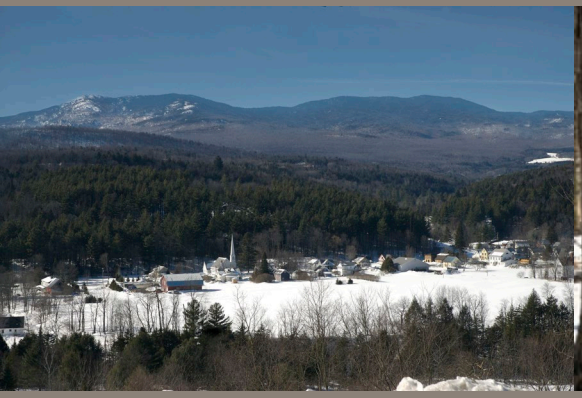


Preparing for Measles – Update for Vermont Health Care Providers

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VERMONT
DEPARTMENT OF HEALTH

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Overview

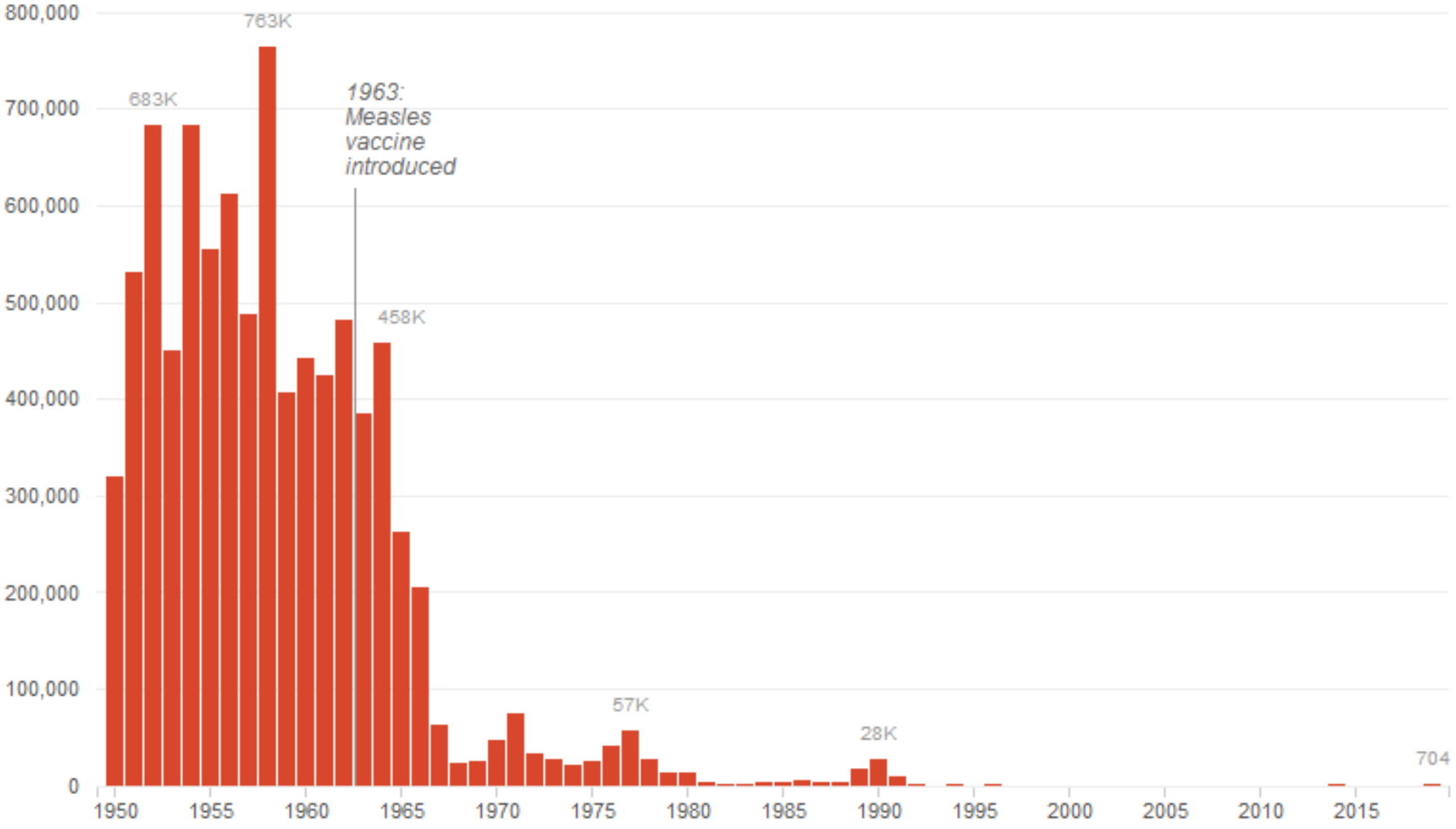
1. Current Outbreak
2. MMR Vaccine Recommendations
3. Measles Virus & Disease Description
4. Laboratory Testing
5. Outbreak Control Recommendations
6. Q&A

Why is measles making a resurgence?

According to the World Health Organization, vaccine hesitancy is one of the top 10 global health threats in 2019.

Image: *World Health Organization*

Reported Measles Cases 1950-2019



Data as of April 26, 2019.
According to the CDC, these data underestimate annual numbers before the vaccine was widely adopted in the 1960s, which are thought to have been 3-4 million cases per year.
Source: Centers for Disease Control and Prevention
Credit: Alyson Hunt/NPR

MMR Vaccine

- Effectiveness: 1 dose 93%, 2 doses 97%
- Protection does not wane over time.
- Second dose may be given any time at least 4 weeks after the first dose.
  - The second dose is not a booster dose; it is intended to induce immunity in the 2-5% of people who do not respond to the first dose.
- Common side effects: sore arm, fever, mild rash, temporary pain and stiffness in the joints*
- Severe events rarely occur.

*mostly in teenage or adult women who did not already have immunity to the rubella component of the vaccine

MMR Vaccine Contraindications and Precautions

- History of anaphylactic reactions to neomycin
- History of severe allergic reaction to any component of the vaccine
- Pregnancy*
  - Pregnancy should be avoided for 4 weeks following MMR vaccine.
- Immunosuppression
- Moderate or severe acute illness
- Recent blood product
- Personal or family (i.e., sibling or parent) history of seizures of any etiology **(MMRV only)**

*Close contact with a pregnant woman is not a contraindication to MMR vaccination. Breastfeeding is not a contraindication to vaccination of either the mother or the breastfeeding child.

Source: Epidemiology and Prevention of Vaccine Preventable Disease, 13th Ed., CDC

MMR Vaccine Recommendation – Children

Children are at the highest risk for measles.

Recommended schedule:

- First dose at age 12-15 months
- Second dose at 4-6 years, before entry to kindergarten

If traveling internationally: Infants age 6-11 months

- **1 dose** before departure
- Will need to revaccinate with **2 doses**, the first dose beginning at 12-15 months. The second dose can be given as early as 4 weeks later.

Provider Outreach for Measles

A mailing was sent to all Vaccines for Children practices the week of April 23, 2019.

It included practice-specific child MMR rates, compared to statewide rates.

VERMONT

Vermont Immunization Registry
Department of Health
108 Cherry Street – PO Box 70
Burlington, VT 05402-0070

Agency of Human Services

Immunization Registry Report for MMR Vaccine Coverage
April 23, 2019
Town Health Clinic

At or above state level
Below state level

	1 through 6 years		
	1+ doses MMR	**Percent**	**Total**
Your practice	0	0.0%	0
State rate	35,540	88.9%	39,965

	7 through 12 years		
	2+ doses MMR	**Percent**	**Total**
Your practice	2	33.3%	6
State rate*	38,088	83.0%	45,892

	13 through 17 years		
	2+ doses MMR	**Percent**	**Total**
Your practice	15	68.2%	22
State rate*	33,736	88.8%	37,979

Source: Vermont Immunization Registry, 4/17/2019

The mailing was sent to the physician-in-charge and the Immunization Registry contact.
E-mail the Immunization Program if you did not receive the packet:
AHS.VDHImmunizationProgram@vermont.gov

MMR Vaccine Recommendations – Adults

Most U.S. adults are at low risk for measles.

Consider the patient's age:

- Those born before 1957 are considered protected. **No** MMR vaccine is indicated.

- For those born in 1957 or later, **one dose of MMR vaccine** usually gives adequate protection from measles.
  - If the patient has laboratory evidence of immunity or having had measles, the MMR vaccine is not indicated.

MMR Vaccine Recommendations – Adults

Frequently asked question: "Should I do a titer test or administer a dose of the vaccine?"

Dr. Offit recently provided the following guidance:

1. The majority of the time, an extra dose of vaccine is not harmful.
2. If a person is immune, the extra dose of vaccine will strengthen existing immunity.
3. If a person's immune system has previously "seen" the potential pathogen, either through natural infection or vaccination, they are less likely to experience adverse events following vaccination.

MMR Vaccine Recommendations – High-Risk Adults

- **Definition of high-risk:**
  - Health care personnel
    - People who work in health care settings, including nurses, technicians, receptionists, and support staff
    - MMWR, Immunization of Health-Care Personnel, pages 10-14
    - See next slide
  - International travelers
  - Students at post-high school education institutions
- **Recommendation:**
  - 2-dose MMR series at least 4 weeks apart **or**
  - Laboratory evidence of immunity **or**
  - Laboratory confirmation of disease

MMR Vaccine Recommendations – Health care personnel born before 1957

- For unvaccinated health care personnel born before 1957 who lack laboratory evidence of measles immunity or laboratory confirmation of disease:
  - Consider vaccinating with two doses of MMR vaccine at the appropriate interval for measles.
  - **During an outbreak of measles:** recommend two doses of MMR vaccine.

Source: *Epidemiology and Prevention of Vaccine-Preventable Diseases, Chapter 13*

MMR Vaccine Recommendations

- There is no recommendation for an adult catch-up program for people born before 1989.
- There is no recommendation for vaccination campaigns among adults or individuals in non-affected areas to prevent measles outbreaks.

Use of State-Supplied Vaccine

- Vaccines for Children (VFC) and Vaccines for Adults (VFA) vaccine may be used in accordance with ACIP guidelines, even if the indication is for international travel.
- If using MMR vaccine for adults, please order MMR with a VFA intention in VIMS.
- If you've submitted an inventory reconciliation within 1 week, you can go into VIMS and order MMR without reconciling.
  - If more than 1 week, e-mail katie.martinez@vermont.gov.

School Immunization Data – MMR

- 97% of K-12 students statewide met the 2-dose MMR vaccination requirement.
- In all counties, MMR coverage for K-12 students was at least 95%.
- Coverage at a small number of schools is very low, creating pockets of vulnerability.
  - 5% of schools had kindergarten MMR coverage below 80%.
  - 12% had kindergarten coverage below 90%.

Example: The Jones Family is heading to NYC and they want to know who needs an MMR vaccine.

Members of the Jones Family	Dose of MMR Vaccine
8 month old	Provider decision
2-year old who has had one dose of MMR vaccine	2nd dose at 4-6 years
Father born in 1967 with no documentation of vaccination	1 dose MMR
Mother who thinks she was checked during her pregnancy	Check records
Uncle, works in a nursing home	2 doses MMR

Note:

- CDC is working on clinical guidance for infant travelers to areas within U.S. experiencing sustained measles transmission.
- Domestic travelers can consult the city, county or state health department web page for specific recommendations.

Measles Virus & Disease Description

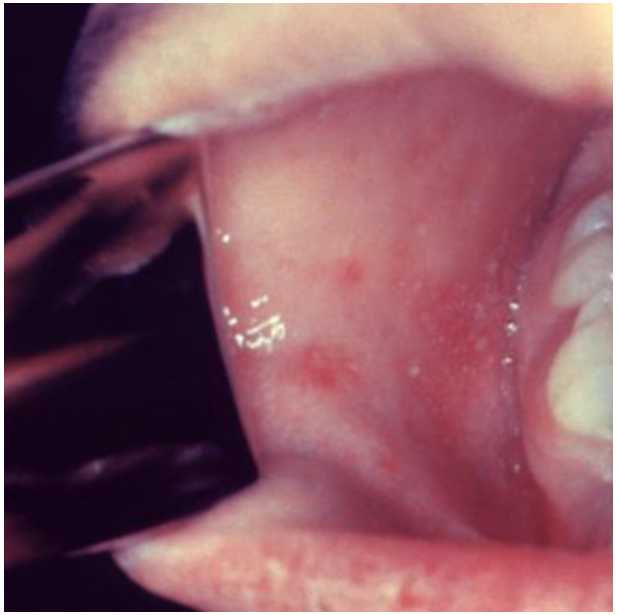
Prompt recognition, reporting and investigation is important because the spread of measles can be limited with early case identification and vaccination of susceptible contacts.

- Highly communicable viral illness
- Secondary attack rates ≥ 90%
- Usually mild or moderately severe; most people feel sick enough to seek medical care.
- Can result in complications such as pneumonia, encephalitis and death.
- Complications are more common among children younger than 5 years of age and adults 20 and older.

Measles Virus & Disease Description

- Characterized by:
  - Generalized rash lasting ≥3 days; and
  - Temperature ≥101^{0}F (often as high as 105^{0}F); and
  - Cough, coryza (runny nose), or conjunctivitis
  - Koplik spots (small spots with white centers on the mucus membrane of the mouth)
- Prodrome symptoms with stepwise increase in fever
- Progression of rash: down and out from hairline → face → torso → extremities; rash fades in order of appearance
- Other symptoms include photophobia, anorexia, diarrhea, especially in infants, and generalized lymphadenopathy.

Pictures of Measles

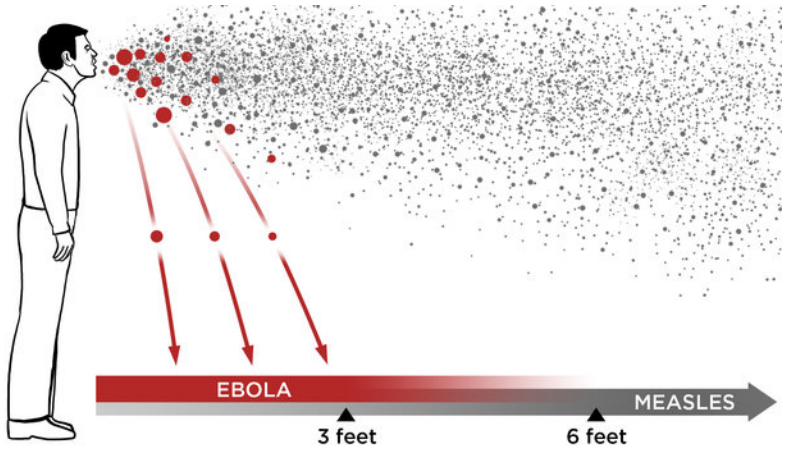


CDC Public Health Image Library

Clinical Features

- **Incubation period**
  - From exposure to prodrome symptoms averages 10-12 days
  - From exposure to rash onset averages 14 days (range 7-21 days)
- **Communicability**
  - From 4 days before through 4 days after rash onset
- **Mode of transmission**
  - Person-to-person via large respiratory droplets
  - Airborne via aerosolized droplet nuclei can occur in closed areas for up to 2 hours after a person with measles occupied the area

Droplet Versus Airborne Transmission



Immediate infection control measures when you have a suspect case:

- Meet patients at the door with a mask.
- Screen for fever with rash at the point of entry and place symptomatic patients in airborne isolation.
  - If a negative pressure room is not available, place the patient in an exam room with a mask and do not use that room for 2 hours after they have left.
- Schedule patients with suspected measles as the last appointment of the day to avoid exposure to other patients.

Courtesy NPR Goats and Soda

It is unlikely to be measles if:

- No rash on face/head/neck
- Rash starts on trunk or legs
- No concurrent fever with rash
- Child feels well

Most childhood febrile rashes are not measles. For example, roseola rash may looks like measles rash. Consider the presence or absence of prodromal symptoms, especially fever and rash presentation, when considering a measles diagnosis.

Patient with roseola rash – not measles

Image: Roseola, Fitzpatrick's Dermatology in General Medicine

Differential Diagnosis

- Dengue and dermatologic manifestations of viral hemorrhagic fevers (international travelers only)
- Drug reactions
- Enteroviral infections
- Erythema infectiosum (fifth disease)
- Infectious mononucleosis
- Kawasaki disease
- Meningitis
- Parvovirus B19 infection
- Scarlet fever (strep)
- Roseola
- Rocky Mountain spotted fever
- Rubella
- Toxic shock syndrome

Specimen Collection for Laboratory Confirmation

- False positives results for measles IgM can occur. To minimize, restrict testing to cases of clinically compatible illness.
- PCR
  - Nasopharynx or throat swab
- Serology
  - Positive measles IgM
  - Significant rise in measles IgG
- Free and timely testing through Health Department Lab
  - Call 802-338-4736 to request collection kits

Specimen to Collect for PCR

- Swab
  - Use a synthetic (Dacron) swab; do not use cotton or calcium alginate.
  - Do not use a swab with a wooden stick.
  - Use viral transport media.
  - Ideally collect within 3 days of rash onset.
  - Specimen should be stored and transported at 4^0C and must be received by the Lab within 24 hours.
    - If a longer time is needed, it should be frozen at -70^0C or colder.

Specimen to Collect for Serology

- Request both measles IgG and measles IgM antibodies.
- Collect 7-10 mL of blood in a red top or serum separator tube; spin down serum if possible.
- May need to repeat if collected <72 hours after rash onset.
- Specimen should be stored and transported at 4^0C.

Actions Requested of Providers

These are initial recommendations from the Health Department. We will work closely with you and your facility to provide assistance.

- What you can do now, before you even see a suspect case: ensure appropriate documentation of immunity is readily available at your facility for all health care personnel.
- Isolate patient and institute respiratory and airborne precautions.
- Report suspect cases immediately to the Health Department.
- Obtain specimens for confirmation of diagnosis.
- Call ahead to ensure appropriate precautions if transport to hospital is necessary.
- Collect list of all exposed patients and staff along with immune status.

Health Department Disease Investigation Activities

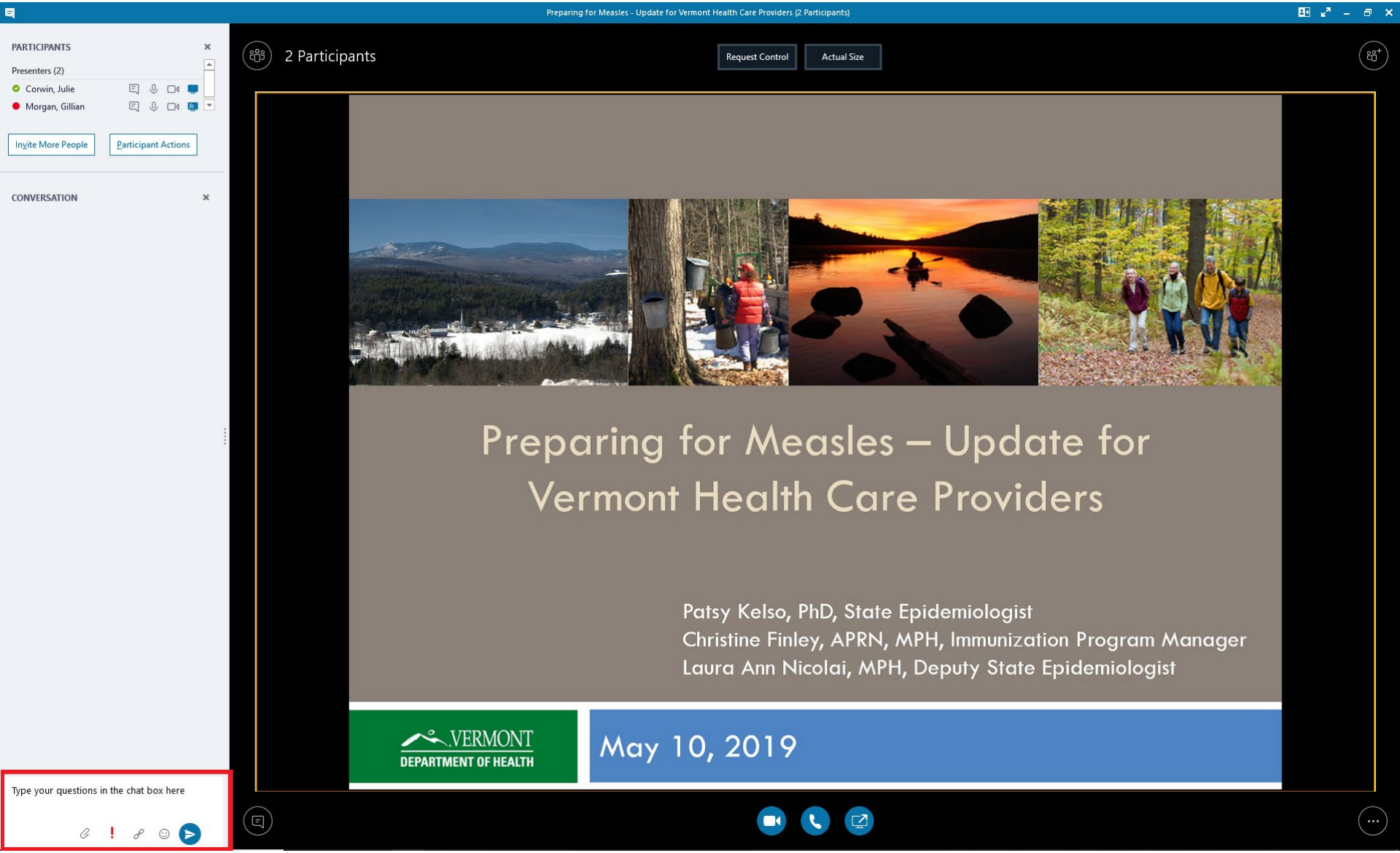
- Identify and notify contacts.
- Determine susceptibility of contacts.
- Provide postexposure vaccine, including a 2nd dose, if appropriate.
- Recommend and provide postexposure IG for susceptible high risk people.
- Initiate active surveillance.
- Enforce exclusions while contagious.
- Recommend self-isolation and monitor for measles signs and symptoms in susceptible contacts as needed.
- Communicate with partner agencies, healthcare providers and the public; opportunity to educate.

Q&A Session

Please type your questions in the chat box.

Q&A: Type your questions in the chat box

Q&A: Type your questions in the chat box



Thank you!

Still have questions?

- **E-mail** AHS.VDHPublicCommunication@vermont.gov
- **Call** the Health Department at 802-863-7200
- **Call** the Lab to order test kits at 802-338-4736
- **Visit** healthvermont.gov/measles
- **Read** Chapter 13 of *Epidemiology and Prevention of Vaccine-Preventable Disease* (a.k.a. the "Pink Book")