

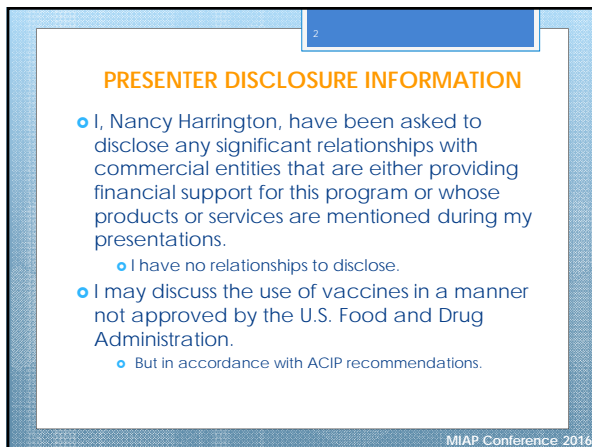
Vaccine Preventable Disease Epidemiology 2016

The 21st Annual Massachusetts Immunization Action Partnership
October 27, 2016

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Division of Epidemiology & Immunization, MDPH

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The slide features a blue background with a grid pattern. It includes a photo of Nancy Harrington, a bar chart, and a line graph.



PRESENTER DISCLOSURE INFORMATION

- I, Nancy Harrington, have been asked to disclose any significant relationships with commercial entities that are either providing financial support for this program or whose products or services are mentioned during my presentations.
 - I have no relationships to disclose.
- I may discuss the use of vaccines in a manner not approved by the U.S. Food and Drug Administration.
 - But in accordance with ACIP recommendations.

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TODAY'S TOPICS


- MDPH and Healthcare Provider Roles
- 105 CMR 300.000: Reportable Diseases Lists
- Vaccine Preventable Diseases in MA
 - Mumps
 - Measles
 - Acute Flaccid Myelitis
 - Influenza
 - Pertussis and Tdap
- Resources

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WHAT IS REPORTABLE BY WHOM?

- 105 CMR 300.000
- Reportable Diseases Lists:
 1. Healthcare providers
 2. Clinical laboratories
 3. Local Boards of Health
- Diseases in red are "immediate" diseases.
- Diseases in black are reportable within 1-2 business days.




mass.gov/dph/epi – click on "Reportable Communicable Diseases"

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HEALTHCARE PROVIDER ROLE

- Notify patient of diagnosis
- Notify the LBOH or MDPH of an infectious reportable disease
- Inform patient that the LBOH may be calling
- Educate patient about protecting their family and close contacts
- Provide key information to the LBOH to complete the official "Case Report"



*per 105 CMR 300.000

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Massachusetts Department of Public Health
Bureau of Infectious Disease and Laboratory Sciences - Division of Epidemiology and Immunization
Vaccine-Preventable Diseases in Massachusetts*, 2006-2015

Disease	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Measles	19	1	2	2	3	24	0	1	8	0
Mumps	10	6	7	15	9	4	6	71	5	6
Rubella	2	1	1	1	0	1	1	0	0	0
CRS	0	0	0	0	0	0	0	0	0	0
Meningococcal Disease	21	21	22	14	8	14	6	11	11	12
Pertussis	1201	1198	762	362	294	273	651	348	298	252
Hib < 5	0	3	2	1	1	0	2	1	1	0
Tetanus	0	0	0	0	0	0	0	0	0	0
Diphtheria	0	0	0	0	0	0	0	0	0	0
Polio	0	0	0	0	0	0	0	0	0	0
Pneumococcal Disease < 5	90	89	83	81	72	40	51	24	27	20
Varicella	**	2094	1585	1415	769	606	626	476	469	367

Data are current as of 3/11/2016 and are subject to change.
*Both confirmed and probable cases are reported for measles, mumps, rubella, and varicella to better reflect the true burden of disease. All other diseases include confirmed cases only. **Varicella surveillance prior to 2007 was conducted using different methodology and cannot be compared with subsequent years.

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Investigations vs. Confirmed* Cases

	2014 Investigations	2014 Confirmed Cases	2015 Investigations	2015 Confirmed Cases
Diphtheria	4	0	5	0
Hepatitis A	231	39	170	34
Measles*	111	8	119	0
Mumps*	121	5	154	6
Polio	30	0	28	0
Rubella*	21	0	20	0
Pertussis	413	298	337	252
Totals	911	350	807	292

*Includes probable cases to more accurately reflect true burden of disease.

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Call 617-983-6800 or your Local Board of Health

EBOLA VIRUS

- Incubation period: usually about 2-10 days after exposure
- Nonspecific initial signs and symptoms: fever and malaise, anorexia, headache, myalgia, arthralgia, sore throat, chest or retrosternal pain, conjunctivitis, injection, lymphocytopenia, maculopapular rash
- Gastrointestinal signs and symptoms follow in first few days: nausea, vomiting, diarrhea and abdominal pain, diarrhea
- Average EVD case fatality rate is around 50%. Case fatality rates have varied from 25% to 90% in past outbreaks.

Our role to date:

- assisting with evaluation and testing of suspect cases
- monitoring of returning travelers for 21 days

ZIKA VIRUS

- Spread by mosquito bites
- Recently introduced to Central and South America and the Caribbean
- In general causes mild viral illness: most infected with Zika are asymptomatic
- May cause birth defects like microcephaly when infection occurs during pregnancy

Call 617-983-6800 for questions about testing patients with recent travel, or testing of pregnant women with travel to Zika affected areas.

HIGHLY PATHOGENIC AVIAN INFLUENZA (HPAI)

- A disease of birds
- Rarely transmitted to humans
- Monitoring of exposed humans out of an abundance of caution

HPAI may enter a country through live birds, and provide respiratory system for influenza like illness, and provide help for MA. MA has high quality avian products.

MIDDLE EAST RESPIRATORY SYNDROME (MERS)


- Incubation period ~12 days
- Fever, cough, weakness, fatigue
- Pneumonia, ARDS
- Diarrhea in many cases
- About 3-4 out of every 10 patients reported with MERS have died.

Call 617-983-6800 for patients in respiratory distress with recent travel to the Middle East and other affected regions or countries.

Mumps Outbreak 2016

There are now 6 confirmed cases of mumps at Harvard University


Officials have asked the students to "self-isolate" for five days.

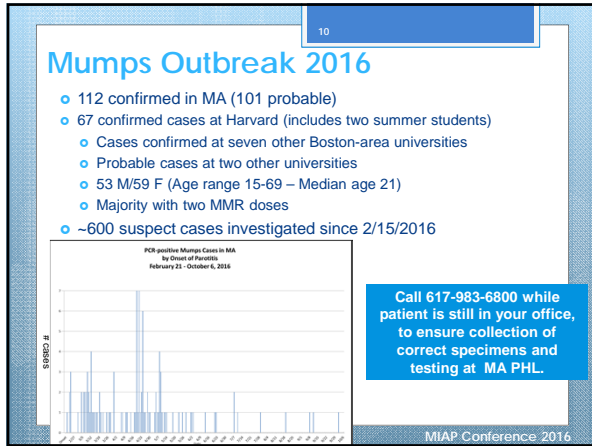


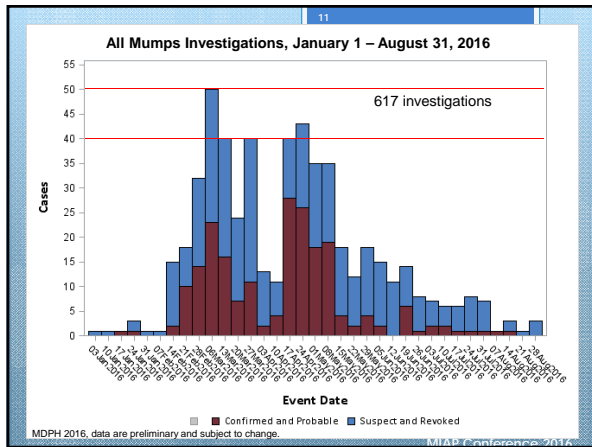
MMR rates among MA college students, 2015-16 school year

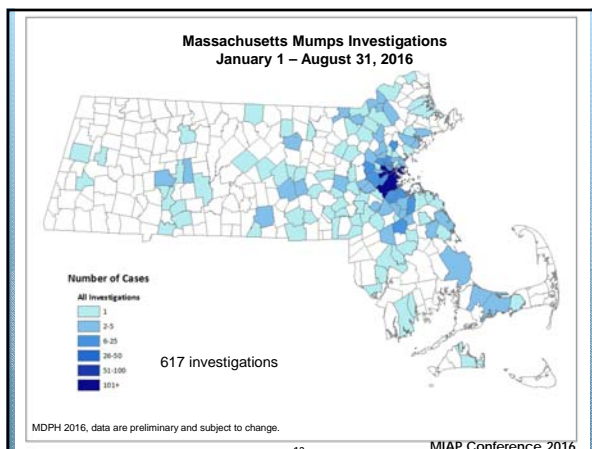
	Undergraduates	Graduates	Health Sciences
Harvard	99.8%	98.8%	100%

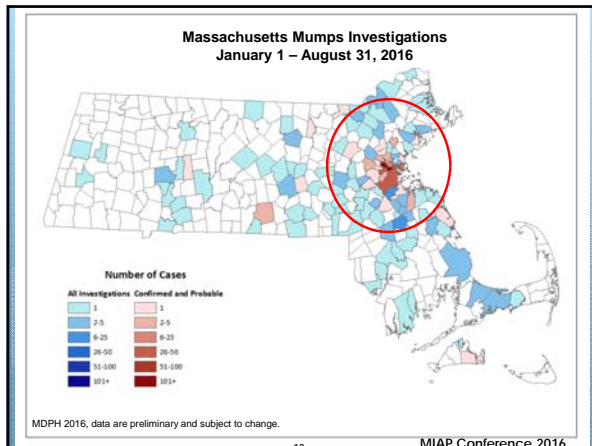
- Initial notification on 2/24/16.
- Clinical advisory issued on 3/2/16.
- Emphasis on early recognition, prompt testing and **isolation of ill patient for five days after onset of parotitis**, and vaccination.
- Mumps may occur in vaccinated individuals.
- Two doses 88% effective (at best) in preventing mumps.











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Mumps Summary (through 8/2016)

210 confirmed/probable

- 114 female (54%)
- 96 male (46%)
- Mean age 24 (range 1 – 69 years)
- 2 hospitalized (1%)
- 11 males with orchitis (11%)
- No reports of deafness, encephalitis, meningitis, or oophoritis
- 181 (86%) associated with five clusters

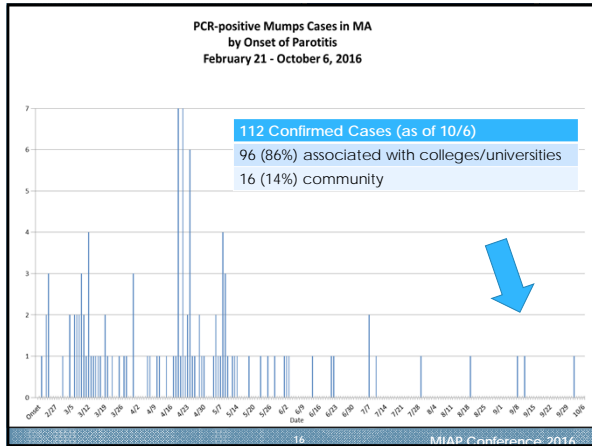
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Challenges – Mumps Outbreak

- Many causes of parotitis (e.g., influenza)
- Asymptomatic and mildly ill may spread mumps
- Testing
 - Buccal swab in VTM for PCR soon after onset
 - False negative PCR results may occur (intermittent shedding)**
 - IgM testing of limited value in vaccinated population
 - Acute/convalescent IgG titer comparison can rule in and rule out cases
- Isolation of patients who feel well and/or have negative results – extremely important!
- Social distancing in a college-age cohort
- Messaging – when two doses of MMR do not protect 100% of those who receive it.

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Measles 2016

Spring

- Visitor from Europe
- Vaccination history unknown
- Several days of malaise
- Developed fever, rash and cough
- Exposures at several large public locations
- And at one large hospital

Fall

- Recent travel to India
- Two doses by age 13 months
- Several days of malaise
- Developed fever, rash and cough
- Travel out of state while infectious
- Exposures limited in MA
- Some exclusions necessary

7NEWS
Health officials warn of potential exposure to measles in Boston

Clinical Alert
Measles exposure in public settings identified

The Commonwealth of Massachusetts, Executive Office of Health and Human Services, Department of Public Health, Division of Epidemiology and Immunization

Measles confirmed in Boston, Massachusetts. Multiple exposures in public settings identified.

The Massachusetts Department of Public Health (MDPH) and the Boston Public Health Commission (BPHC) have confirmed the first case of measles in the Commonwealth this year. It is associated with an outbreak in the Northeast who recently visited the Boston area. MDPH and BPHC have been working with health-care providers and other local health-care providers to identify who has been exposed and to ensure that they are notified and vaccinated if necessary. The case involves an individual with an unconfirmed occupational history who reportedly visited Massachusetts from Europe.

The updated year listed several cases in the greater Boston area while infectious illnesses emerged from February 28 to May 10, 2016. One patient is hospitalized. Because the average incubation period is seven weeks, it is likely with a range of 7-21 days, providers may see new cases at any time.

Persons that consider measles in general when:

- are not known to be immune, symptomatic and were exposed during the three-hotel hotel
- contact with Measles and closely related measles viruses (parvovirus group) during living together or in congregate
- measles tested (serologically or virus exposed) to someone who recently traveled
- measles have been exposed to someone who recently traveled

MEASLES

Measles Prevention

Vaccinate patients and ensure staff have evidence of immunity.

Measles Testing – Specimen Collection

Attachment A

Attachment B

Measles Control in Medical Settings – Initial Steps

Attachment C

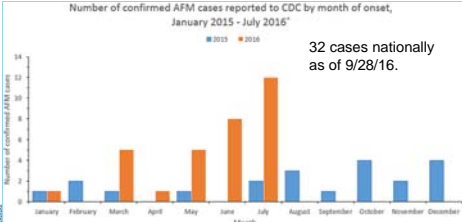
Measles Control in Medical Settings – Ongoing Steps

Acute Flaccid Myelitis

Acute flaccid myelitis (AFM): an illness with onset of acute focal limb weakness **and** an MRI showing spinal cord lesion largely restricted to gray matter and spanning one or more spinal segments **or** CSF with pleocytosis (increased white cell count).

CDC reports an increase in number of reports from May through August 2016. **Clinicians urged to report cases in all age groups to MDPH and local health.**

Number of confirmed AFM cases reported to CDC by month of onset, January 2015 - July 2016*




Month	2015	2016
January	1	1
February	2	0
March	1	5
April	1	1
May	1	5
June	2	8
July	2	13

32 cases nationally as of 9/28/16.

20 **INFLUENZA**

INFLUENZA



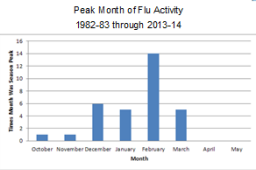
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2015-2016 Influenza Season

- o Relatively mild season relative to other recent seasons.
- o Peak in early to mid March
- o 2009 influenza A (H1N1) predominated.
- o Circulating strains appeared to be a good match with the vaccine.
- o Other respiratory pathogens circulated and caused respiratory illness: human rhino/entero, RSV, parainfluenza virus, human metapneumovirus, adenovirus, and human coronavirus.
- o Two pediatric deaths in MA

Peak Month of Flu Activity
1982-83 through 2013-14



*During 2009-2010, flu activity peaked twice because of the 2009 H1N1 pandemic activity in the United States peaked once in the Fall to early winter and seasonal influenza activity peaked again in the Spring (April), with the first wave of 2009 H1N1 viruses. A second, larger peak of 2009 H1N1 activity occurred in October, the year of the 2009-2010 season.

http://www.cdc.gov/flu/season/flu_seasons.htm

Two pediatric deaths in MA
 1 < 5 years of age
 1 5-10 years
 Both vaccinated
 Both with significant pre-existing health issues

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Pertussis and Pregnancy

The Centers for Disease Control and Prevention (CDC) recommends that pregnant women receive Tdap vaccine during the third trimester of each pregnancy. This recommendation is supported by the American College of Obstetricians and Gynecologists and the American College of Nurse-Midwives.

Provide the best prenatal care to prevent pertussis

1. Talk about Tdap and Pregnancy

2. Receive Tdap (Tdap includes T, d, and P)

3. Receiving Tdap during pregnancy is safe

4. Tdap is safe for you and your baby

5. Tdap is safe for you and your baby

6. Tdap is safe for you and your baby

7. Tdap is safe for you and your baby

8. Tdap is safe for you and your baby

You can start protecting your baby from whooping cough before birth

1. What you get for whooping cough

2. Why you should get whooping cough vaccine

3. How to get whooping cough vaccine

4. Whooping cough vaccine is safe

5. Whooping cough vaccine is safe

6. Whooping cough vaccine is safe

7. Whooping cough vaccine is safe

8. Whooping cough vaccine is safe

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PERTUSSIS

PERTUSSIS TESTING

- Acceptable diagnostic tests include:
 - Culture at HSLI or any commercial lab
 - PCR from any commercial lab
 - Serology performed at HSLI (Serology from commercial labs are not acceptable due to inability to interpret results)

DURATION OF COUGH	Diagnostic Method	
	CHILDREN (<11yrs)	ADULTS (≥11yrs)
<14 DAYS	NP Swab(s) (for Culture & PCR Testing)	NP Swab(s) (for Culture & PCR Testing)
14-28 DAYS		Serology* at HSLI -OR- Serology* at HSLI & Consider NP Swab(s) (for Culture & PCR Testing)
29-56 DAYS		Serology* at HSLI

*Serology results are not valid if less than 3 years since Tdap

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FOR MORE INFORMATION

- Massachusetts Immunization Program
 - 1-617-983-6800 (24 hour Epi Assistance)
 - 1-888-658-2850
 - Website <http://www.mass.gov/dph>
- CDC/NIP
 - English and Spanish
 - 1-800-232-INFO
 - 1-800-232-4636
 - TTY 888-232-6348
 - Website <http://www.cdc.gov/nip>
- Your Local Board of Health contact information can be found on your town or city website.

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QUESTIONS?

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