

NYSDOH EPIDEMIOLOGY UPDATE

NYS Trends in Vaccine Preventable Disease Control

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Objectives

- ▣ Participants will be able to identify disease outbreaks that impacted NYS 2010-2012
- ▣ Participants will be able to identify “lessons learned” from current disease outbreaks
- ▣ Participants will be able to recognize NYSDOH role in understanding the current epidemiology of measles, mumps and pertussis

VPD Annual Surveillance Report New York State 2010

Disease	Cases
Haemophilus Influenzae, Inv B (≤ 5 yo)	2
Hepatitis A	66
Hepatitis B, acute (Infant Perinatal)	73/1
Measles, Import non US	2
Mumps	663
Pertussis	721
Rubella	0
S. Pneumo Invasive, Drug Res	44
S. Pneumo Invasive, Intermediate	84
S. Pneumo Invasive, Sens / Unk	892 / 212
Tetanus	1

Mumps

- ▣ Contagious disease caused by the mumps virus
- ▣ Typically starts with a few days of fever, headache, muscle aches, tiredness, and loss of appetite, and is followed by swelling of salivary glands
- ▣ Two doses of the vaccine are more effective against mumps than one dose and prevent most, but not all, cases of mumps
- ▣ Spread by droplets of saliva or mucus from the mouth, nose, or throat of an infected person
- ▣ Most mumps transmission likely occurs before the salivary glands begin to swell and within 5 days after the swelling begins

Epidemiology of Mumps Outbreak in New York (excluding NYC)

- ▣ 1100 confirmed cases, 106 probable as of 5/7/2010
- ▣ 99% members of the Hasidic Jewish community
- ▣ 66% male
- ▣ 61% age 7 – 18 years; median age 14 years (range 6 months – 75 years)
- ▣ Of the 81% of cases with known vaccine status, 77% had 2 or more doses of MMR, 11% 1 dose MMR, 12% unvaccinated
- ▣ Few complications: 26 orchitis (4.7% males >10 years old), 7 hospitalizations (<1%), 1 meningitis (<1%)

Community Factors Favoring A Mumps Outbreak

- ▣ Isolated population
 - Limited interaction with outside communities
 - Close contact within the community
- ▣ Dense living conditions
 - Large families (median household size: 10 persons)
- ▣ Dense educational conditions, particularly for boys
 - Learning style emphasizes close contact between student partners
 - Adolescent males attend school for 12+ hours a day

Lessons Learned

- ▣ Mumps can occur in highly-vaccinated populations
 - Even a small number of unvaccinated people can provide a “foothold” for mumps, particularly in congregate settings
- ▣ Outbreaks can occur following importation of mumps from endemic areas outside the United States
- ▣ Timely reporting of mumps cases is critical for rapid outbreak identification and control

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Mumps Outbreak in Orthodox Jewish Communities in the United States

Albert E. Barskey, M.P.H., Cynthia Schulte, R.N., B.S.N., Jennifer B. Rosen, M.D., Elizabeth F. Handschur, M.P.H., Elizabeth Rausch-Phung, M.D., M.P.H., Margaret K. Doll, M.P.H., Kisha P. Cummings, M.P.H., E. Oscar Alleyne, Dr.P.H., Patricia High, M.H.S., Jacqueline Lawler, M.P.H., Andria Apostolou, Ph.D., M.P.H., Debra Blog, M.D., M.P.H., Christopher M. Zimmerman, M.D., M.P.H., Barbara Montana, M.D., M.P.H., Rafael Harpaz, M.D., Carole J. Hickman, Ph.D., Paul A. Rota, Ph.D., Jennifer S. Rota, M.P.H., William J. Bellini, Ph.D., and Kathleen M. Gallagher, D.Sc., M.P.H.

Mumps: When to Test and Report

- ▣ Every suspected case should be tested and reported at the time of initial clinical suspicion



When Mumps is Mumps

Reporting

Physicians, infection control practitioners, health care facilities, state institutions, and schools are required to report any suspected case of mumps to their local health department (LHD). LHDs should contact the New York State Department of Health (NYSDOH) Bureau of Immunization immediately for assistance with confirming the diagnosis, controlling spread, and coordinating sample collection and shipping.

Case Definition

A case of mumps is defined as a person who has two or more days of parotid and/or other salivary gland swelling, or orchitis, or oophoritis unexplained by another more likely diagnosis.

Parotitis is generalized swelling of the parotid gland anterior to the ear and inferior to the mastoid process with jaw angle obliteration. Mumps should be suspected in the first episode of acute, tender parotid swelling.

History

The following information obtained from a patient or provider interview will help establish a level of suspicion for the likelihood of the patient having mumps.

Historical Element	Suspicion Level for Mumps		
	HIGH	MOD	LOW
Initial episode of parotitis	+		
Recent* contact with person with parotid enlargement	+		
Recent international travel or travel to area with mumps outbreak	+		
Recent exposure to international traveler or recent exposure to traveler to area with mumps outbreak	+		
No mumps virus immunization**	+		
One mumps virus immunization**		+	
Two mumps virus immunizations**		+/-	+/-
Parotid or jaw pain when eating or drinking			+
Parotid enlargement when eating or drinking			+
Recurrent parotid swelling			+
Recent dental problems			+
Recent jaw trauma/injury			+

*Within 12-25 days of onset of parotitis in patient being evaluated.

**In an outbreak setting, history of mumps vaccination should not increase or decrease suspicion.

Differential Diagnosis

Other viral etiologies such as parainfluenza virus, Epstein-Barr virus (EBV), cytomegalovirus (CMV), enterovirus, lymphocytic choriomeningitis virus (LCMV), and HIV are possible causes of

VPD Annual Surveillance Report New York State 2011

Disease	Cases
Haemophilus Influenza, Inv B (≤ 5 yo)	0
Hepatitis A	48
Hepatitis B, acute (Infant Perinatal)	58 / 0
Measles, Import non US	7
Mumps	10
Pertussis	931
Rubella	0
S. Pneumo Invasive, Drug Res	42
S. Pneumo Invasive, Intermediate	39
S. Pneumo Invasive, Sens / Unk	895 / 202
Tetanus	0

Measles

- ▣ Highly contagious respiratory disease
- ▣ Causes fever, runny nose & rash all over body
- ▣ Almost eradicated in the US, still kills 200,000 people per year around the world
- ▣ Spread through air by breathing, coughing, or sneezing
 - Highly contagious (exposed and not immune will likely become ill)
- ▣ Communicable 4 days before to 4 days after rash onset

Measles Statistics 2007 – 2011, U.S. and NYS

Year	U.S. Measles	NYS* Measles
2007	43	2
2008	140	2
2009	71	0
2010	57	2
2011	222	7 NYS 25 NYC

* Upstate NY, excluding NYC

Measles in the United States

- ▣ January 1, 2011 to December 31, 2011
 - **222 cases reported**
 - ▣ 196 US residents
 - ▣ 129 unvaccinated
 - ▣ 37 vaccination status not documented
 - **200 associated with importations from other countries**
 - ▣ 72% US travelers returning to the U.S.
 - ▣ 28% travelers coming to the U.S.
 - **86% of current cases were unvaccinated or no documentation of vaccination**

Measles Impact 2011

- ▣ U.S. : 222 confirmed cases
 - Most reported since 1996
- ▣ NYS : 7 confirmed cases
 - Hundreds exposed at hospital Emergency Departments
 - All cases import related
- ▣ NYCDOHMH : 25 confirmed cases
 - > 70 investigations completed, thousands exposed

Prevention of Imported Strains of Measles from Establishing Endemic Transmission

- ▣ Rapid detection of cases is necessary so that appropriate control measures can be quickly implemented
- ▣ The major challenges to sustaining the elimination of measles from the U.S. are:
 - Continuing to vaccinate all children aged 12-15 months with a first dose of MMR
 - Ensuring that all school-aged children receive a second dose of MMR vaccine
 - Working with other countries to set and achieve national measles elimination goals

VPD Annual Surveillance Report New York State 2012

Disease	Cases
Diphtheria	1
Haemophilus Influenza, Inv B (≤ 5 yo)	6
Hepatitis A	63
Hepatitis B, acute (Infant Perinatal)	51 / 1
Measles, Import non US,	1
Mumps	6
Pertussis	2716
Rubella	1
S. Pneumo Invasive, Drug Res	31
S. Pneumo Invasive, Intermediate	28
S. Pneumo Invasive, Sens / Unk	801 / 182
Tetanus	0

Pertussis

- ▣ Highly contagious respiratory disease, also known as whooping cough
- ▣ Causes uncontrollable, violent coughing which often makes it hard to breathe. After the fits of coughs, a patient sometimes needs to take deep breathes resulting in a “whooping” sound
- ▣ Spreads easily from person to person through coughing and sneezing
- ▣ Commonly affects infants and young children and can be fatal, especially in babies less than 1 year
- ▣ The best way to protect against pertussis is immunization
- ▣ Communicable 21 days after cough onset

U.S / NYS Preliminary Pertussis Statistics 2012

UNITED STATES

- ▣ 49 states plus Washington D.C. report significant increases in cases
 - >41,000 cases
 - 18 pertussis related deaths, majority in infants less than 3 months old
 - Highest incidence is in infants, 7-10 year olds and 13-14 year olds

NEW YORK STATE

- ▣ Preliminary year-to-date confirmed and probable cases through December: 2,716
 - Incidence rate : 24.5/100,000
 - 229 infants less than 1 year old
 - No infant deaths in 2012
 - 1,310 cases in children aged 10 -19 years

Vaccine Issues

- ▣ Acellular and whole-cell vaccines both have high efficacy during the first 2 years after vaccination
- ▣ Recent changes in the epidemiology of pertussis in the U.S. strongly suggest diminished duration of protection afforded by childhood acellular vaccine (DTaP) compared with that of diphtheria and tetanus toxoids and whole-cell pertussis (DTwP) vaccine
- ▣ Vaccination provides some protection
 - Less infectious
 - Milder symptoms and shorter illness duration
 - Reduced risk for severe outcomes, including hospitalization

Vaccine Issues (cont.)

- ▣ Vaccination continues to be the single most effective strategy to reduce morbidity and mortality caused by pertussis
- ▣ Vaccination of pregnant women and contacts of infants is recommended to protect infants too young to be vaccinated
- ▣ Efforts should focus on full implementation of DTaP and Tdap recommendations to prevent infection and protect infants

Recommended DTaP / Tdap Schedule

Pregnant Women

Updated Recommendations: On October 24, 2012, the ACIP voted to recommend that health-care personnel should administer a dose of Tdap during each pregnancy irrespective of the patient's prior history of received Tdap. Optimal timing for Tdap administration is at 27 through 36 weeks gestation

Published February 22, 2012

<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6207a4.htm>

When the Cough is Pertussis

Case Definition

The following clinical case definition for pertussis was approved by the Council of State and Territorial Epidemiologists (CSTE) in 2010:

A cough illness lasting at least 2 weeks with one of the following:

- Paroxysms of coughing,
- Inspiratory “whoop,”
- Post-tussive vomiting, AND
- Without other apparent cause (as reported by a health professional)

Differential Diagnosis

The clinical presentation of pertussis often mimics many other more commonly encountered bacterial and viral respiratory infections. These include; *Bordetella parapertussis*, *Mycoplasma pneumoniae*, *Chlamydia trachomatis*, *Chlamydia pneumoniae*, *Bordetella bronchiseptica*, *Bordetella holmesii*, *Respiratory Syncytial Virus*, and Rhinoviruses. Non-infectious etiologies include reactive airways disease and/or cough of irritant or allergic origin.

Exam Findings

Signs or Symptom	Consistent with Pertussis		Comments
	YES	NO	
Gagging and/or apneic episodes in an infant	+		Infants presenting with these symptoms should always be ruled out for pertussis
Fevers of >101.0 F with accompanying non-productive cough		+	Consider other bacterial and/or viral etiologies
Productive cough for 2-3 weeks with intermittent low grade fevers		+	Consider other bacterial, viral and/or allergic etiologies
Non-productive cough for ≥2 weeks without any other known cause, with inspiratory “whoop” and/or paroxysms of coughing and post-tussive vomiting	++		Consider allergic and/or irritant etiologies
Non-productive cough of > 3 weeks in duration without inspiratory “whoop”, post-tussive vomiting, cough paroxysms, apnea or any other known cause	+/-		Higher suspicion if symptoms occur in a community experiencing an outbreak
Non-productive chronic cough (e.g. emphysema, asthma) with a recent change in character	+/-		Investigate for any other source for cough change (infectious, environmental)

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 http://www.health.ny.gov/prevention/immunization/providers/outbreak_control_guidelines.htm

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Outbreak Control Guidelines for Vaccine Preventable Diseases

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- [Chapter 2 - Hib](#) (PDF, 130KB, 6pg.)
- [Chapter 3 - Measles](#) (PDF, 362KB, 12pg.)
 - [Measles Diagnostic Testing Decision Tree](#) (PDF, 34KB, 1pg.)
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- [Chapter 4 - Mumps](#) (PDF, 361KB, 12pg.)
- [Chapter 5 - Pertussis](#) (PDF, 226KB, 12pg.)
 - [Pertussis Outbreak Control Decision Tree](#) (PDF, 5KB, 1pg.)
 - [Guidance on Pertussis Control for Health Care Providers](#) (PDF, 102KB, 1pg.)
- [Chapter 6 - Rubella](#) (PDF, 157KB, 10pg.)
- [Chapter 7 - Tetanus](#) (PDF, 135KB, 6pg.)
- [Chapter 8 - Varicella](#) (PDF, 176KB, 14pg.)

Acronyms

- [Printable Outbreak Control Guidelines for Vaccine Preventable Diseases - Acronyms](#) (PDF, 20KB, 1pg.)

ACIP
Advisory Committee on Immunization Practices

CDC
Centers for Disease Control and Prevention

CSF
Cerebral Spinal Fluid

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Immunization Update Webinar Series



Name That Rash!

Elizabeth Rausch-Phung, M.D., M.P.H.
New York State Department of Health
Bureau of Immunization

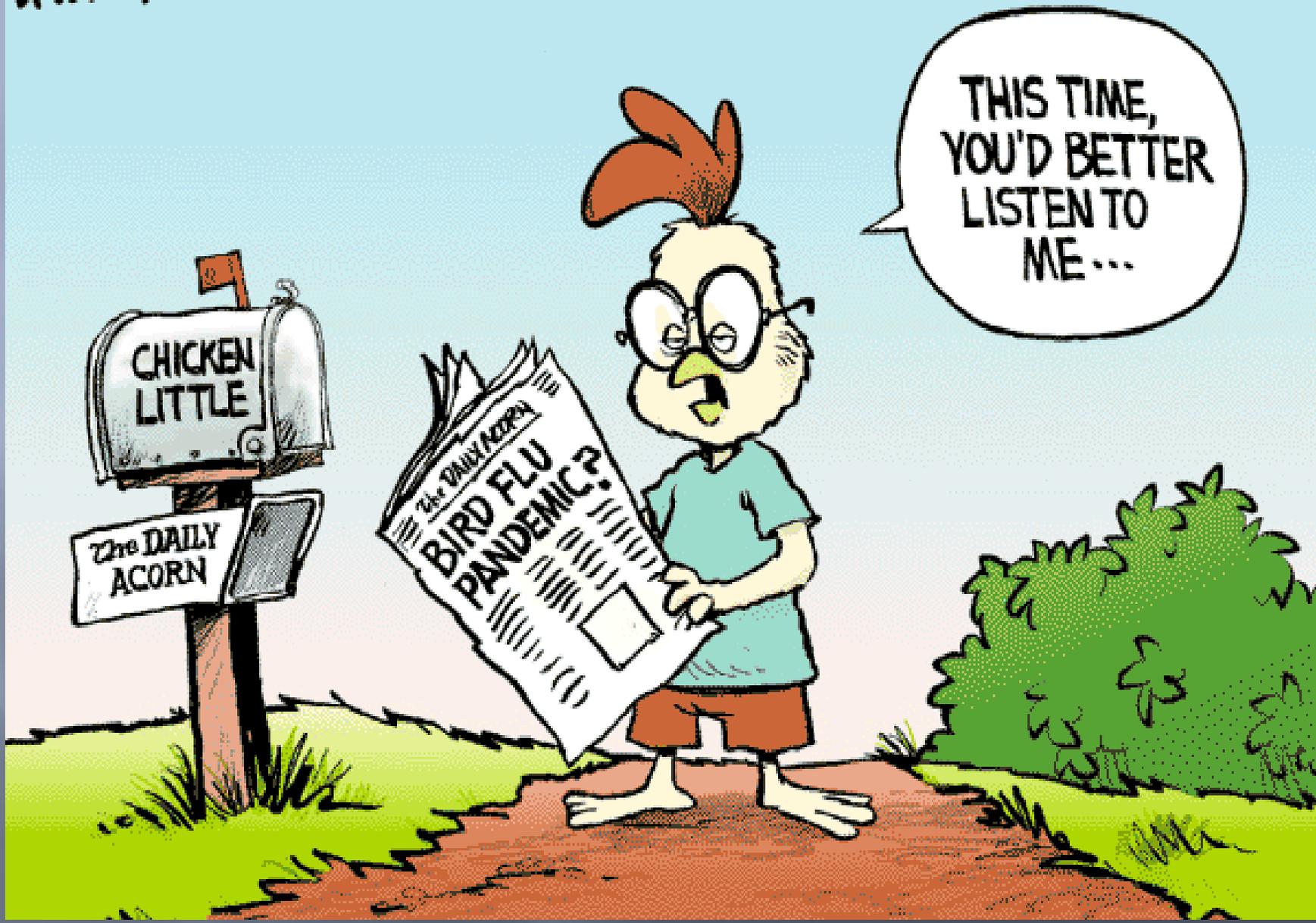
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Fifth Disease/Erythema Infectiosum (Parvovirus B19)

- Symptoms in common with measles: maculopapular rash, cough, coryza, conjunctivitis
- Parvovirus B19 infection may cause false-positive measles immunoglobulin M (IgM) test results at commercial laboratories
 - All positive specimens should be sent to the state laboratory (Wadsworth Center) for confirmation



13



THIS TIME,
YOU'D BETTER
LISTEN TO
ME...

CHICKEN
LITTLE

The DAILY
ACORN

The DAILY ACORN
BIRD FLU
PANDEMIC?

Avian Influenza (H7N9)

- ▣ March 29, 2013 –Chinese CDC completed lab confirmation of 3 human infections with avian influenza (H7N9) virus not previously reported in humans
- ▣ All 3 patients had severe pneumonia, developed acute respiratory distress syndrome and died from their illness
- ▣ Cases were NOT epidemiologically linked
- ▣ No evidence of sustained human-to-human transmission has been found and no human cases have been detected in the United States

Epidemiologic Investigation

- ▣ As of April 29, 2013, China reported 126 confirmed H7N9 infections in humans
 - 24 (19%) died
- ▣ Illness onsets of confirmed cases occurred during February 19 – April 29
- ▣ Source of human infections remains under investigation

Epidemiologic Investigation

- ▣ Exposure information available for 82 confirmed cases
 - 63 (77%) reported exposure to live animals (chickens (76%) and ducks (20%))
 - At least 3 family clusters of 2 or 3 confirmed cases have been reported where limited human-to-human transmission might have occurred
- ▣ Median age of patients is 61 years
 - 17 (21%) cases are among ≥ 75 years
 - 58 (71%) cases are among males
- ▣ 81 (99%) cases required hospitalization
- ▣ Among hospitalized patients/cases
 - 17 (21%) died
 - 60 (74%) remained hospitalized
 - 4 (5%) discharged

Epidemiologic Investigation

- ▣ 1,689 contacts of 82 infected persons were followed-up, including health care workers who cared for patients
 - No transmission to close contacts of confirmed cases was reported (serologic studies ongoing)
- ▣ April 5, CDC requested state & local health departments initiate enhanced surveillance among symptomatic patients who had returned from China in the previous 10 days
 - 37 travelers reported to CDC by 18 states
 - None found to have infection with H7N9
 - ▣ 7 seasonal flu; 1 rhinovirus; 1 RSV; 28 negative for flu A & B

THANK YOU!

Questions?

