

WASHINGTON HEALTHCARE AND PUBLIC HEALTH HIGH CONSEQUENCE INFECTIOUS DISEASES EXPECTATIONS

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High Consequence Infectious Diseases Workshop
November 6, 2019

What is a High Consequence Infectious Disease?

- Immediate threat
- High risk of death/disability to a large number of people
- Substantial risk of public exposure

High Consequence Infectious Diseases (HCID)

- Middle East Respiratory Syndrome (MERS)
- Ebola Virus Disease (EVD)
- Marburg hemorrhagic fever (Marburg HF)
- Lassa Fever
- Crimean-Congo Hemorrhagic Fever (CCHF)
- Nipah Virus (NiV)
- Monkeypox

What is My Biggest Concern?

- A novel infectious disease
 - low community immunity
 - little clinical experience with this agent
 - media hype
- High R_0
- Respiratory spread
- Limited diagnostic capability
- No vaccine available
- No treatment beyond supportive care

Time To Review R_0

- In epidemiology, the basic reproduction number of an infectious agent can be thought of as the number of additional cases a single case of that infection creates over the course of its infectious period, in an otherwise unvaccinated population
- For simple models, with a 100% effective vaccine, the proportion of the population that needs to be vaccinated to prevent sustained spread of the given infection is $1 - 1/R_0$
- For measles the R_0 is 18. So, $1 - 1/18$ equals 0.94 or 94% of the population needs to be vaccinated!

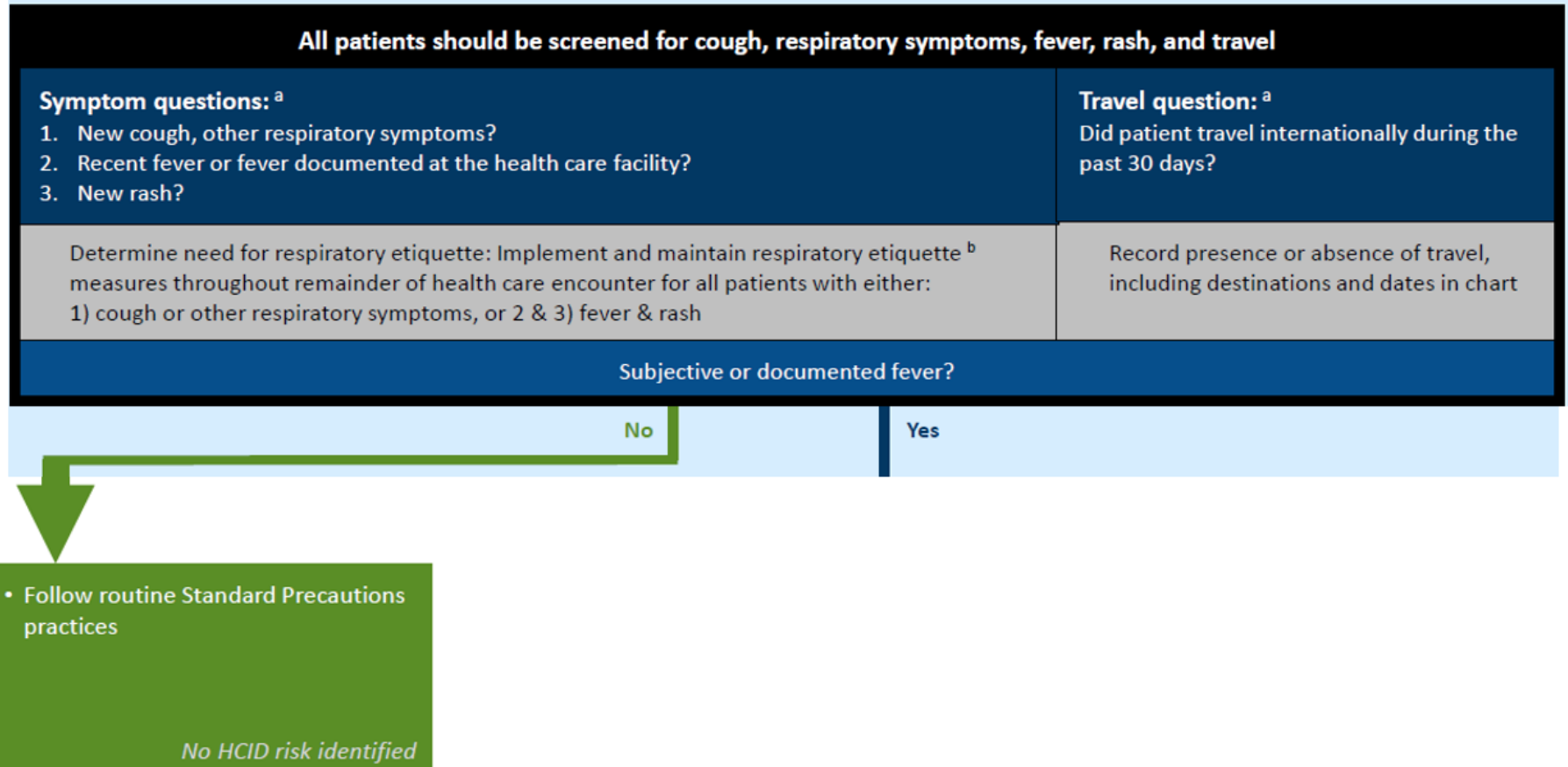
What Are My Recommendations For Looking For HCID

- Patient Screening (front desk triage)
- Provider Screening (index of suspicion)
- Isolation
- Testing
- Public Health System involvement

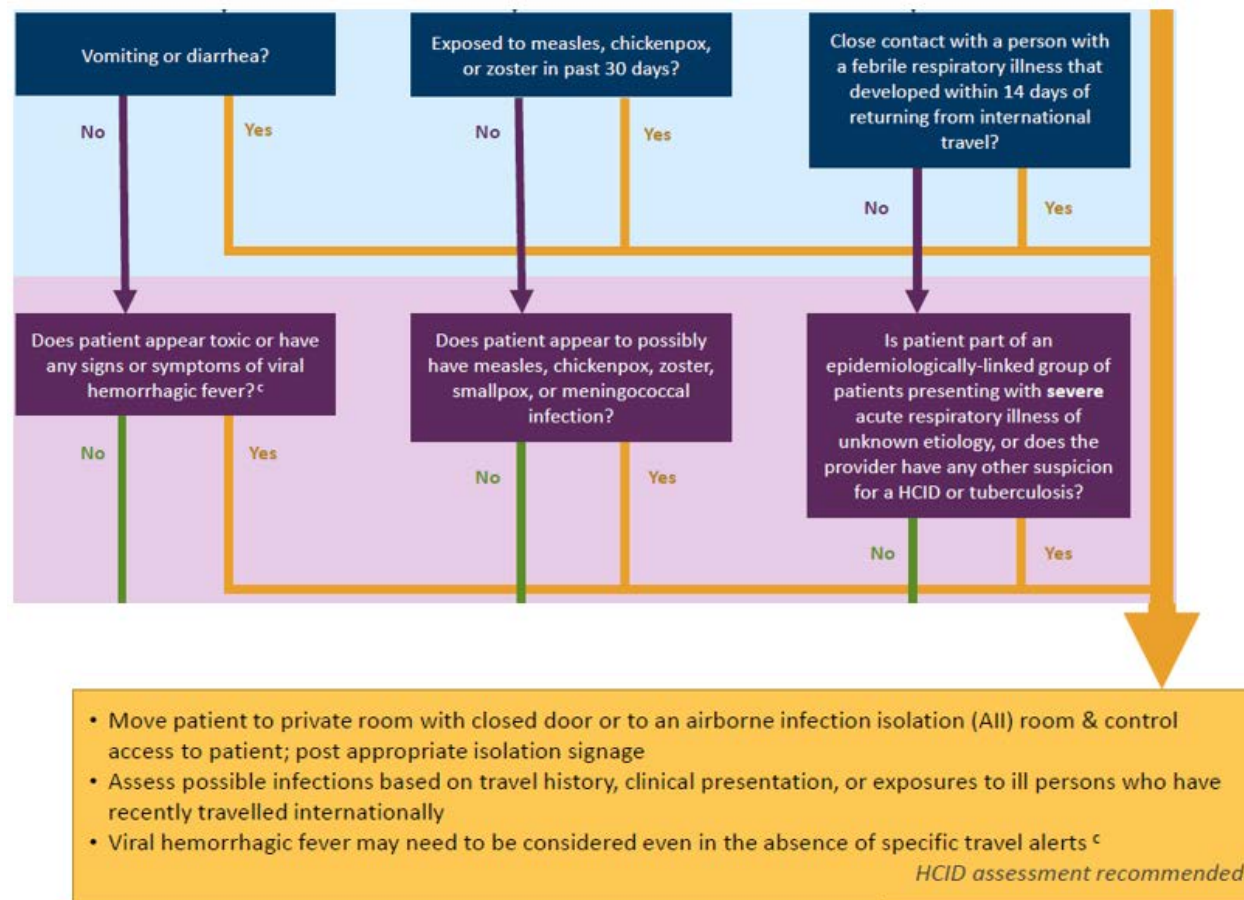
Patient Screening

- All patients should be screened for:
 - Respiratory symptoms
 - Fever
 - Rash
 - Travel history in last 30 days
- Screening all patients will aid in identifying a High Consequence Infectious Disease (HCID) or other contagious illnesses such as measles, chickenpox, and influenza

Assessment by Front Desk or Triage Nurse



Assessment by Provider



Assessment by Provider

- Move patient to private room with closed door or to an airborne infection isolation (All) room & control access to patient; post appropriate isolation signage
- Assess possible infections based on travel history, clinical presentation, or exposures to ill persons who have recently travelled internationally
- Viral hemorrhagic fever may need to be considered even in the absence of specific travel alerts ^c

HCID assessment recommended

For patients with recent travel, check for travel health notices:

- Travel Clinical Assistant (TCA): dph.georgia.gov/TravelClinicalAssistant
- CDC Travel Health Notices: wwwnc.cdc.gov/travel/notices
- WHO Disease Outbreak News: www.who.int/csr/don/en/

Suspect HCID or other highly infectious disease?



1. Implement airborne (or droplet for meningococcal disease or plague) and contact precautions & control access to patient
2. Providers should don appropriate PPE before entering room ^d
3. Notify infection preventionist and MDH (651-201-5414)
4. Screen persons accompanying the patient for symptoms & collect information on other contacts

Activate HCIDs plans, including possible transfer to biocontainment unit

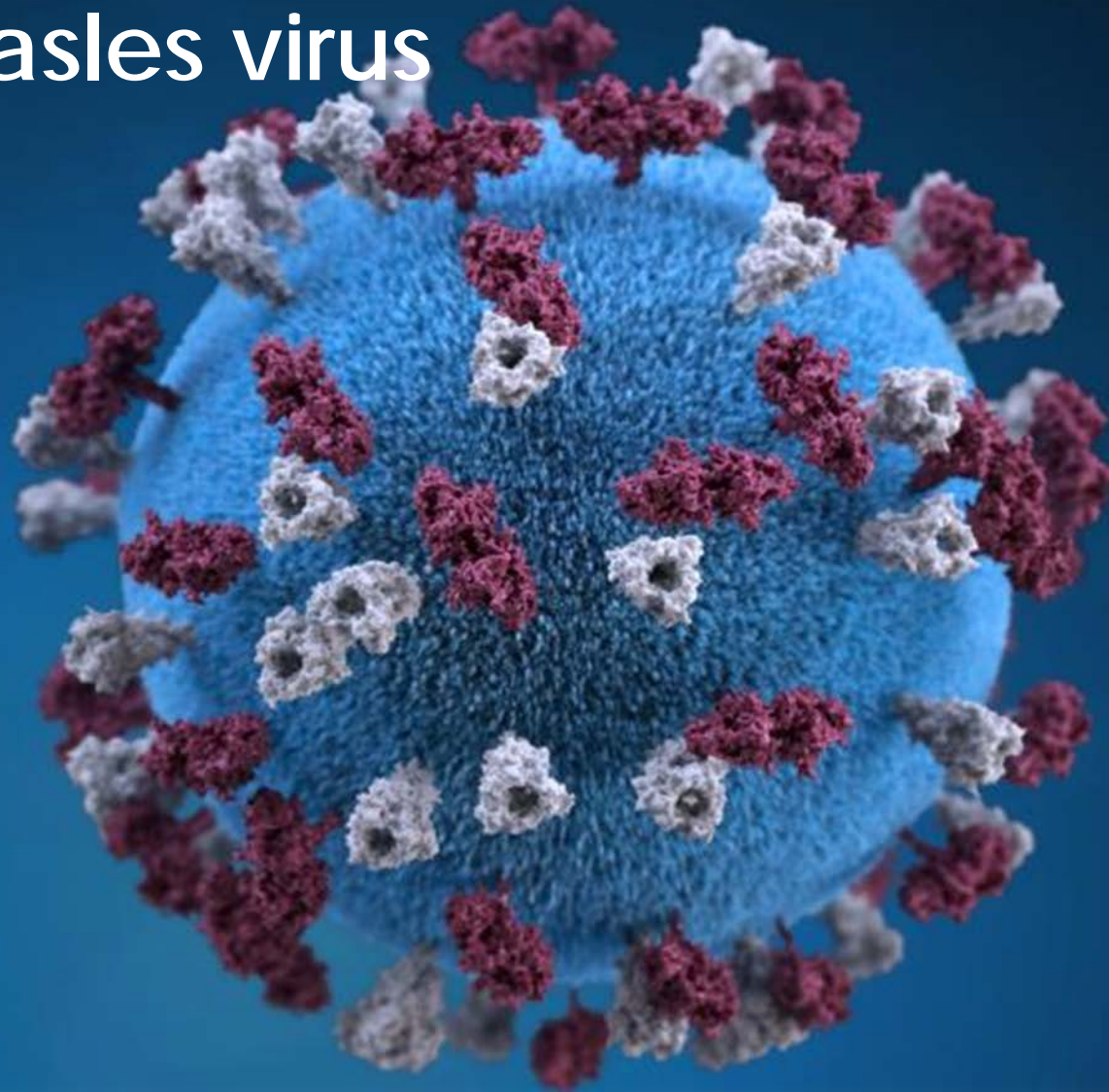
Quick and Easy Travel Exposure Assessment

- CDC Travel Health Notices:
 - <https://wwwnc.cdc.gov/travel/notices>
- WHO Disease Outbreak News:
 - www.who.int/csr/don/en/
- Travel Clinical Assistant (TCA):
 - <http://www.dph.Georgia.gov/TravelClinicalAssistant>

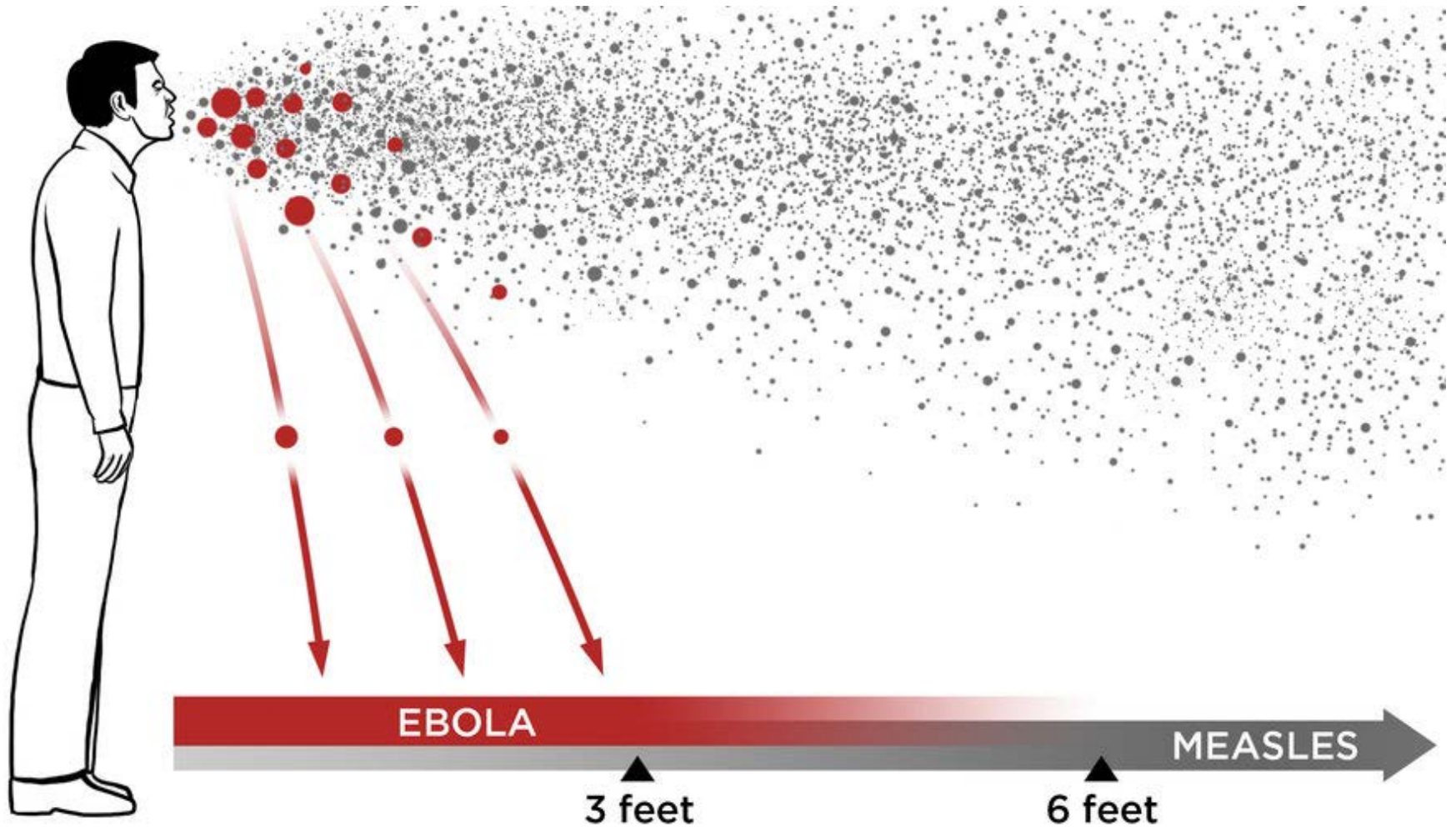
If HCID suspected – do the following

- Place appropriate isolation signage at the patient's door
- Evaluate persons accompanying the patient for illness and/or exposure to a HCID
- Track all health care providers (HCP) who have had contact with the suspected HCID patient for potential exposure
- Track all the HCP who have entered the patients room for potential exposure
- Clinical staff should contact the laboratory leadership regarding sending specimens to the facility's clinical laboratory or Washington State Public Health Lab

Measles virus

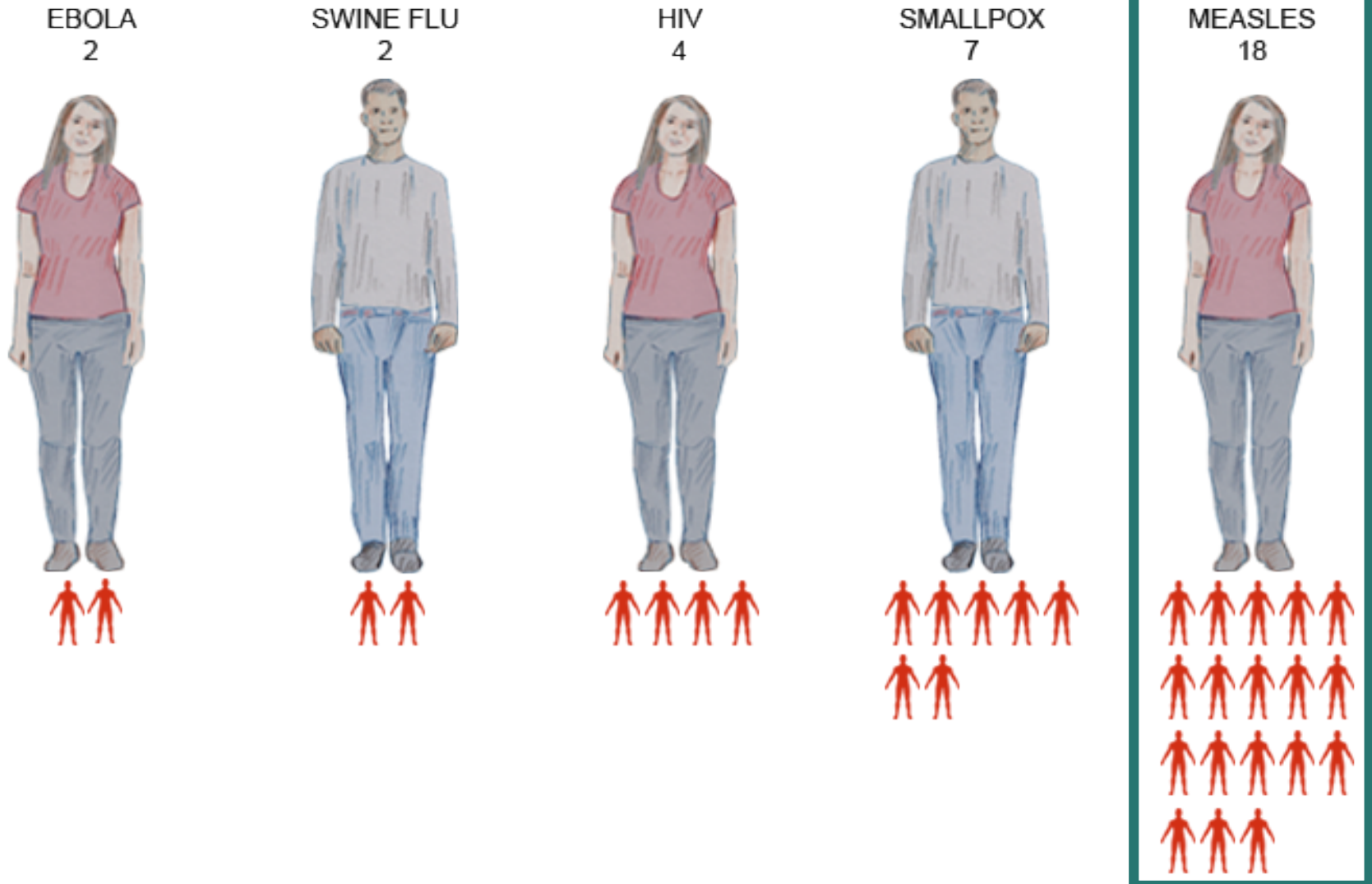


Measles spreads easily.

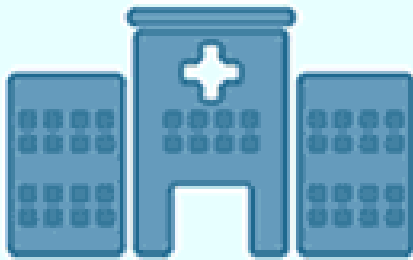


Measles is highly contagious.

For each sick person, how many subsequent people will be infected?



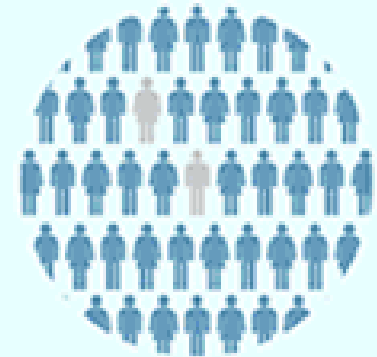
Measles infection can be serious.



About 1 out of 4 people who get measles will be hospitalized.



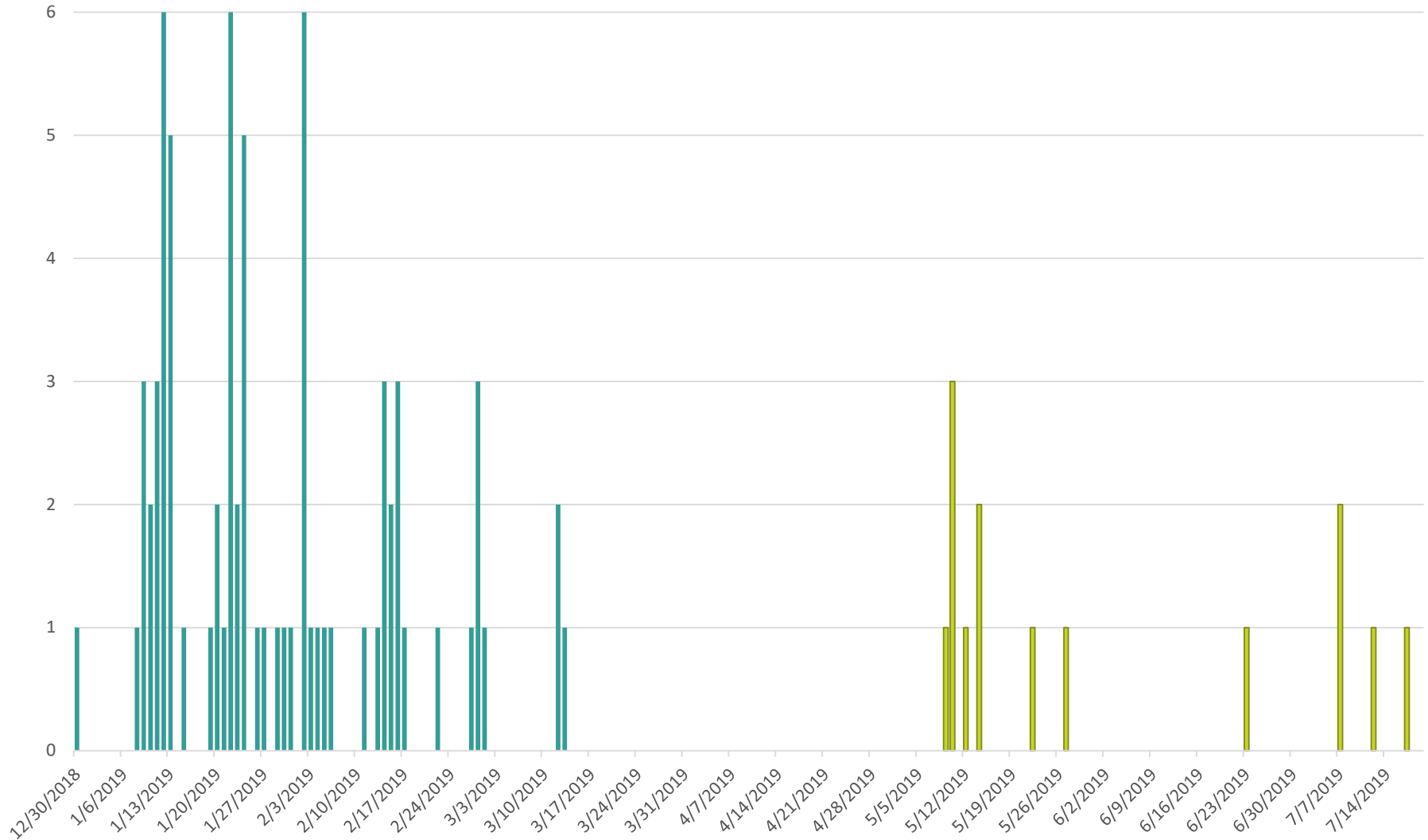
1 out of every 1,000 people with measles will develop brain swelling due to infection (encephalitis), which may lead to brain damage.



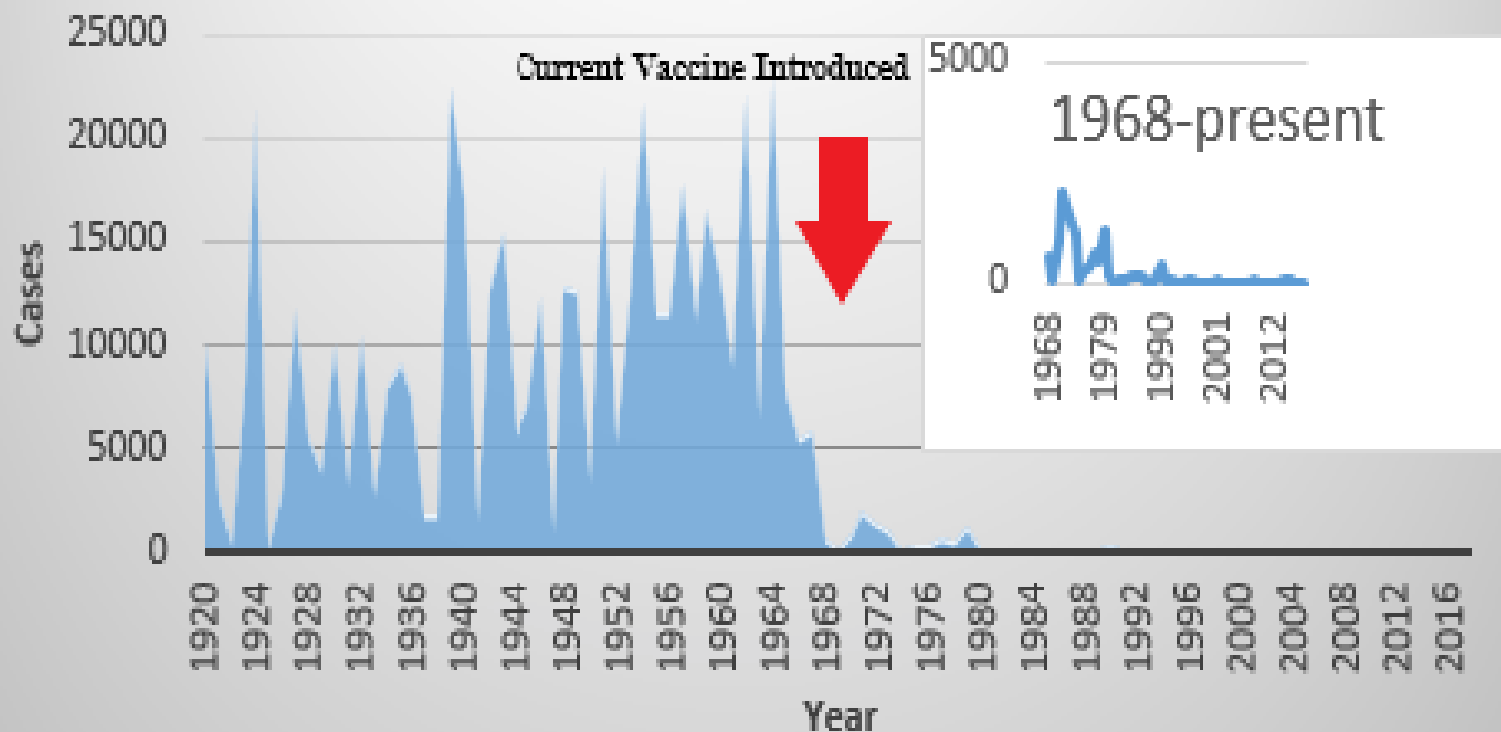
1 or 2 out of 1,000 people with measles will die, even with the best care.



So far in 2019, Washington has confirmed 86 cases of measles: **72 in the Clark County outbreak***, and **14 in the Puget Sound outbreak***.



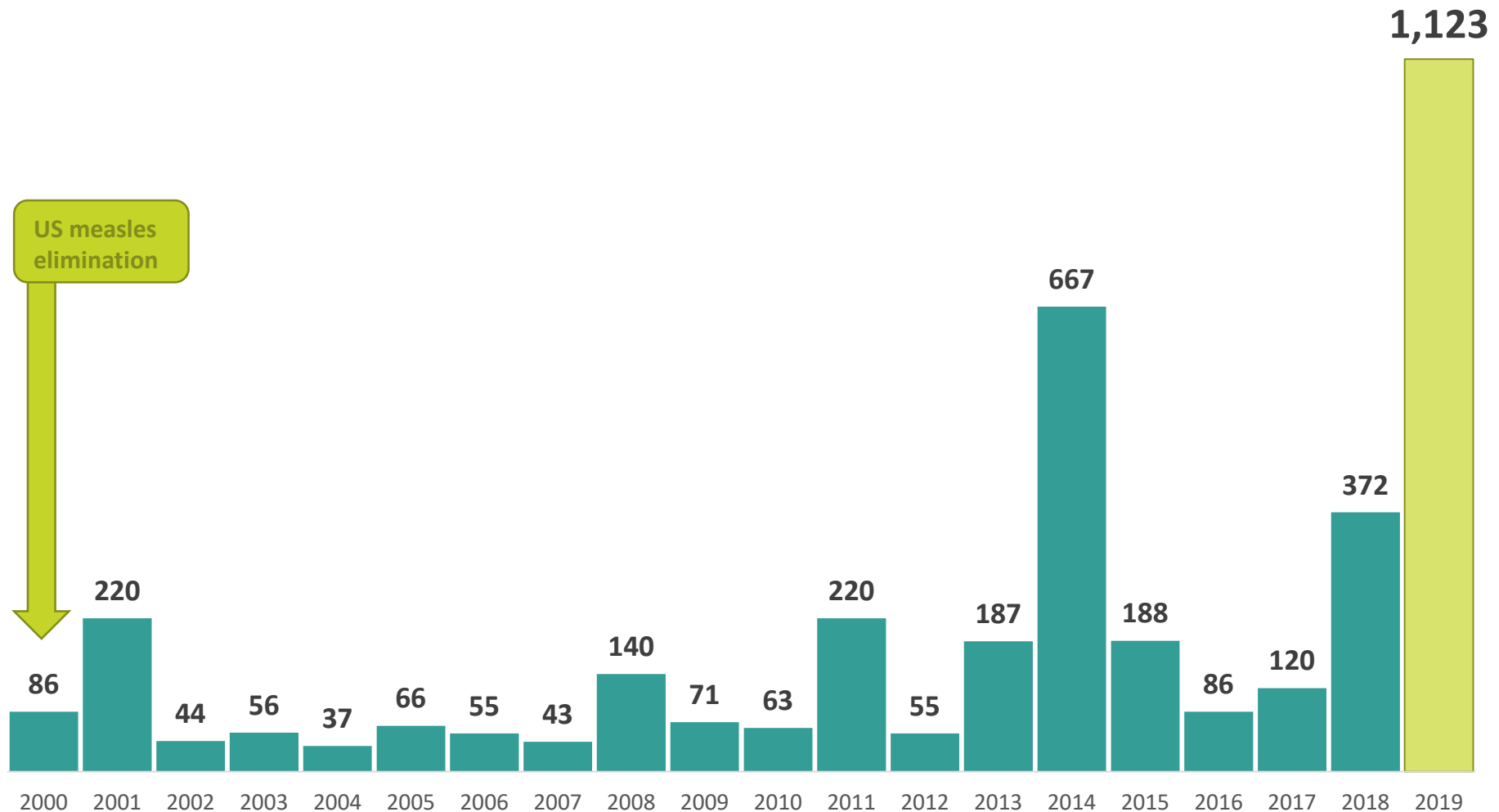
Washington State Measle Cases 1920-2018





The CDC is also reporting a record number of measles cases across the US.

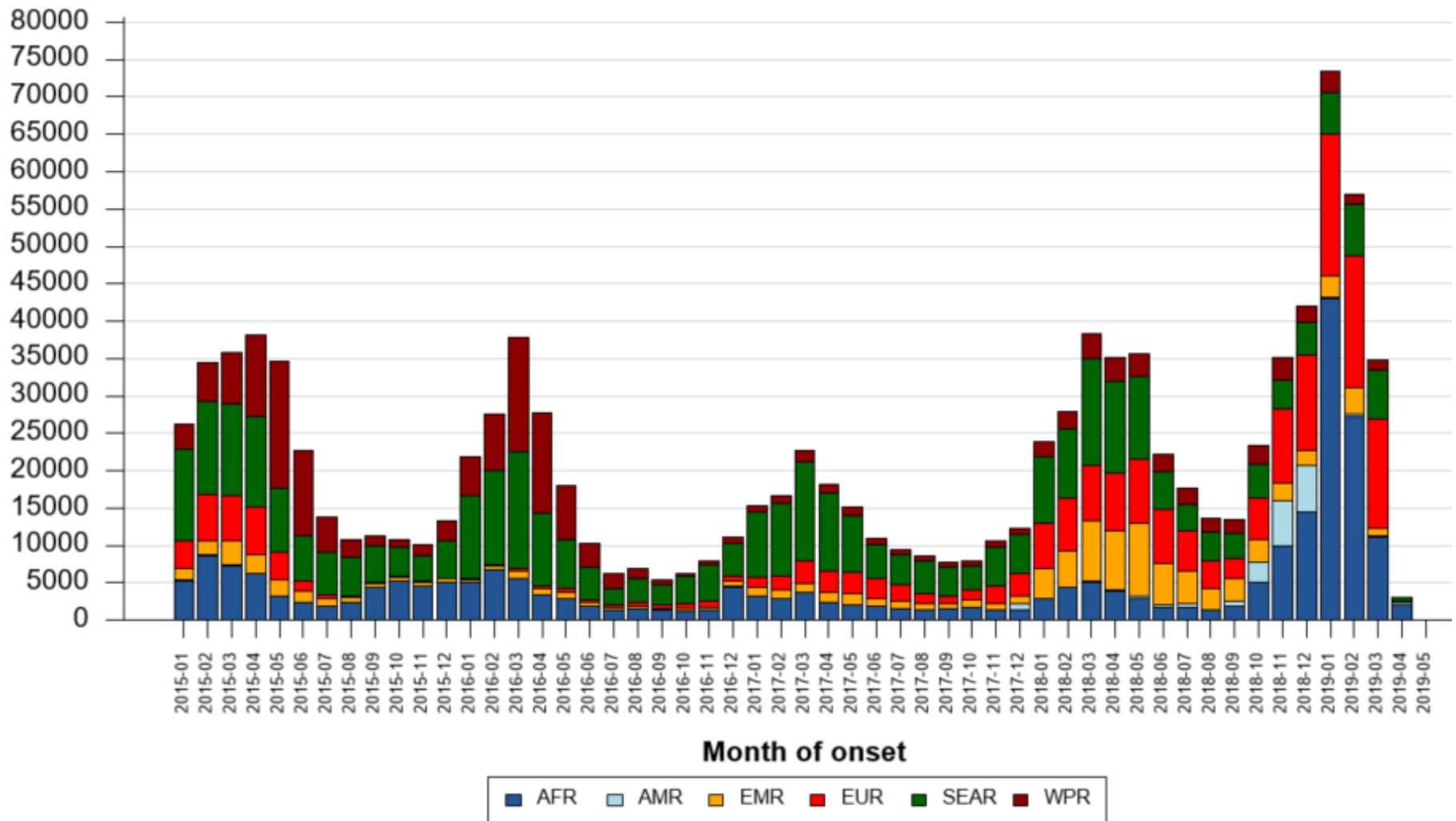
In 2019 we have seen the most cases in over 20 years.





Across the world, many countries are having a record-breaking number of measles cases.

The World Health Organization (WHO) reports many regions with large outbreaks in 2018-2019.



Top Take Away

- Our biggest risk is exposure to international outbreaks so **ASK THE TRAVEL QUESTION**
- Pockets of unvaccinated populations amplify these exposures
- Early aggressive and complete isolation **and** quarantine (mainly school and work exclusions) lessen the spread of exposure sites and subsequent cases

Measles outbreak in Clark County declared over; 71 cases confirmed

Originally published April 29, 2019 at 11:26 am Updated April 30, 2019 at 8:59 am



Public-health officials say raising vaccination rates is key to preventing future measles outbreaks. Shown here is a dose of measles-mumps-rubella vaccine. An outbreak in Southwest Washington has been declared over. (Eric Risberg / The Associated Press, 2015)

HEALTH

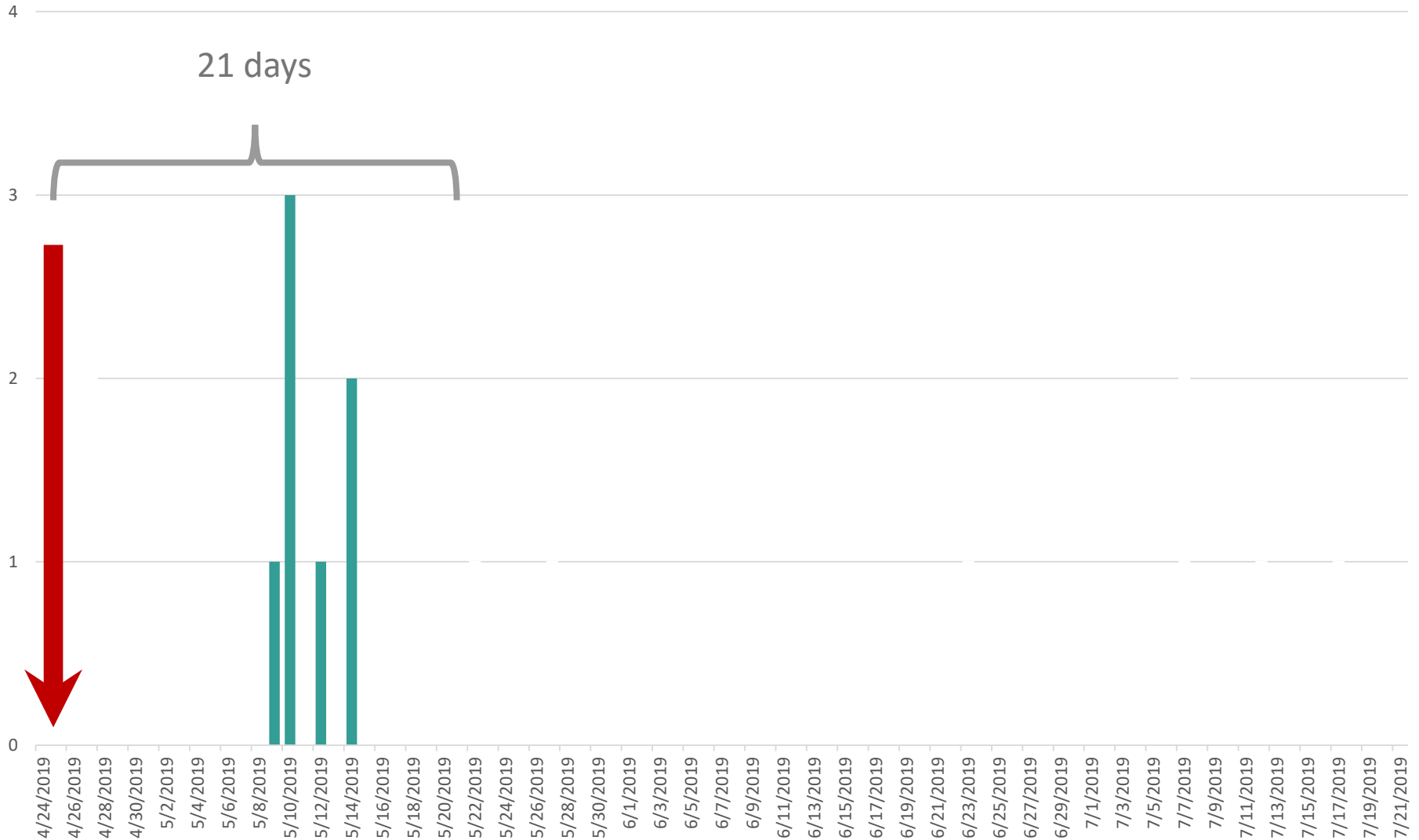


In this photo taken Tuesday, Oct. 22, 2013, a biplane hangs from the ceiling of the Gina Marie Lindsey Arrivals Hall at Seattle-Tacoma International Airport in SeaTac, Wash.

CREDIT: AP PHOTO/ELAINE THOMPSON

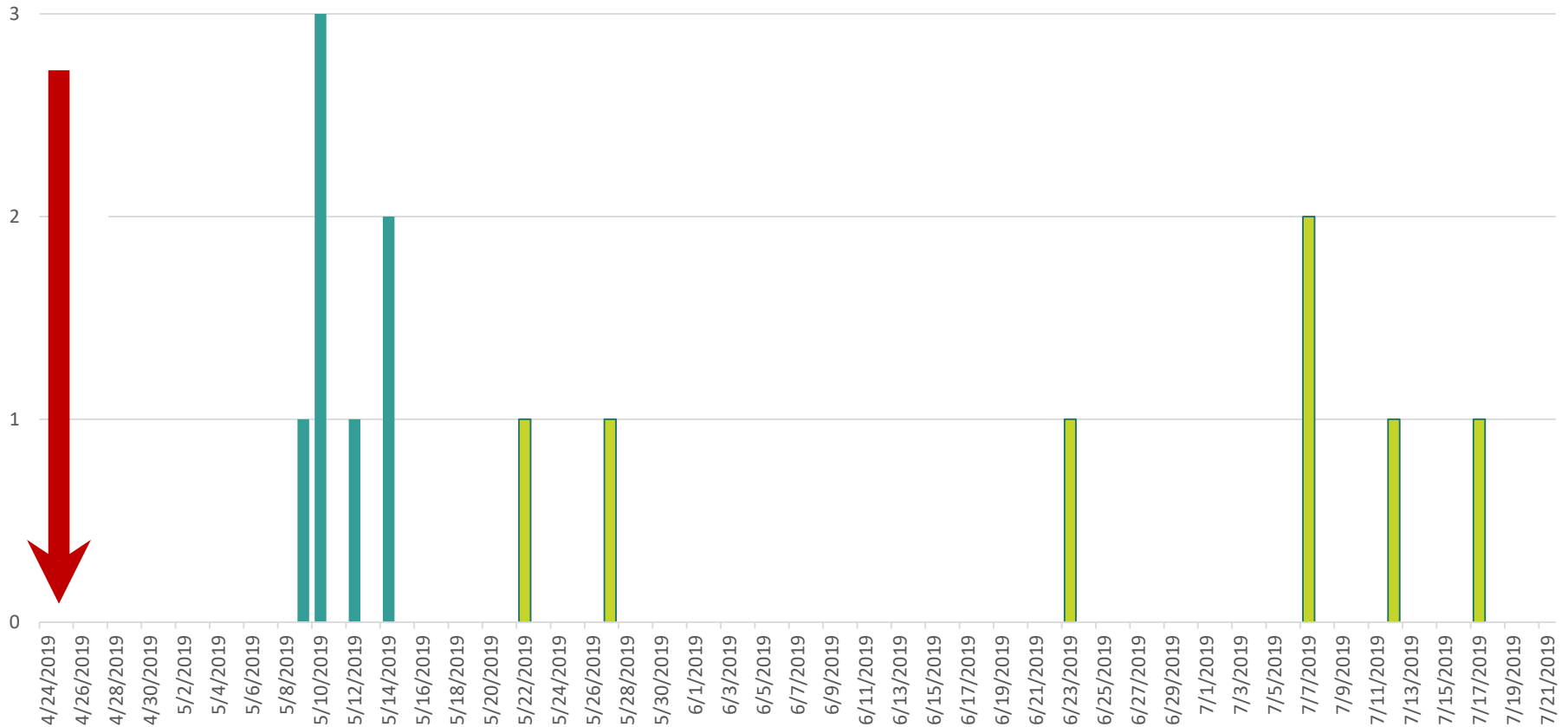
Another measles outbreak spreads, this time in Seattle

Investigation of the first group of 7 cases found a common travel date of April 25.



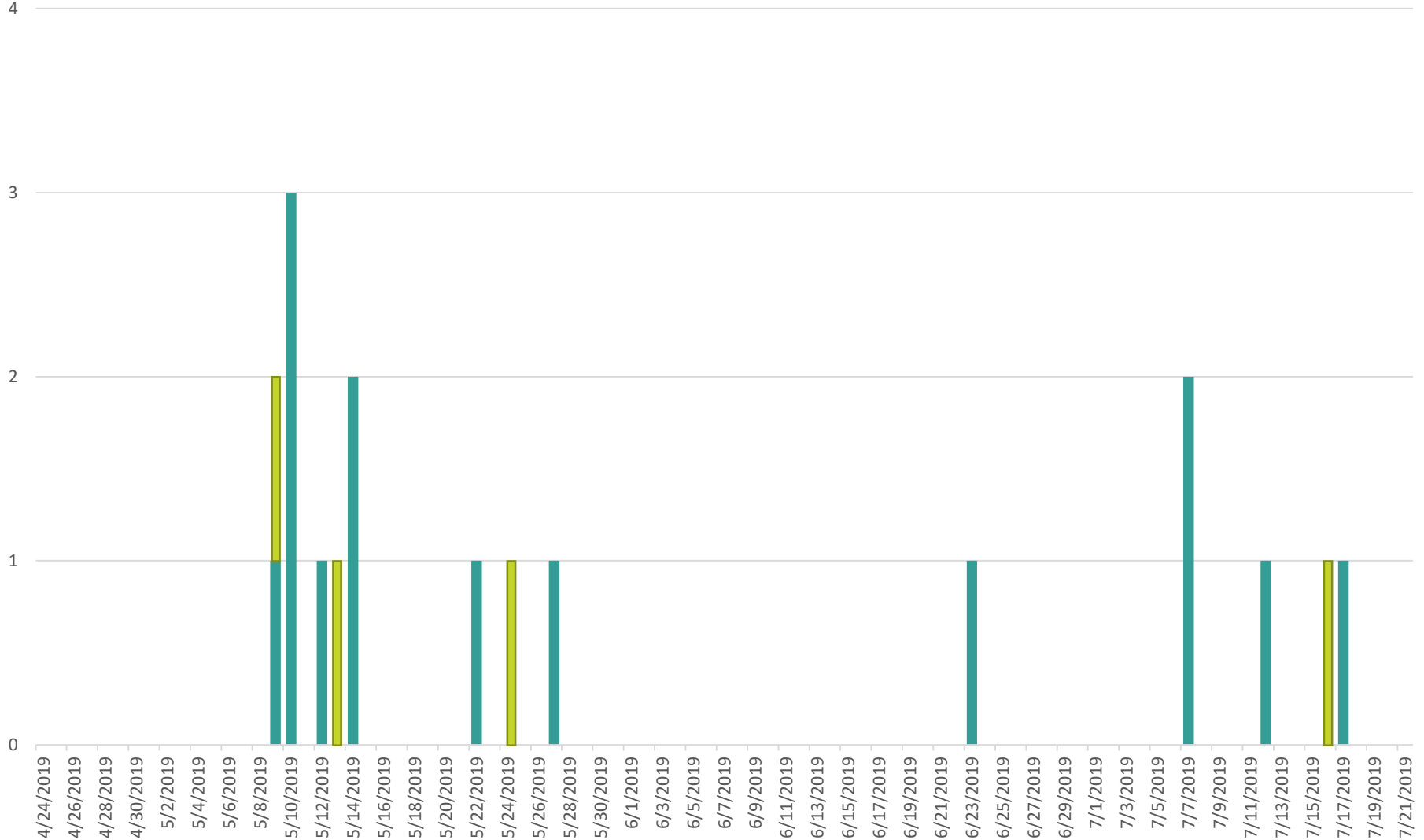
Investigation of the first group of 7 cases found a common travel date of April 25.

7 additional cases were not in the airport, but had contact with earlier cases.





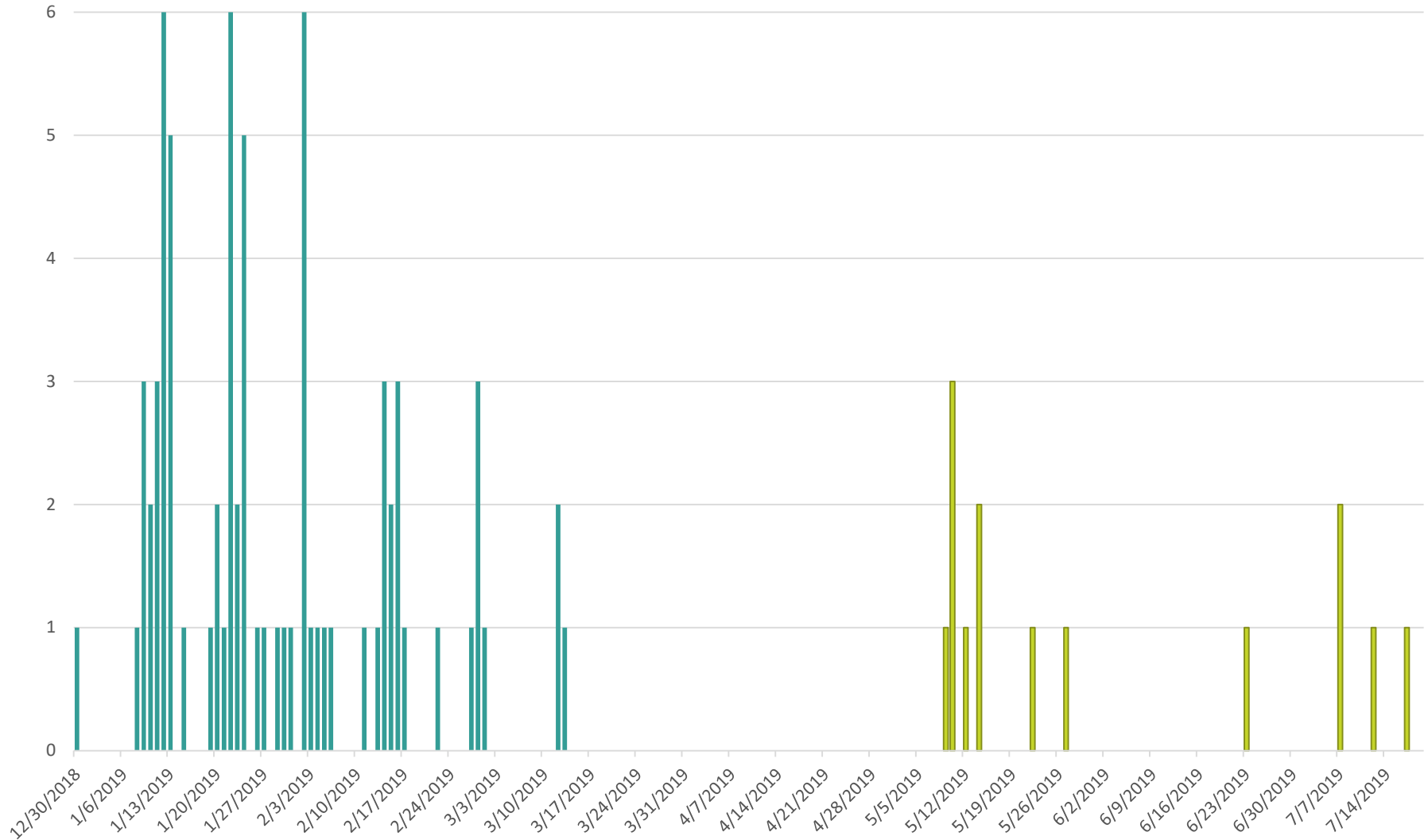
Aside from the **14 Washington cases**, at least **4 more cases from other states** are connected to this outbreak.



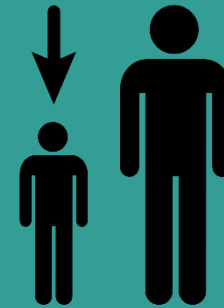
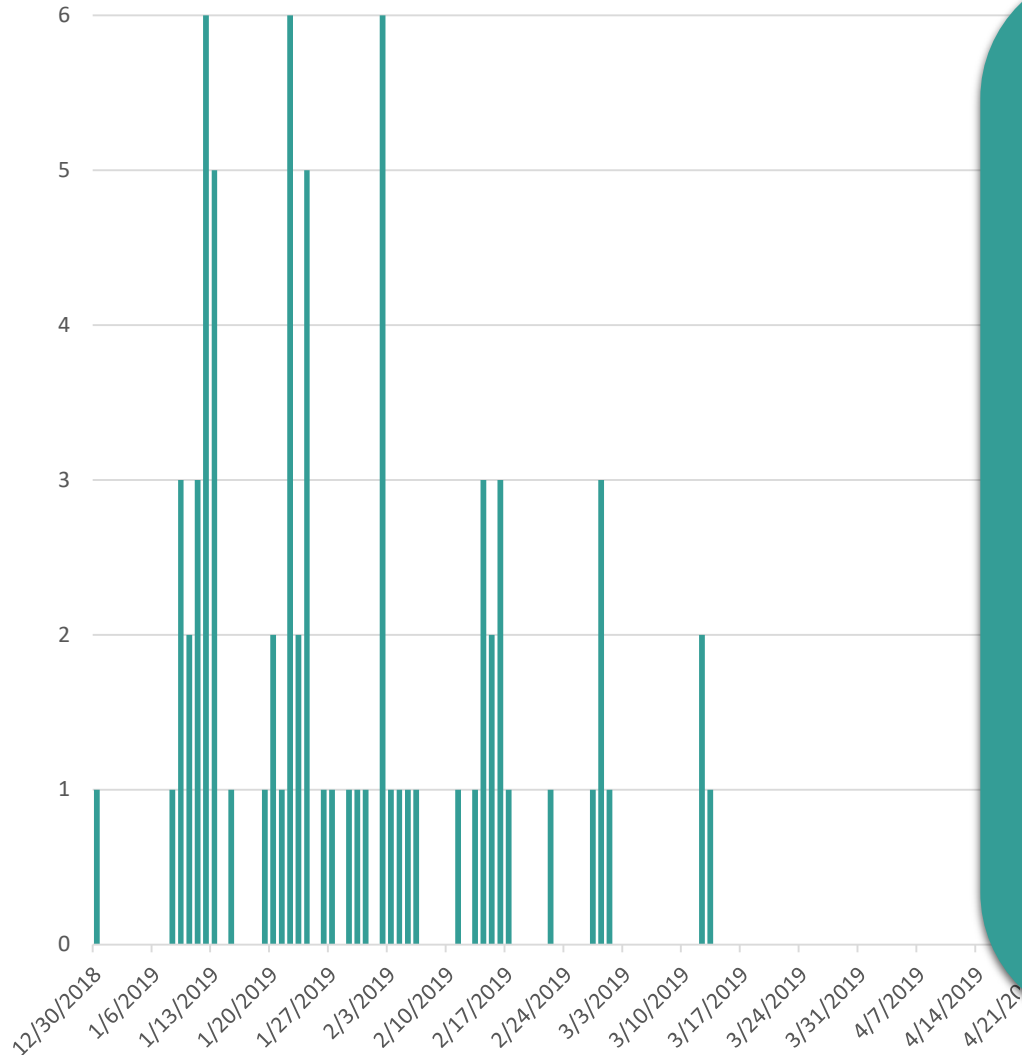


How are the two Washington measles outbreaks different?

And what can they teach us about preventing future outbreaks?



Cases from the Clark County outbreak were mostly in unvaccinated children.



72%

(52 cases) were 10 years or younger

85%

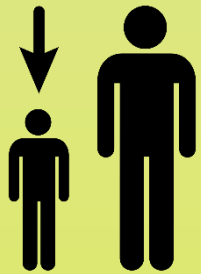
(61 cases) were unvaccinated



41.5%

(30 cases) exposed to measles in public

Cases from the **Puget Sound outbreak** are mostly in adults who were exposed in a public setting.



64%

(9 cases) were adults over the age of 18

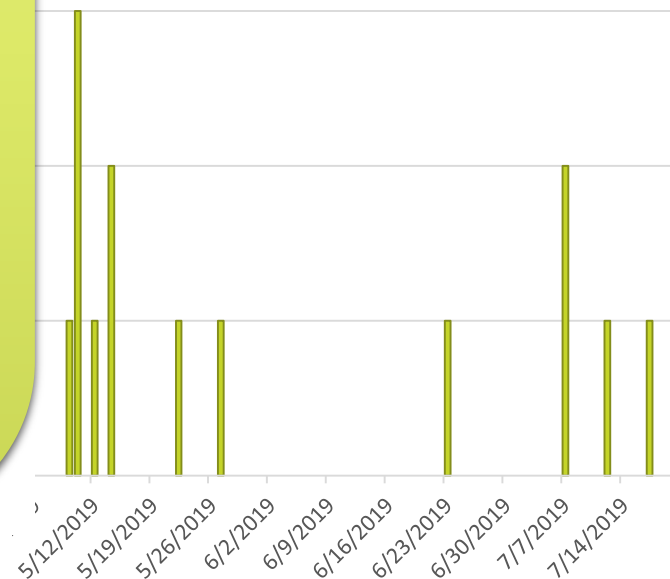
57%

(8 cases) were unvaccinated/
unknown status



64%

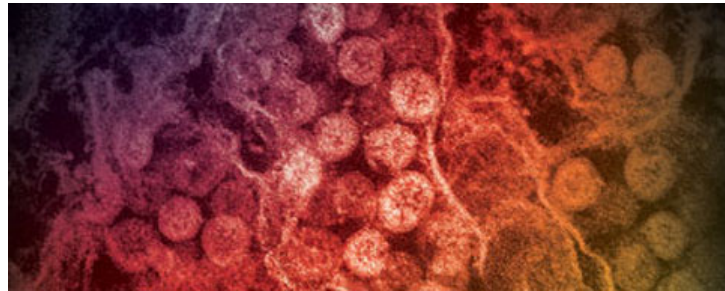
(9 cases) exposed to measles in public



What is My Biggest Concern?

- A novel infectious disease
 - Pockets of low community immunity
 - little (waning) clinical experience with this agent
- High R_0
- Respiratory spread
- Limited diagnostic capability
- No vaccine available
- No treatment beyond supportive care

Middle East Respiratory Syndrome (MERS)



CDC: www.cdc.gov/coronavirus/mers/index.html

WHO: www.who.int/emergencies/mers-cov/en/

History of MERS-CoV Infection

- Middle East Respiratory Syndrome (MERS) is caused by a virus called Middle East Respiratory Syndrome Coronavirus (MERS-CoV). Most MERS patients develop severe acute respiratory illness with symptoms of fever, cough and shortness of breath. About 3 to 4 out of every 10 patients reported with MERS have died.
- Health officials first reported the disease in Saudi Arabia in September 2012. Through retrospective (backward-looking) investigations, health officials later identified that the first known cases of MERS occurred in Jordan in April 2012. So far, all cases of MERS have been linked through travel to, or residence in, countries in and near the Arabian Peninsula.
- The largest known outbreak of MERS outside the Arabian Peninsula occurred in the Republic of Korea in 2015. The outbreak was associated with a traveler returning from the Arabian Peninsula. There was a total of 186 cases which occurred primarily due to transmission in health care facilities. The case fatality rate was 44%.¹
- MERS-CoV has spread from ill people to others through close contact, such as caring for or living with an infected person.

Middle East Respiratory Syndrome (MERS)

Screen all patients for:

- Respiratory symptoms
- Fever
- Rash
- Travel history in last 30 days
- Screening all patients will aid in identifying an HCID or other contagious illnesses such as measles, chickenpox, and influenza

Symptoms

- Fever, cough, shortness of breath - may have diarrhea and nausea/vomiting, sore throat, coryza, headache, dizziness, abdominal pain
- In severe cases pneumonia and kidney failure
- Some have mild illness (like a cold) or no symptoms
- People with pre-existing conditions may be more likely to be infected or have a severe case

Causative agent

- Coronavirus called Middle East Respiratory Syndrome Coronavirus (MERS-CoV)

Middle East Respiratory Syndrome (MERS) continued

Reservoir

- Humans and camels
- Source is likely an animal source in the Arabian Peninsula

Incubation period

- Usually about 5-6 days, but can range from 2-14 days

Transmission

- Close contact
- Thought to spread from an infected person's respiratory secretions such as through coughing
- The precise ways the virus spreads are not currently well understood

Diagnosis

- For suspect case, contact your Local Health Jurisdiction
- WA PHL can perform testing for MERS-CoV
- Specimens for testing: lower respiratory specimen, NP swab and serum

Middle East Respiratory Syndrome (MERS) continued

Lab Specimens

- Follow standard laboratory practices using Standard Precautions for potential MERS-CoV specimens
- Specimens are Category B per Department of Transportation. Must package appropriately for transport.

Management of contacts

- Identify persons at risk for contact with patient: staff, other patients, visitors
- Evaluate persons who accompany the patient for symptoms of MERS
- Develop plan with the state and federal authorities for monitoring exposed persons and facility staff
- Monitor exposed persons for 14 days for symptoms of MERS

Treatment

- There is no specific antiviral treatment recommended for MERS-CoV infection. Individuals with MERS often receive medical care to help relieve symptoms. For severe cases, current treatment includes care to support vital organ functions.

Middle East Respiratory Syndrome (MERS) continued

Isolation

- Clinical symptoms and epidemiologic risk should be met to designate a Patient Under Investigation (PUI) for MERS (www.cdc.gov/coronavirus/mers/interim-guidance.html)
- Place facemask (not N95) on any patient with respiratory symptoms
- Place patient in airborne infection isolation room (AIIR) as soon as possible
- Hand hygiene, personal protective equipment (PPE): gloves, gown, N95 or PAPR, eye protection
- Identify others at risk for exposure (persons accompanying patient, other patients, visitors)
- Limit transport of patient around facility
- Only essential persons should enter room. Consider using phone or intercom for communication with patient.
- Length of isolation determined on a case-by-case basis with consult from state and federal health authorities

Middle East Respiratory Syndrome (MERS) continued

Cleaning

- Standard cleaning and disinfection procedures are appropriate for MERS-CoV in healthcare settings, including those patient-care areas in which aerosol-generating procedures are performed. If there are no available EPA-registered products that have a label claim for MERS-CoV, products with label claims against human coronaviruses should be used according to label instructions.

Waste

- Management of laundry, food service utensils, and medical waste should also be performed in accordance with routine procedures

Prevention

- No vaccine
- Protect from respiratory diseases in general: hand hygiene, respiratory etiquette

Patient Under Investigation (PUI) Definition

MERS

- A. Fever¹ AND pneumonia or acute respiratory distress syndrome (based on clinical or radiologic evidence) AND EITHER:
- history of travel from countries in or near the Arabian Peninsula² within 14 days before symptom onset, OR
 - close contact³ with a symptomatic traveler who developed fever and acute respiratory illness (not necessarily pneumonia) within 14 days after traveling from countries in or near the Arabian Peninsula², OR
 - a member of a cluster of patients with severe acute respiratory illness (e.g., fever¹ and pneumonia requiring hospitalization) of unknown etiology in which MERS-CoV is being evaluated, in consultation with state and local health departments,
- OR
- B. Fever¹ AND symptoms of respiratory illness (not necessarily pneumonia; e.g., cough, shortness of breath) AND being in a healthcare facility (as a patient, worker, or visitor) within 14 days before symptom onset in a country or territory in or near the Arabian Peninsula² in which recent healthcare-associated cases of MERS have been identified.
- OR
- C. Fever¹ OR symptoms of respiratory illness (not necessarily pneumonia; e.g. cough, shortness of breath) AND close contact³ with a confirmed MERS case while the case was ill.

MERS PUI Definition Footnotes

1. Fever may not be present in some patients, such as those who are very young, elderly, immunosuppressed, or taking certain medications. Clinical judgement should be used to guide testing of patients in such situations.
2. Countries considered in the Arabian Peninsula and neighboring include: Bahrain; Iraq; Iran; Israel, the West Bank, and Gaza; Jordan; Kuwait; Lebanon; Oman; Qatar; Saudi Arabia; Syria; the United Arab Emirates (UAE); and Yemen.
3. Close contact is defined as a) being within approximately 6 feet (2 meters), or within the room or care area, of a confirmed MERS case for a prolonged period of time (such as caring for, living with, visiting, or sharing a healthcare waiting area or room with, a confirmed MERS case) while not wearing recommended personal protective equipment or PPE (e.g., gowns, gloves, NIOSH-certified disposable N95 respirator, eye protection); or b) having direct contact with infectious secretions of a confirmed MERS case (e.g., being coughed on) while not wearing recommended personal protective equipment.

Middle East Respiratory Syndrome Coronavirus (MERS-CoV)

Disease & Agent	Geographic Areas	Transmission	Incubation period	Signs & Symptoms	Mortality rate	Diagnostic Testing	Prevention & Treatment	Isolation & PPE	Cleaning	Specimen transport and waste
Middle East Respiratory Syndrome (MERS) is caused by Middle East Respiratory Syndrome Coronavirus (MERS-CoV)	<p>Linked to travel in and near the Arabian Peninsula</p> <p>2015 Korean outbreak – traveler returning from the Arabian Peninsula</p> <p>Source is likely an animal source in the Arabian Peninsula</p>	<p>Close contact</p> <p>Thought to spread from an infected person's respiratory secretions such as though coughing</p> <p>The precise ways the virus spreads are not currently well understood</p>	Usually about 5-6 days but can range from 2-14 days	<p>Fever, cough, shortness of breath - may have diarrhea and nausea/vomiting, sore throat, coryza, headache, dizziness, abdominal pain</p> <p>In severe cases can be followed by pneumonia and kidney failure</p> <p>Some have mild illness (like a cold) or no symptoms</p> <p>People with pre-existing conditions may be more likely to be infected or have a severe case</p>	About 3 to 4 out of every 10 patients reported with MERS have died	<p>Specimens for testing: lower respiratory specimen, NP swab and serum</p> <p>For suspect case, contact MDH at 651-201-5414 or 1-877-676-5414</p> <p>MDH can perform testing for MERS-CoV</p>	<p>There is no specific antiviral treatment recommended for MERS-CoV infection</p> <p>Individuals with MERS often receive medical care to help relieve symptoms. For severe cases, current treatment includes care to support vital organ functions</p>	<p>Place facemask (not N95) on any patient with respiratory symptoms</p> <p>Place patient in airborne infection isolation room (AIIR) as soon as possible</p> <p>Hand hygiene, personal protective equipment (PPE): gloves, gown, N95 or PAPR, eye protection</p>	<p>Standard cleaning and disinfection procedures</p> <p>If available EPA - registered products do not have a label claim for MERS-CoV, products with label claims against human coronaviruses should be used according to label instructions</p>	<p>Transport specimens as Category B infectious waste</p> <p>Management of laundry, food service utensils, and medical waste should be performed in accordance with routine procedures</p>

References:

CDC: www.cdc.gov/coronavirus/mers/index.html

WHO: www.who.int/emergencies/mers-cov/en/

What is My Biggest Concern?

- A novel infectious disease
 - low community immunity
 - little clinical experience with this agent
- High R_0 UNCLEAR ranging as high as 8 to less than 1
- Respiratory spread +/-
- Limited diagnostic capability
- No vaccine available
- No treatment beyond supportive care



Washington State Department of Health is committed to providing customers with forms and publications in appropriate alternate formats. Requests can be made by calling 800-525-0127 or by email at civil.rights@doh.wa.gov. TTY users dial 711.