may not be fully immune (transfer students and Second semester Freshman) and emails were sent to these students

# Managing Measles on Two NYS Campuses

- MEMORANDUM

- 
- DATE: February 3, 2014

- TO:

- FROM: Mark Smith, Dean of Students  
Dr. Les Lawrence, Medical Director, Student Health Center

- RE: Measles Outbreak

- You are receiving this Memorandum because you have chosen not to be vaccinated or not respond to providing certification of vaccination to the Student Health Center. Measles is a highly communicable disease easily prevented by getting a vaccination. A student who chooses not to be vaccinated or show proof of prior vaccinations puts all students, faculty, staff and community at risk.

- You have either gone home or accepted the Institute's invitation to quarantine in Blitman through February 21. Due to the nature and incubation period for measles, no unimmunized student will be permitted to return to the campus and attend classes until February 21.

- You should continue to monitor for the symptoms of Measles which include blotchy rash over the body, fever often as high as 102° to 103°F, runny nose, cough, conjunctivitis (pink eye), feeling run down, and tiny white spots with bluish centers located inside your mouth. If you develop any of these symptoms you should contact your own physician or go to the Emergency Room. Always call ahead to the Emergency Room to let them know you are coming and you have been exposed to measles so ER staff can take necessary precautions to prevent further spread. Also, alert the Student Health Center at 518-276-6287 so that staff can locate any contacts you had in the prior days.

- Failure to comply with this directive will result in your being issued a mandatory leave of absence effective immediately through August 25, 2014 as described in the Rensselaer Student Handbook ([http://www.rpi.edu/dept/doso/resources/judicial/docs/2012-2014RPIStudentHandbookofRightsandResponsibilitiesAUGUST2012\(rev\).pdf](http://www.rpi.edu/dept/doso/resources/judicial/docs/2012-2014RPIStudentHandbookofRightsandResponsibilitiesAUGUST2012(rev).pdf)), Involuntary Leaves and Withdrawals, page 26.

- Thank you for your cooperation in this matter. If you have any questions, please call at your convenience.

- Sincerely,

## Managing Measles on Two NYS Campuses

- Of the 15 unvaccinated or under-vaccinated students
  - 8 were medical exemptions
  - 7 were religious exemptions
- **10 students** were subsequently vaccinated (4 medical exemptions and 6 religious)
- **1 student** proved she had previously received 2 MMR vaccines
- **4 students** left Campus (all medical exemptions- 2 were bone marrow transplants after cancer)

# Managing Measles on Two NYS Campuses

- Transfer students had not been placed on our evacuation list as they had not passed the deadline (per NYS public Health Law 2165) for them to prove immunity
- 2/3/2014 -Identified 9 transfer students who had not yet proven vaccination status/ immunity
- All 9 transfers either provided proof of two immunizations or came in within 48 hours to get second vaccine (7 needed second MMR)

# Managing Measles on Two NYS Campuses

- Each unvaccinated student was monitored with an email communication each day
  - The recently vaccinated students got one email
  - The student still unvaccinated received another
- Each email reminded the students of the symptoms of Measles and asked about the development of symptoms and to report to us should they develop any

# Univ of Rochester Case

- 22 yr old male undergraduate from an eastern European country presented to UHS on 30 Jan 2014 with a CC of sore throat that had started 3 days earlier. He also reported fever, dry cough, some sores in his mouth, arthralgias and one day of rash.
- Records showed he had had measles vaccine in 1997 and MMR in 2004.

## U of R Case, cont

- On exam he appeared ill and had a temp of 38.2. Pharynx was red, anterior cervical nodes were slightly enlarged and lungs were clear.
- Skin exam showed scattered red blanching slightly raised lesions on his back and chest.
- Rapid tests for strep and influenza were negative.
- Symptomatic treatment for URI advised.

# U of R Case, cont

- On 31 Jan pt called to report the rash was spreading and he couldn't take liquids by mouth. He was sent to the ED.
- On 1 Feb he was admitted. Derm and ID saw him and ordered lots of tests. He was put in respiratory isolation.
- He was discharged on 5 Feb wearing a mask. Parvovirus Ab was positive, measles IgM was pending.
  - “I have low suspicion for bacterial process given all sx explained by parvovirus... await Measles IgM ab but again very low suspicion for this given h/o vaccination.”

# U of R Case, cont

- At 4:13pm on Friday 7 Feb the Wadsworth lab reported a positive PCR for measles.
- By 6 pm there was a conference call with the Monroe County Health Dept (MCHD), the U of R and the hospital.
- At 8 pm I cancelled my travel plans for the weekend and notified the meeting planner I wouldn't be able to give my talk on the 8<sup>th</sup>.

# U of R Case Management

- By Friday evening, Feb 7<sup>th</sup>, I had the following:
  - List of students and faculty who had been in class with the index case
  - List of the index case's apartment-mates
  - List of 13 students who had an exemption from the MMR vaccine requirement
  - A directive from the NYSDOH that everyone on the main campus could have been exposed

# U of R Case Management, cont

On Sat, Feb 8<sup>th</sup> I called and sent the following email to 13 students who had an MMR exemption:

A University of Rochester River Campus student was diagnosed with measles yesterday. The NYS Dept of Health has directed us to consider everyone who has been on the River Campus for the last two weeks (January 27 – February 3) to be potentially exposed. UHS records show that you were granted an exemption from the NYS measles immunization requirement on religious grounds. Therefore, we consider you to be susceptible to measles infection. Now that we have had someone with active measles on campus, you must do one of the following:

- a. Have a blood test to determine whether or not you are immune to measles (unlikely if you have not had at least one dose of vaccine);
- b. Provide documentation that you have had at least one dose of measles vaccine that meets CDC guidelines (and get a second dose immediately if you've had only one); or
- c. Stay off the River Campus from now through 20 February 2014.

You can call 275-2662 to schedule a time to come in for a blood test or if you have any questions. Note that if the blood tests shows you are not immune, your only remaining options will be (b) and (c) above. The UHS River Campus Office is open 9am to 5pm Saturday and 1pm to 6pm on Sunday. You can fax immunization records to 256-1285, attention Dr Manchester.

Information about measles (including symptoms to watch for) is available on the CDC website:  
<http://www.cdc.gov/measles/index.html>

# U of R Case Management, cont

- Also on Sat, I handled over 30 emails plus additional phone calls with University officials to coordinate response plans and communications.
- A meeting was held on Sun, Feb 9<sup>th</sup> at 10 am to discuss plans for (a) supporting students who would be quarantined and (b) for determining the immunity/susceptibility of faculty and staff.
- List of susceptible students was given to the MCHD (concern re student-teachers)

# U of R Case Management, cont

- On Mon 10 Feb meetings with U of R officials were held at 7:30 and 8:30 am.
- Meeting with key UHS staff at 10 am.
- The MCHD/NYSDOH issued a press release announcing the measles case at 10:30 am.
- A press conference was held at 11 am.
- We contacted the UHS pts who might have been exposed on 30 Jan.

# U of R Case Management, cont

## Message from Dr. Ralph Manchester about Measles

A University of Rochester undergraduate student was diagnosed with measles on February 7. He has recovered and is no longer contagious.

We have notified students and faculty and staff who work on the River Campus. The vast majority of students are not at risk because they provided evidence of their immunity to measles in order to register. A few students are exempt from this requirement for medical or religious reasons, and I have contacted them about what they need to do.

I have asked faculty and staff to check their immunization records. People born before January 1, 1957, are presumed to be immune due to childhood exposure to measles.

You may read the message to River Campus faculty and staff [here](#). If you do not work on the River Campus but visited the campus between January 26 and January 31 and have concerns, please contact your physician.

Ralph Manchester, M.D.  
Vice Provost and Director of the University Health Service  
Professor of Medicine

# UHS Phone Bank



# First Day's Data on Employees

This is the last one I'll send today. I'll send another in the morning around 9 am.

Type	Count
01 dose	22
02 doses	406
None	5
Not Sure	23
<b>TOTAL</b>	<b>456</b>

# U of R Case Management, cont

- 11 Feb: First daily spreadsheet sent to MCHD
  - 48 more incomplete students (started in January)
  - 40 dining hall employees may have been exposed
- 12 Feb: NYSDOH announces 4 travel-related measles cases in 4 counties
- 13 Feb: Vaccine clinic on campus (25 empl)
  - Down to 2 in quarantine
  - Campus Times story; confidentiality concern

# First List Sent to MCHD

PID	LNAME	FNAME	COLLEGE	CLASS	REASON	Contact	Plan	Disposition	Phone #	Email	Home state
93649			SIMON	G	Religious	LM	?				
75621			SIMON	G	Religious	phone	titer - NEGATIVE	Quarantine			
68200			THECOLLEGE	2015	Religious	phone	titer - ordered				WA
53503			THECOLLEGE	2013	Religious	phone	titer - pending				
87381			THECOLLEGE	2017	Medical	phone	titer - pending				
68449			THECOLLEGE	2015	Religious	phone	titer - pending				NJ
76396			THECOLLEGE	2015	Medical	phone	got 2nd dose 2/8/14	cleared			
76946			THECOLLEGE	2016	Religious	phone	titer - POSITIVE	cleared			
65568			THECOLLEGE	G	Religious	phone	Quarantine	Quarantine			
89280			THECOLLEGE	2017	Medical	phone	titer - POSITIVE	cleared			
85369			WARNER - P/T	G	Religious	LM	MMR GIVEN 02/11/14 MCHD	cleared			
80947			WARNER - P/T	G	Medical	LM	MMR to be done 2/11/14 PCP				
94150			WARNER	G	Medical	phone	titer - pending				

# U of R Case Management, cont

- 17 Feb: take down phone bank
- 19 Feb: secondary case identified in Pittsburgh PA (friend of our case)
- 21 Feb: end of risk period for additional cases
  - 1339 employees responded to HR website
    - 88% reported 2 doses of measles vaccine
    - 1.3% reported no doses of vaccine
- 12 May: Wrap-up meeting with MCHD

# Managing Measles on Two NYS Campuses

## Lessons Learned:

- 1) Need to remember transfer or new students who may not yet be on our Evacuation List
- 2) Many of our physician-certified medical exemptions were fictitious, and religious exemptions are subject to change
- 3) Medical Director will need at least three full days blocked out at the beginning of Event

# More Lessons Learned

- 4) U of R did not have a reliable way to communicate with faculty and staff.
- 5) Quarantine is imposed by the NYSDOH (not by us), and they “call the shots”.
- 6) But we’re the messenger, and we need to have support systems in place for students in quarantine.
- 7) Measles is not easy to recognize.

# More Lessons Learned

- 8) Measles can happen in persons who have a record of receiving 2 doses of vaccine.
- 9) Good IT support is essential.
- 10) Certain types of students require special attention (eg, student teachers).
- 11) There will be a press conference.
- 12) It takes teamwork.