Outbreak? – Don't Panic!

Tips for Effectively Managing Outbreaks in School Settings

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Indiana Association of School Nurses
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Indiana State Department of Health

Overview

- What happens during an outbreak?
  - Investigation, response, and key players
- Common causes of school-based outbreaks
- Other infectious diseases of concern

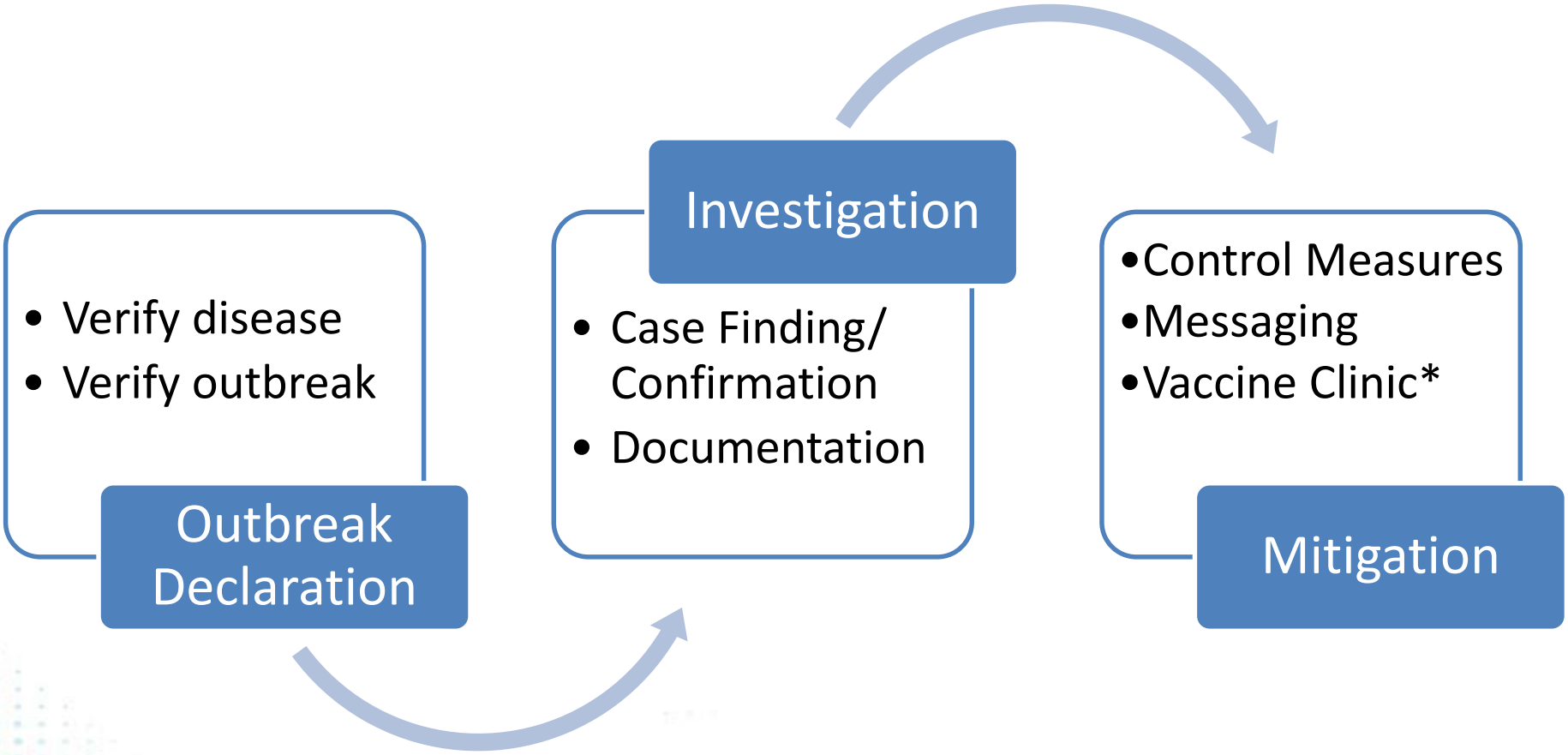
Indiana State Department of Health

Outbreak Definition

Cases of disease occurring in a defined community, region, or particular population at a rate in excess of that which is normally expected.

Outbreak declaration, investigation, and control governed by Indiana Communicable Disease Rule (410 IAC 1-2.5)

Public Health Outbreak Response



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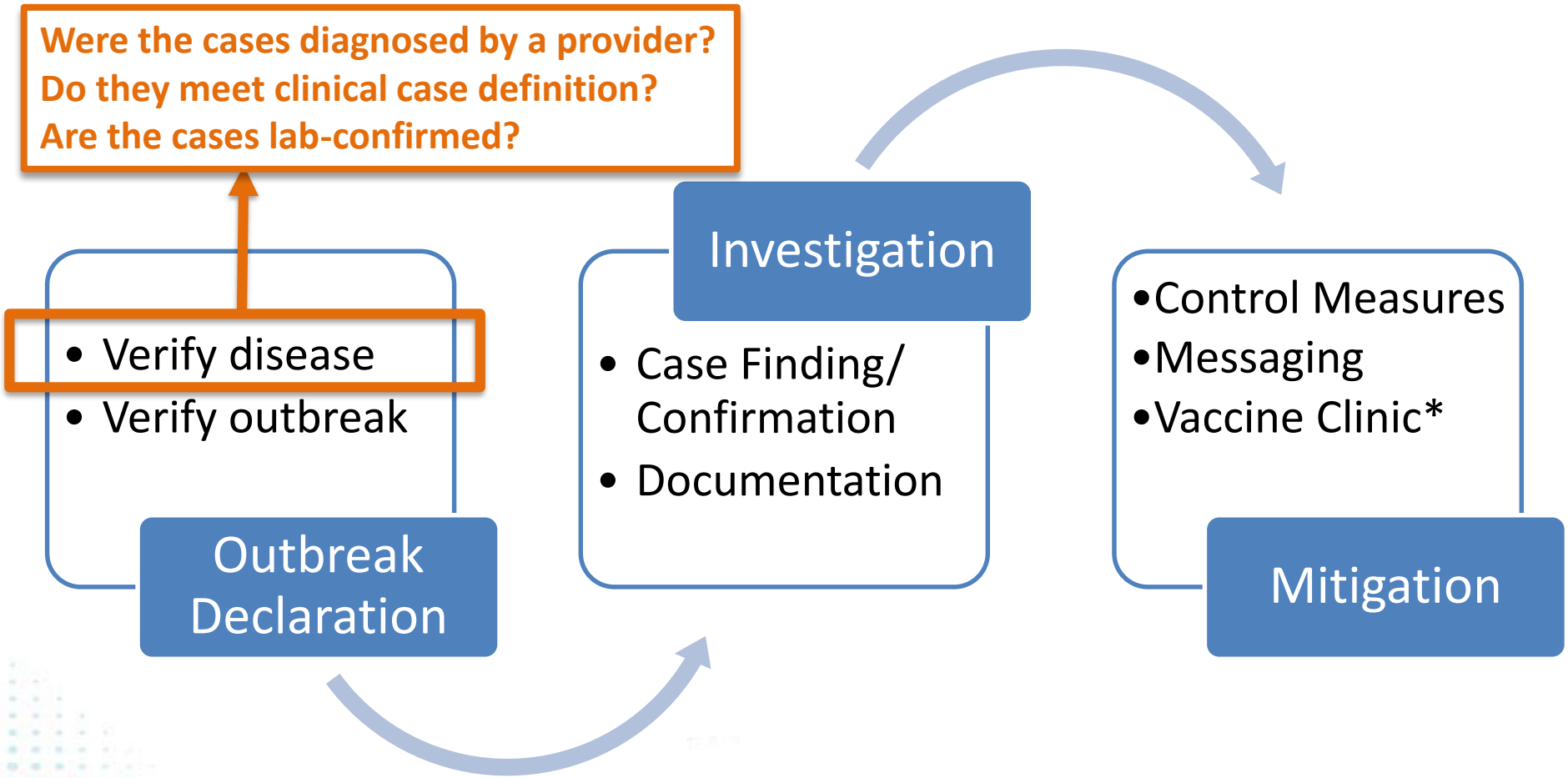

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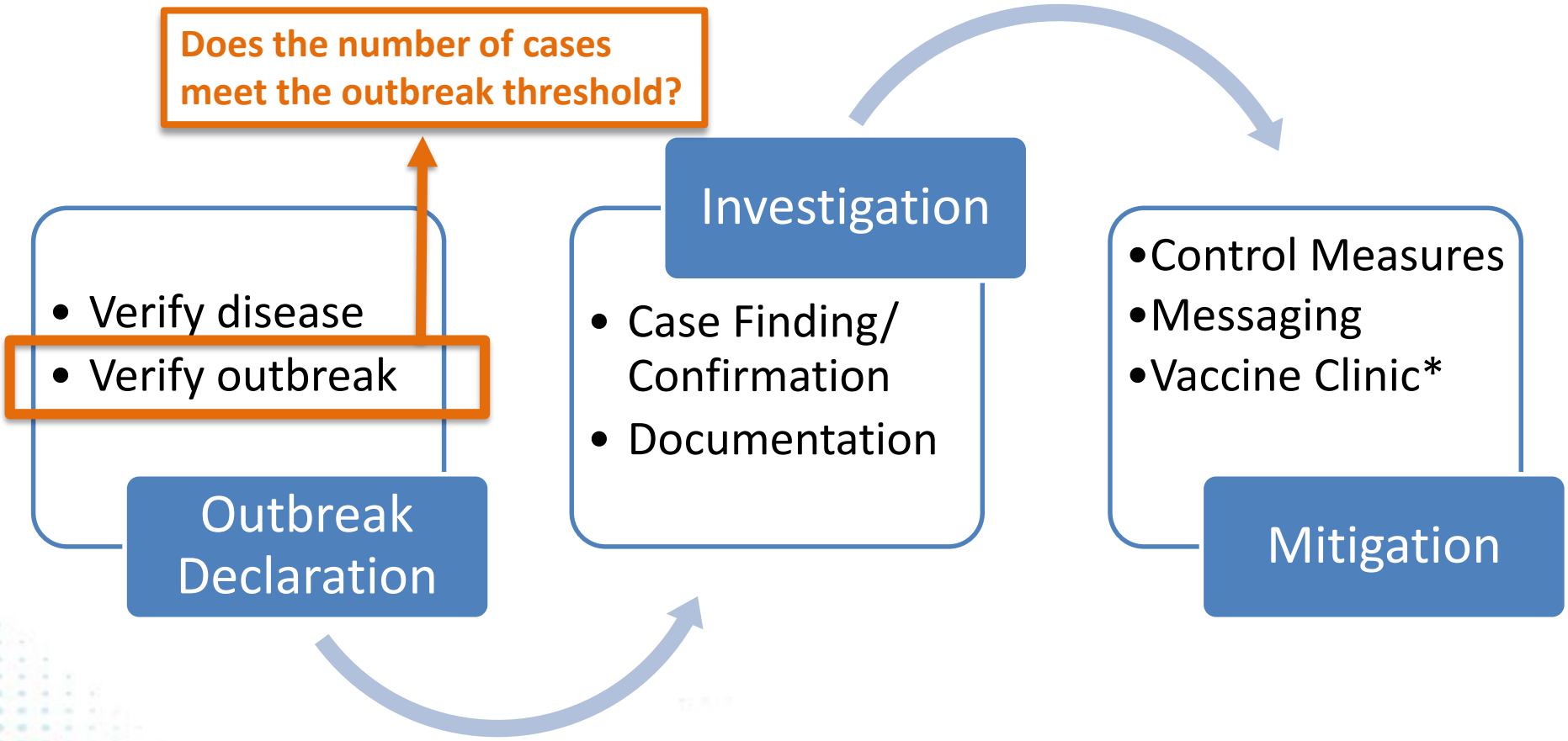

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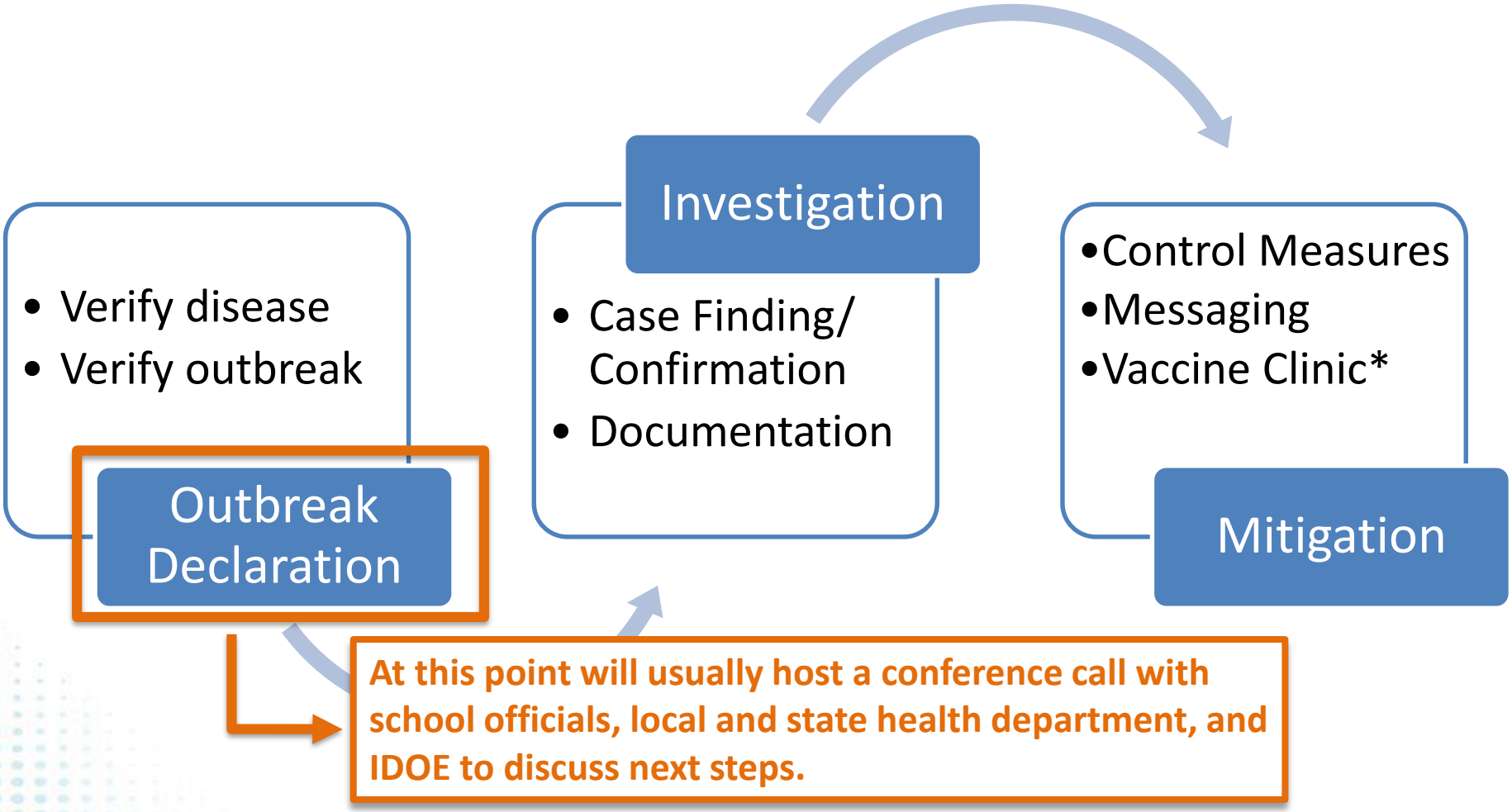

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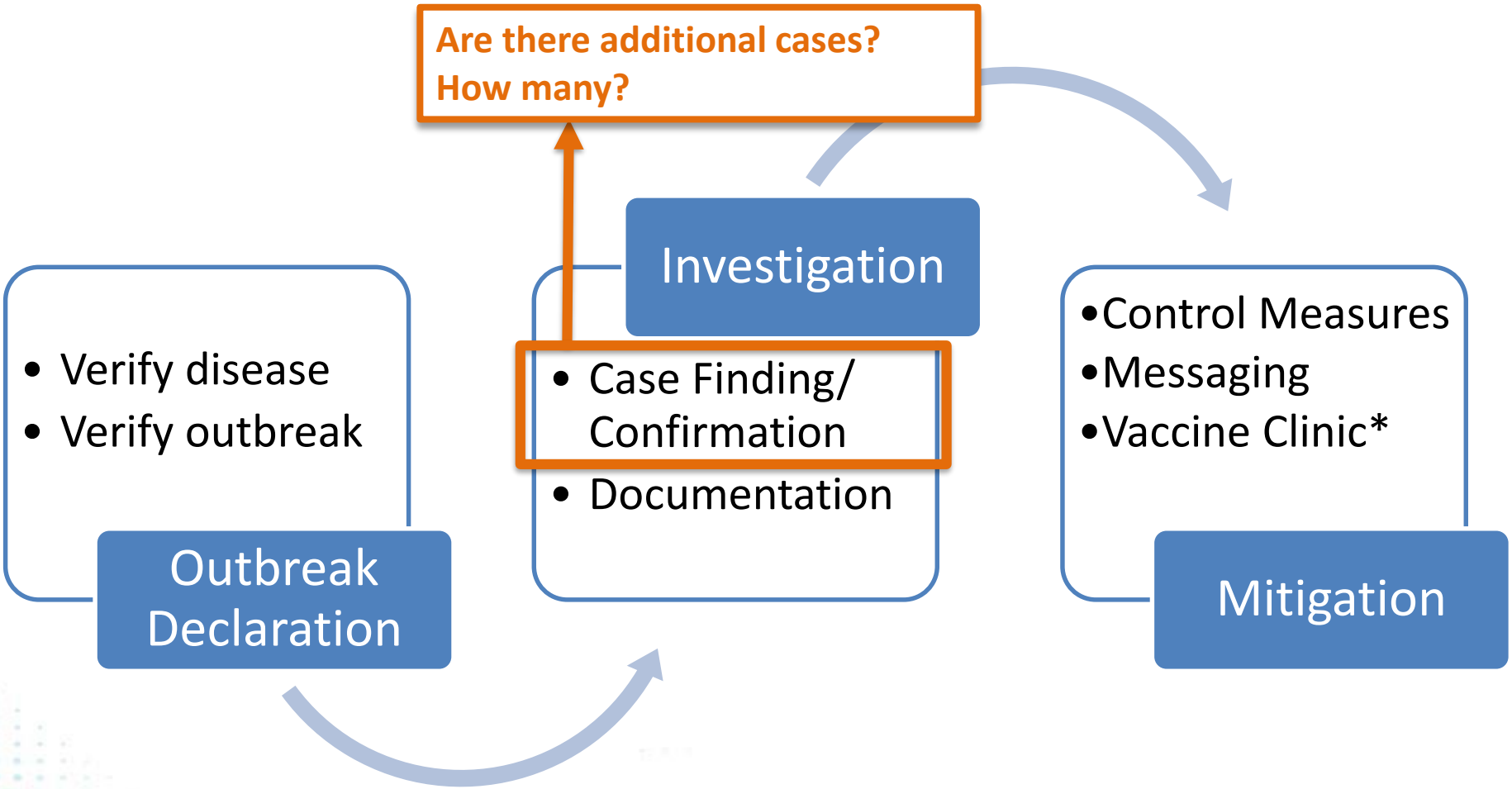

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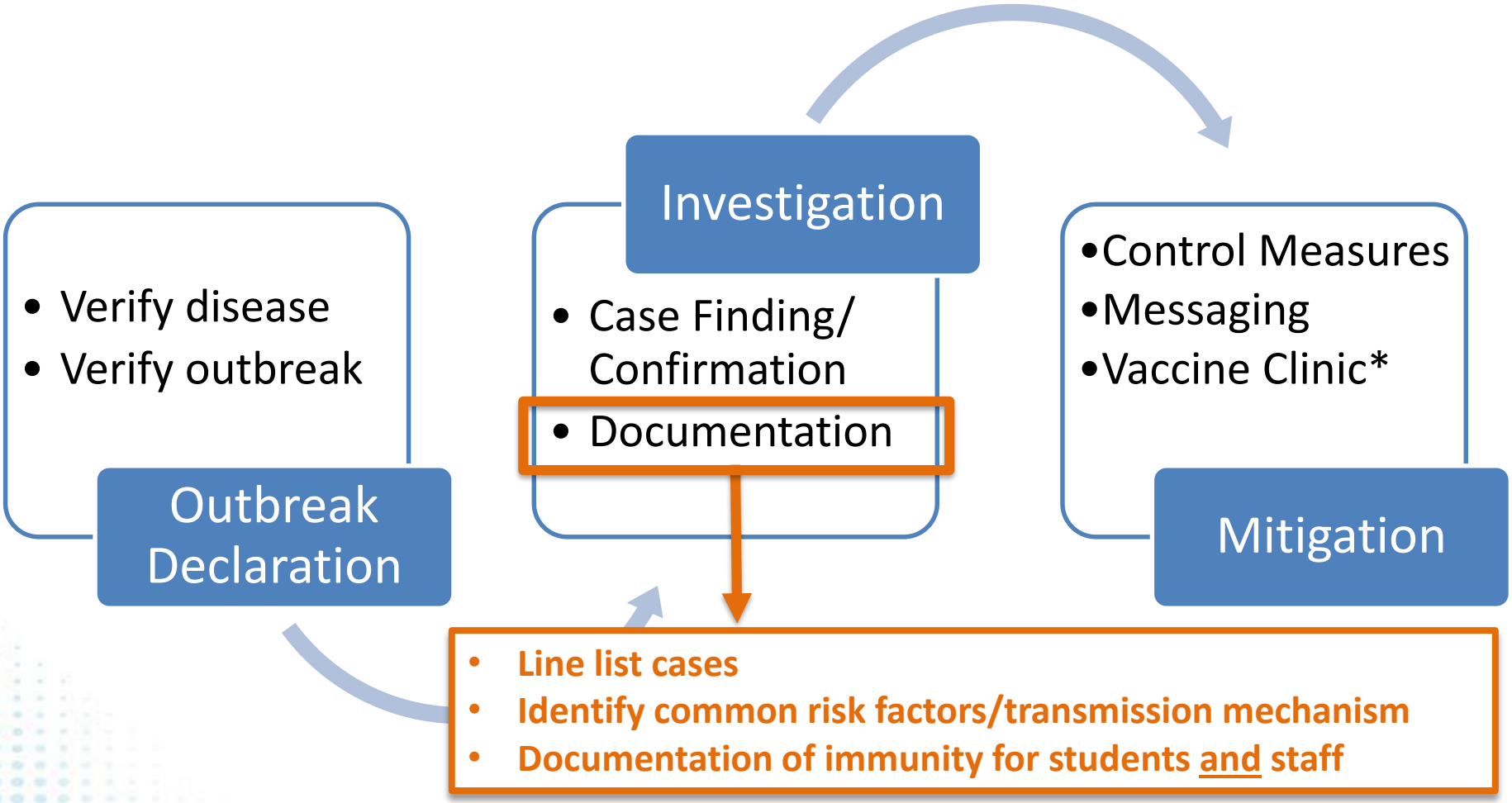

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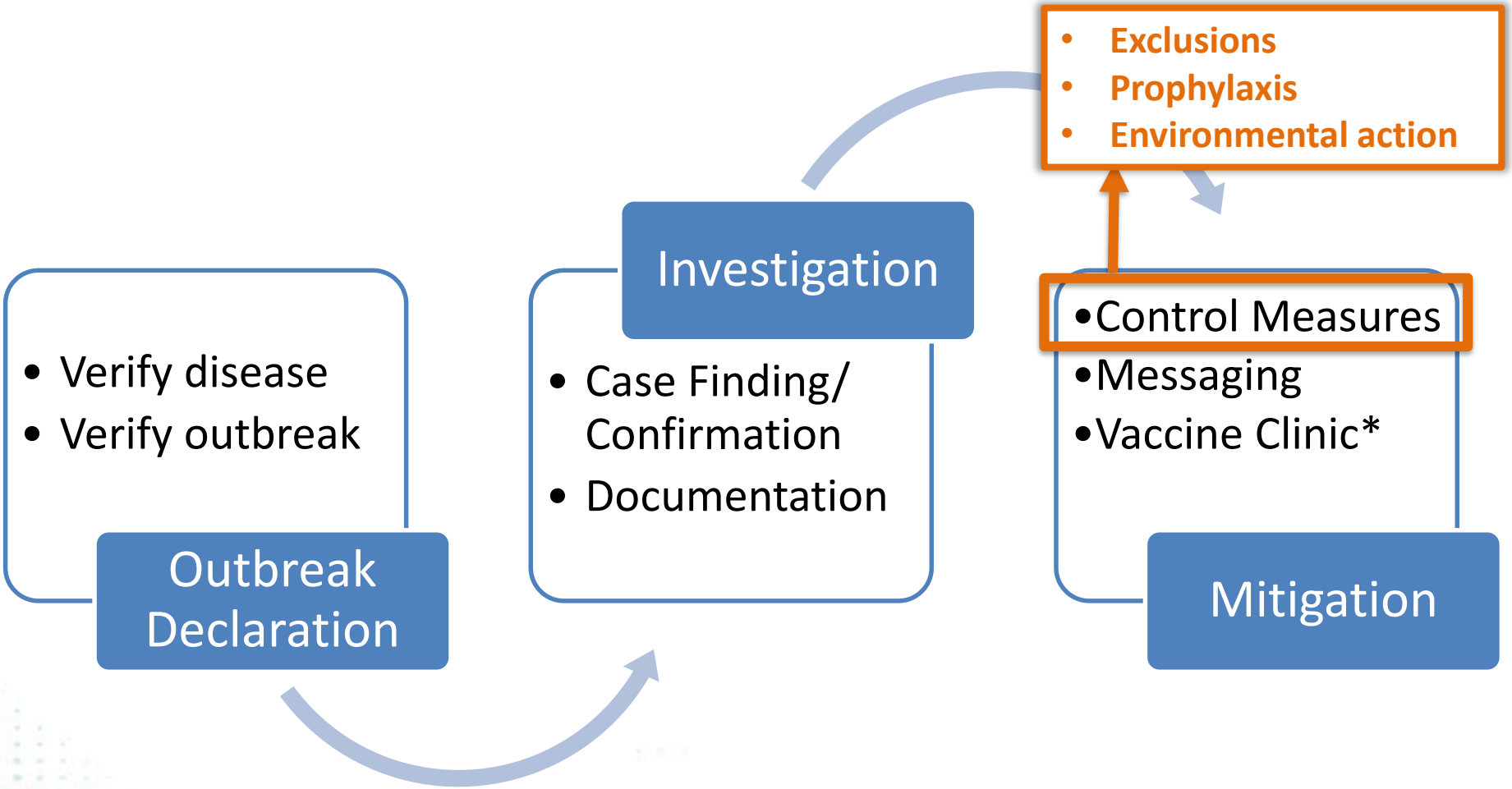

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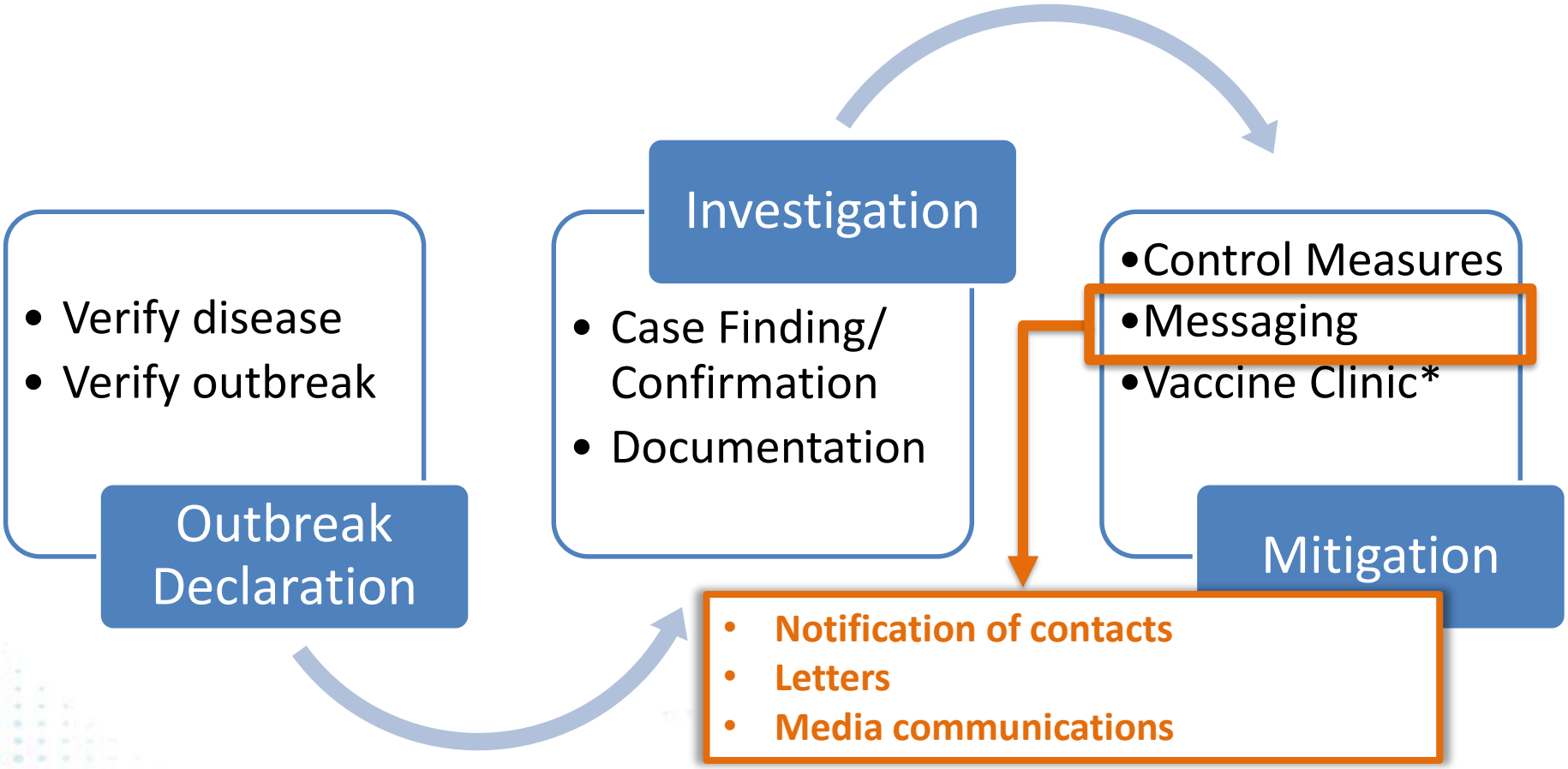

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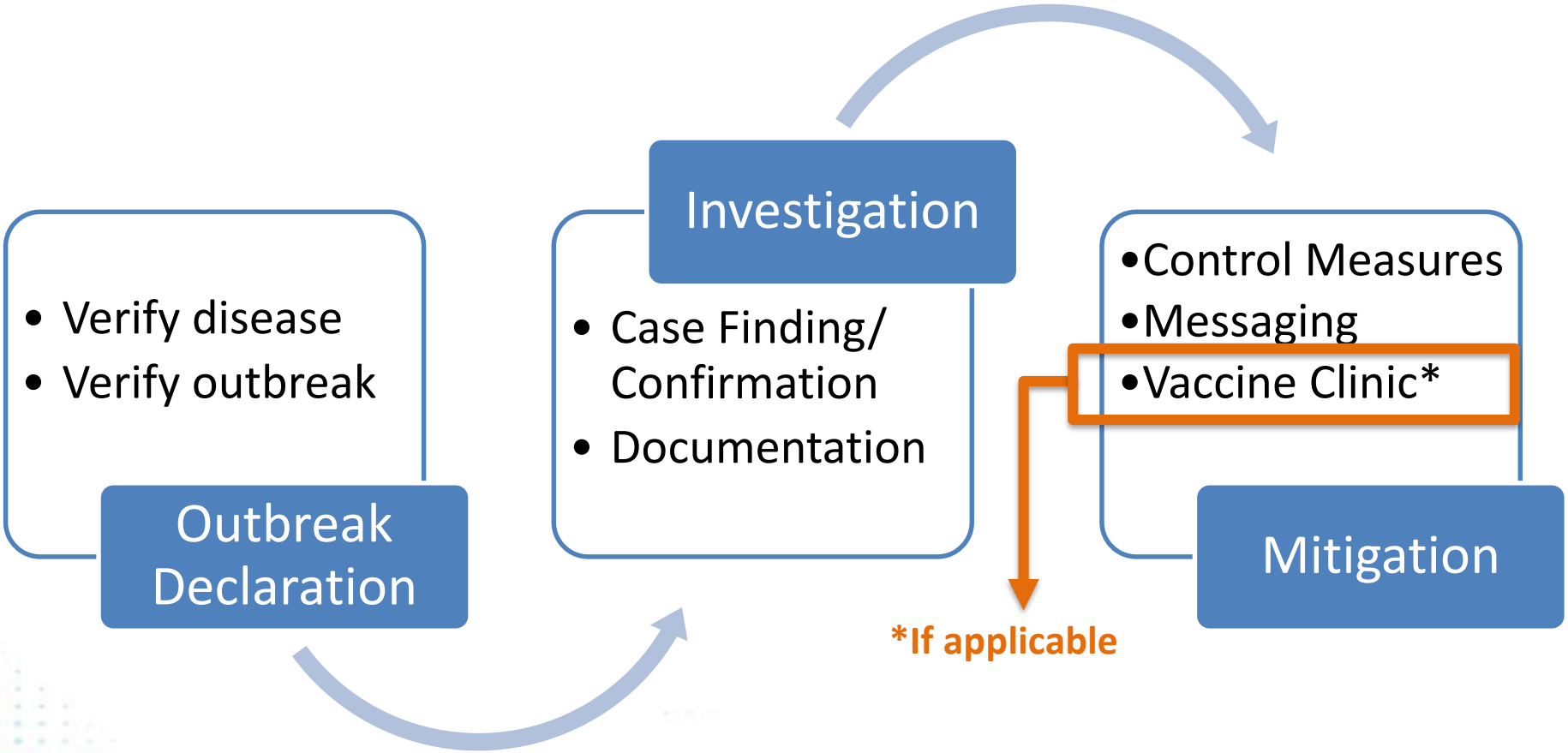

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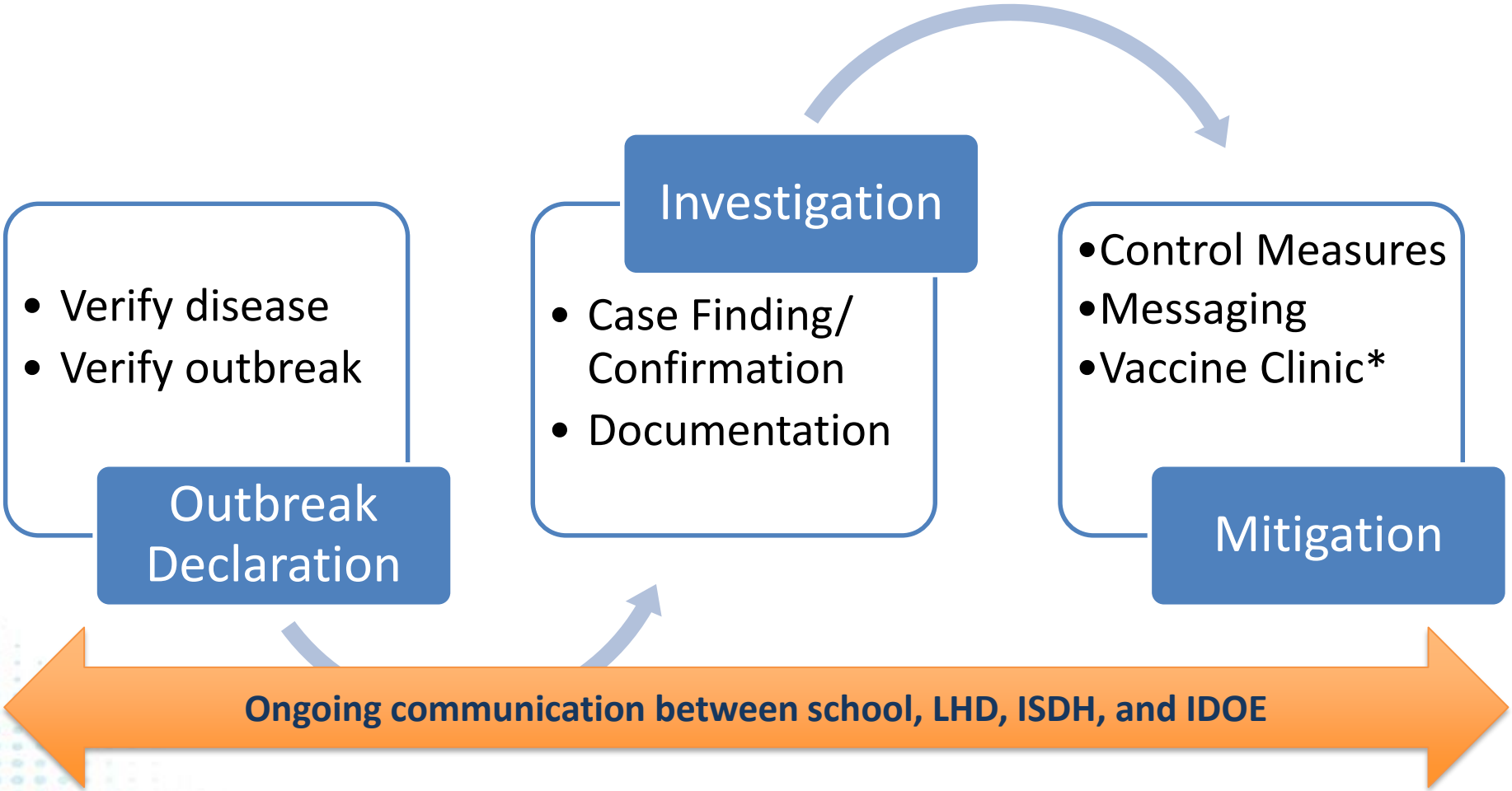
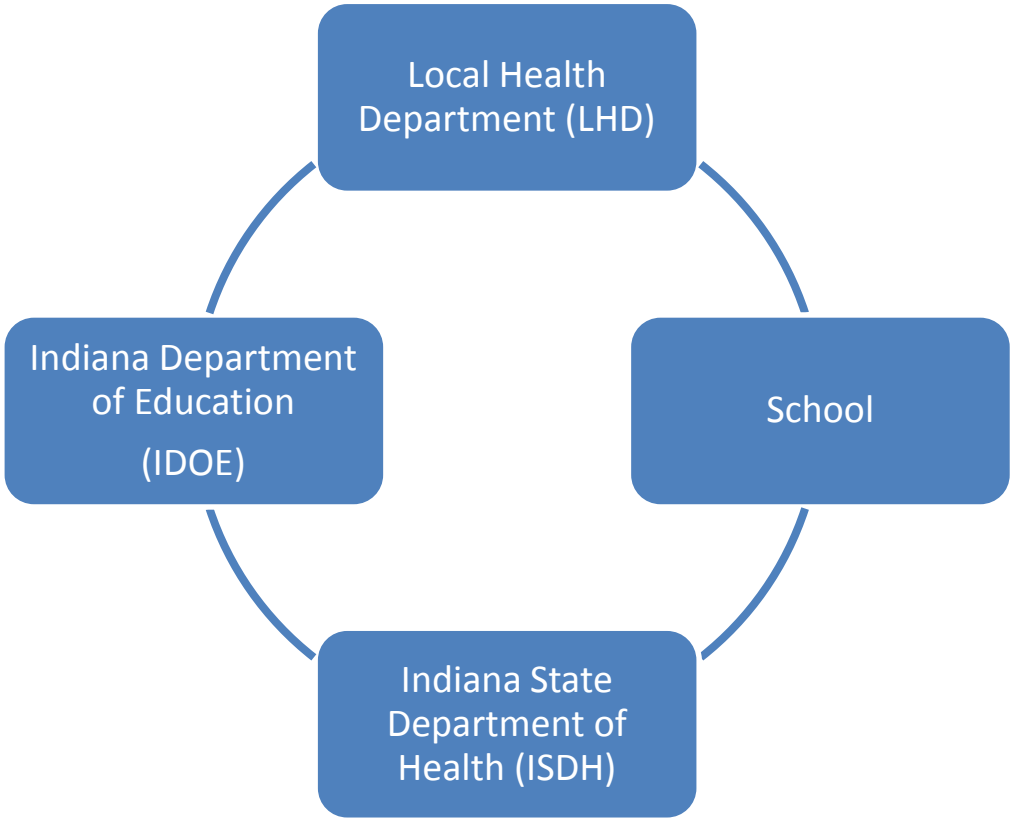


Key Players and Responsibilities



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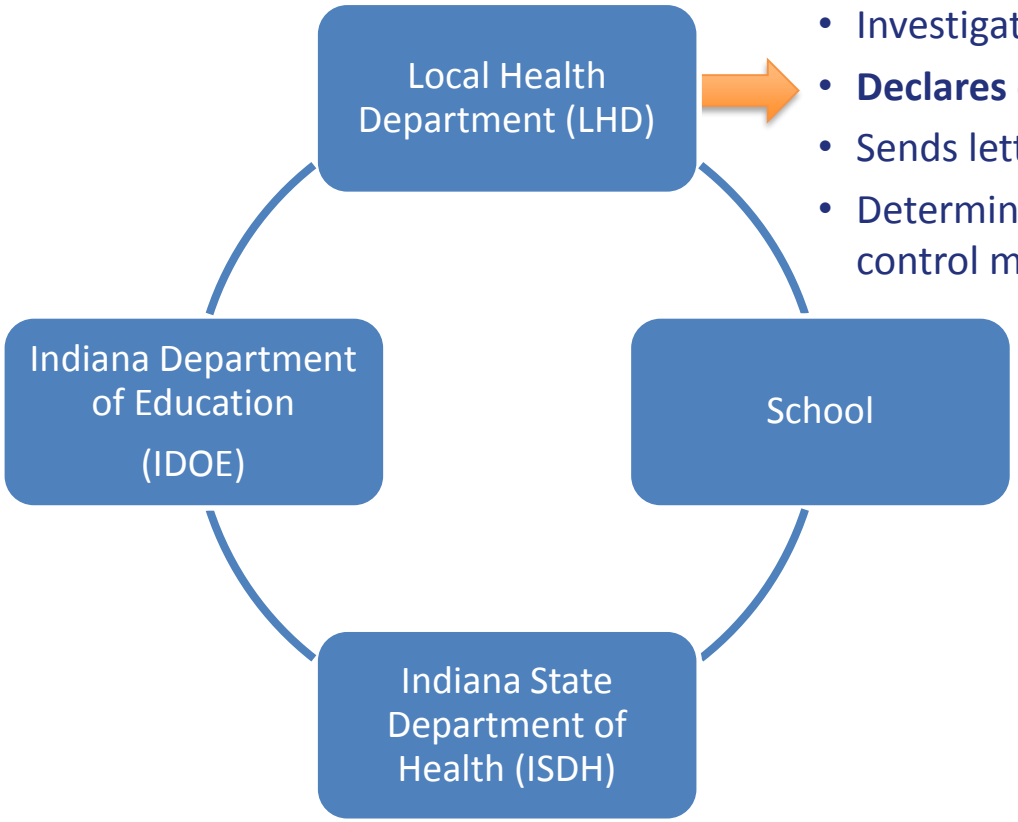

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- Investigates cases/outbreaks
- **Declares outbreak**
- Sends letters (if applicable)
- Determines and implements control measures

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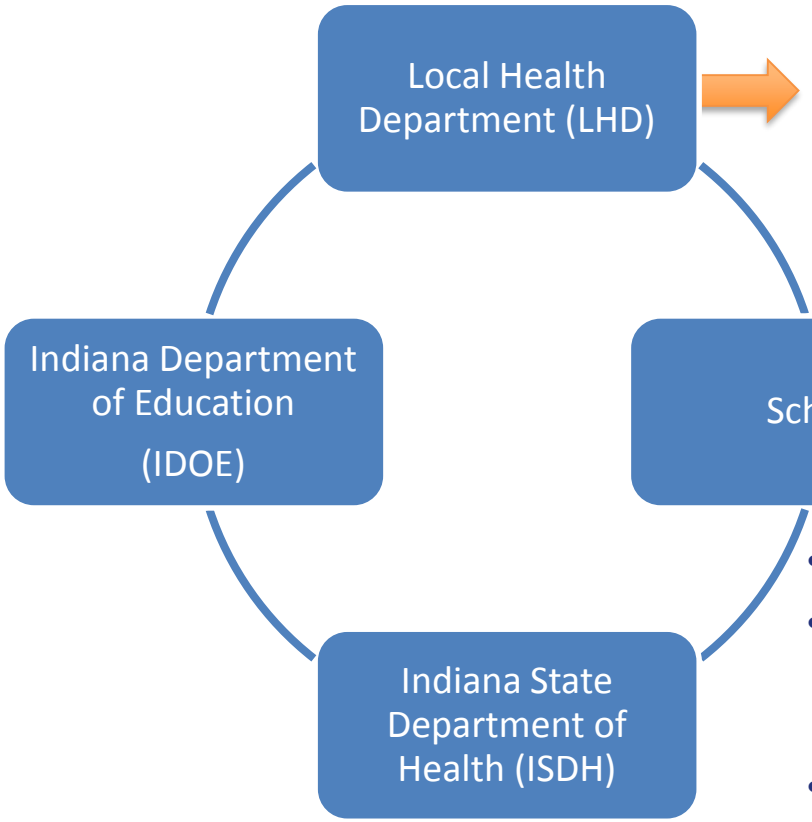

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- Assist with control measures
- Work with IDOE to ensure educational requirements met

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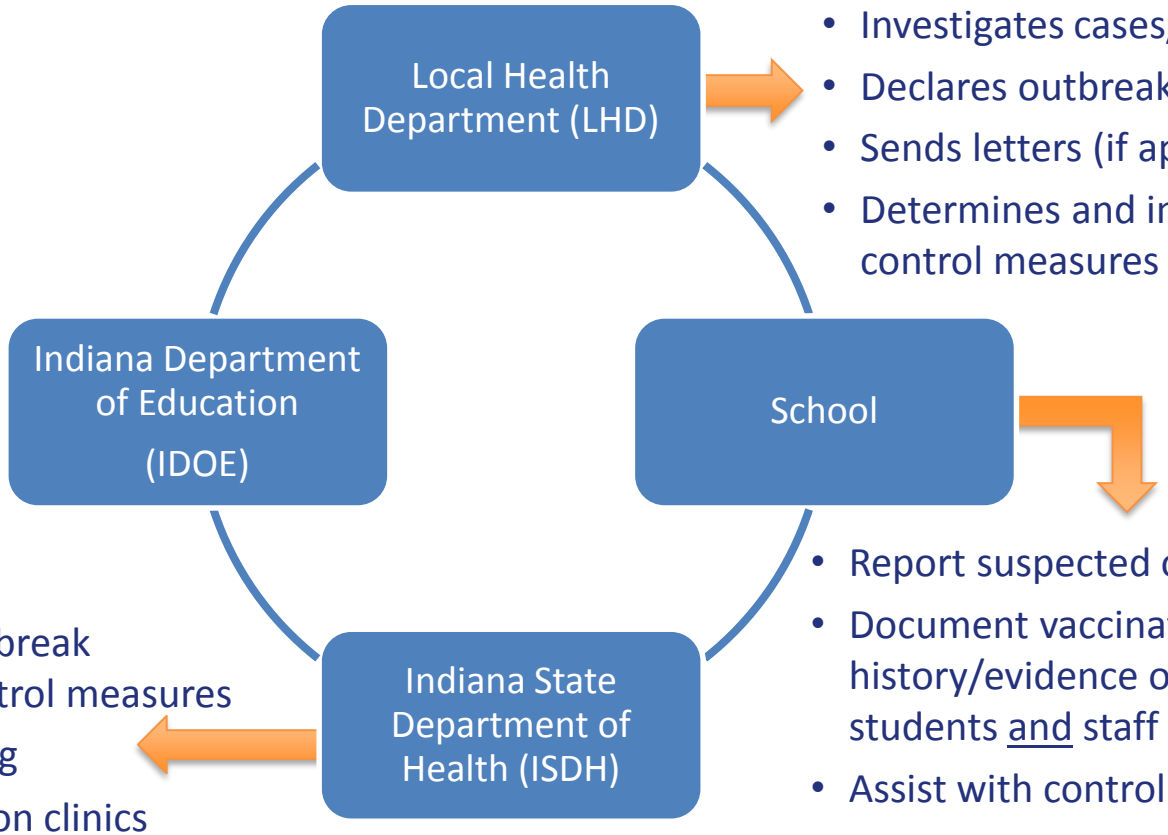

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- Assist with lab testing
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- Assist with communication

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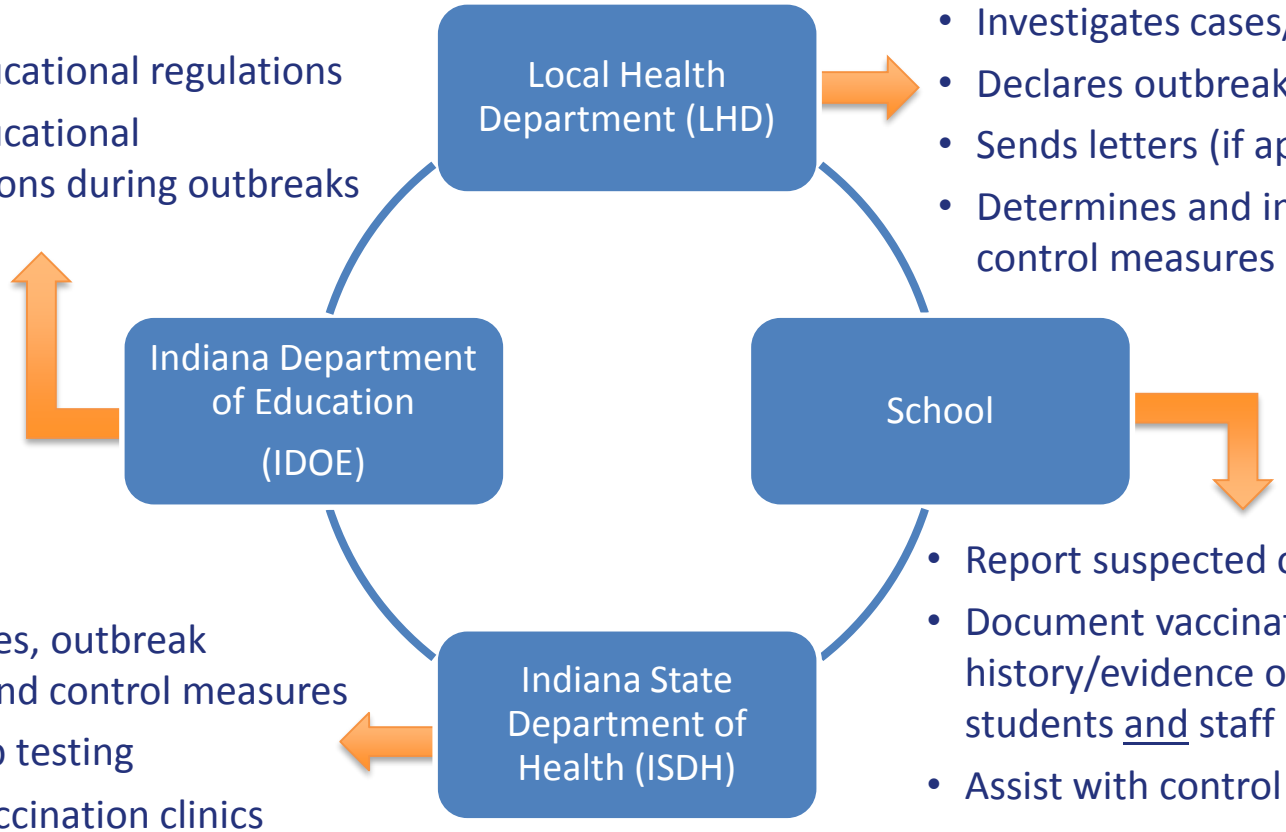

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- Advise on cases, outbreak declaration, and control measures
- Assist with lab testing
- Assist with vaccination clinics
- Assist with communication

- Advise on educational regulations
- Advise on educational accommodations during outbreaks

Notes on Disease Reporting: Responsibilities

Physicians, hospitals and labs

- Required to report cases of reportable conditions and outbreaks to LHD or ISDH per Indiana Communicable Disease Rule

Schools

- Not required, but encouraged to report cases of reportable conditions
- Cases in excess of what is normally expected or with a common connection should be reported **immediately**.
- Early reporting ensures more time to prepare for outbreaks.

Notes on Disease Reporting: School Reporting

Reportable Conditions

- Inform parent that their child has a reportable disease, which should have been reported to the LHD by their health care provider.
- School just following up and will report to local health department.
  - Will provide child's name, diagnosis, and parent contact information
- Parent will most likely receive a call from LHD personnel.

Non-reportable Conditions

- School may inform LHD of number of cases.
- School does not need to report personally identifiable information.
- School does not need to notify parent.

Reportable conditions list available at: https://www.in.gov/isdh/25366.htm

Notes on Disease Reporting: HIPAA and FERPA

HIPAA

- ISDH/LHDs fall under HIPAA public health exemption - may receive medical or epidemiological information without prior written consent

FERPA

- "Health or safety emergency exemption"
- Permits school officials to disclose personally identifiable information (PII) from education records without consent to appropriate parties only when there is an actual, impending, or imminent emergency
- Schools have discretion to determine what constitutes a health or safety emergency
- Exemption temporally limited to the emergency
- Consult IDOE with any concerns about sharing student PII

Vaccine-Preventable Disease Outbreaks in School Settings

- Varicella (chickenpox)
- Mumps
- Pertussis
- Measles

Is it an outbreak?

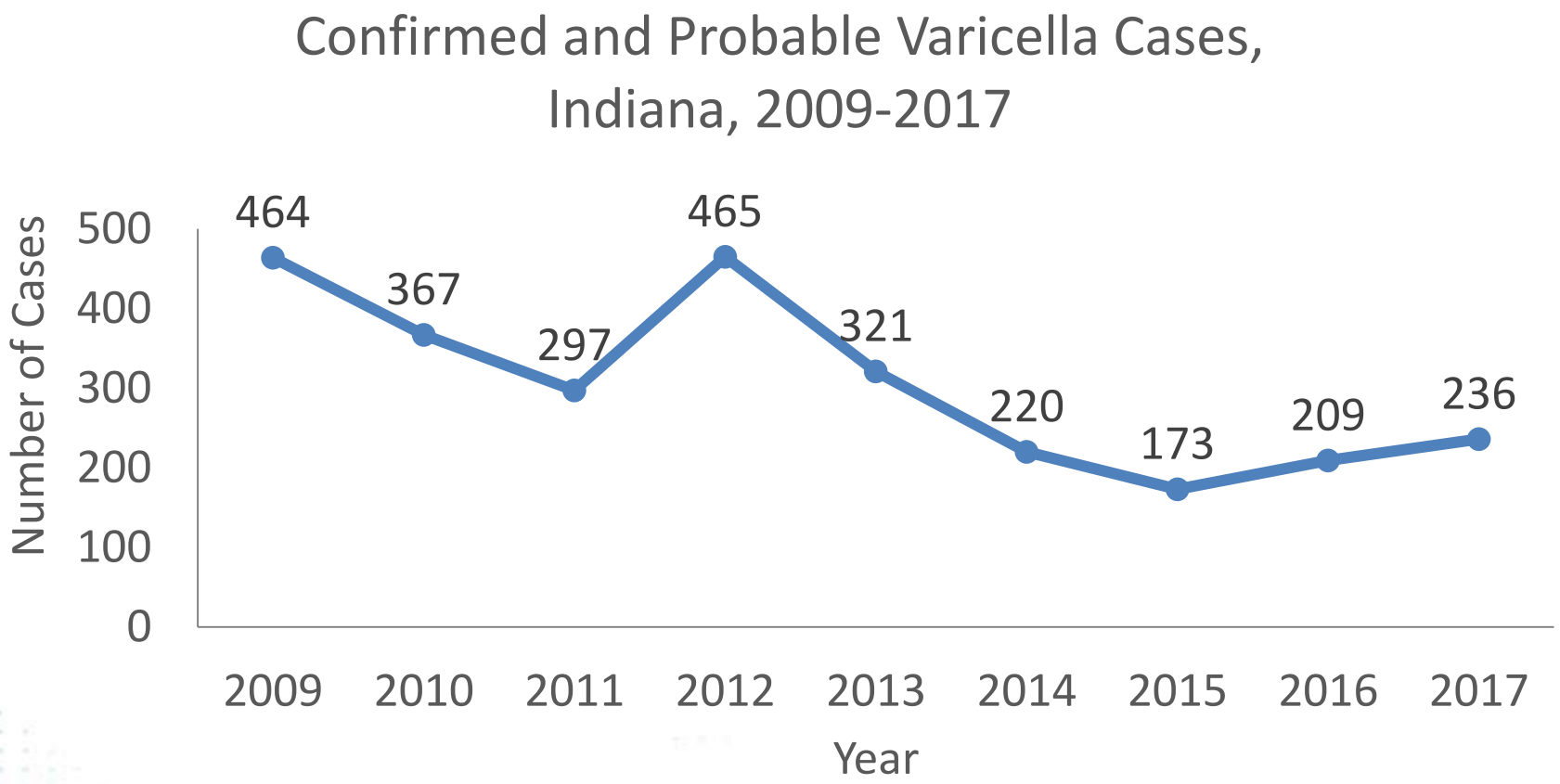
Disease	Outbreak Threshold
Varicella (Chickenpox)	Cases <13 years: 5 epi-linked cases Cases ≥13 years: 3 epi-linked cases *Must reside in two separate households.
Mumps	3 epi-linked cases (with at least 1 lab confirmed case)
Pertussis	No specific threshold
Measles	1 case

Varicella (Chickenpox)

- 236 cases in 2017
- Three outbreaks declared in 2018 to date
- Transmission:
  - Airborne droplets, respiratory secretions, or lesion fluid
- Challenges:
  - "Breakthrough" disease in previously vaccinated individuals
  - Reporting gaps

Source: CDC Public Health Image Library

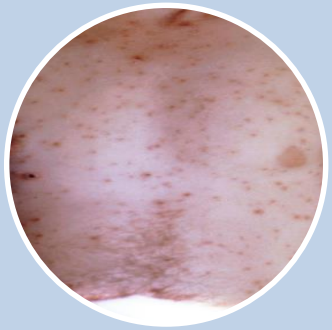
Indiana Varicella Cases



Unvaccinated Case

vs.

Breakthrough Case



200-500 lesions

Mostly vesicular

2-4 “crops” of lesions

Fever, malaise

<50 lesions

Atypical appearance

Few or no vesicles

Less contagious

Source: CDC Public Health Image Library

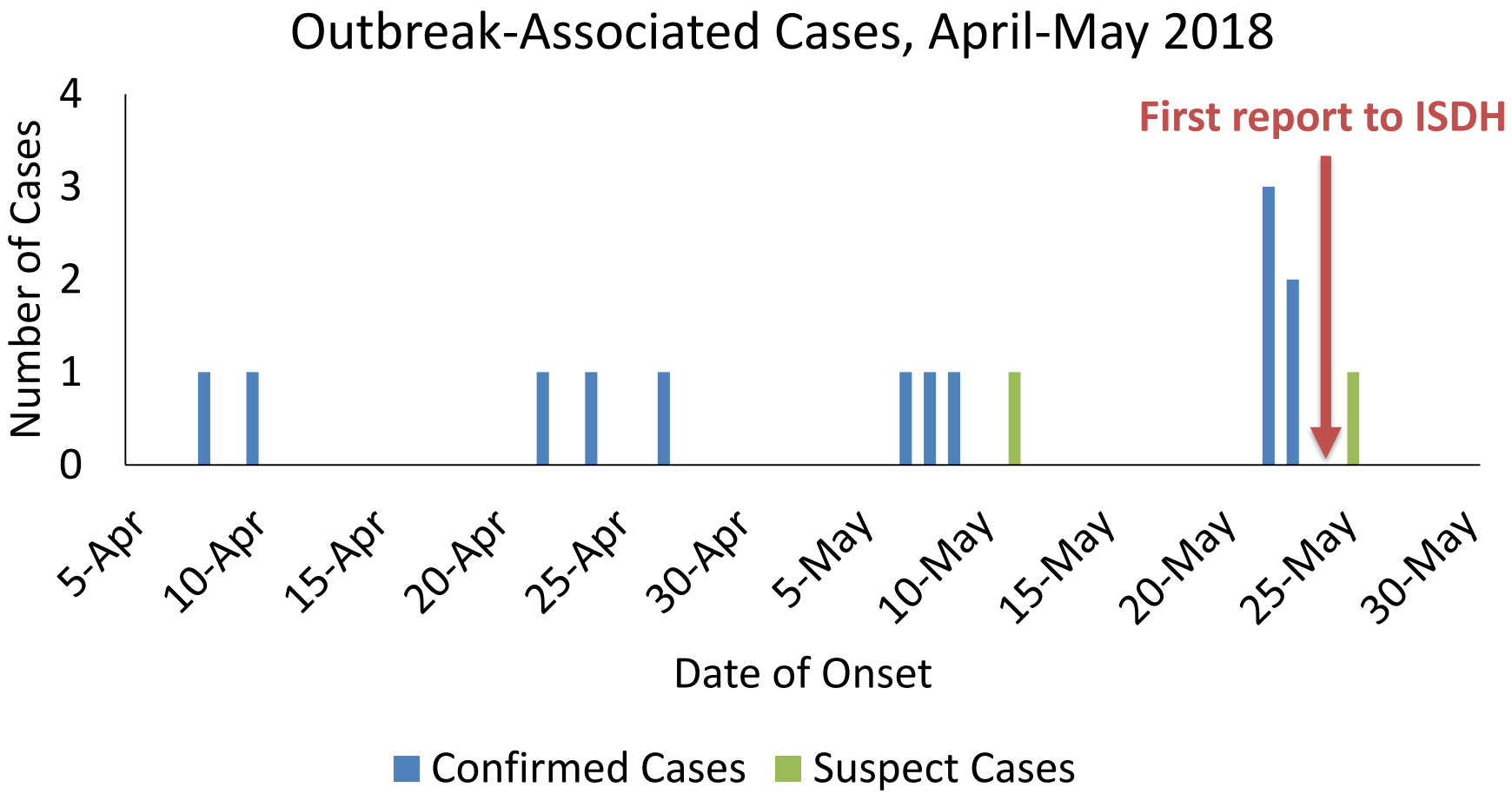
Diagnosing Breakthrough Varicella

Source: CDC Public Health Image Library

Diagnosing Breakthrough Varicella

Source: CDC Public Health Image Library

Varicella – Reporting Challenges



Varicella – Control Measures

- Case Management:
  - Exclude cases from school until all lesions crust over OR
  - In the case of mild disease: exclude until lesions fade & no new lesions appear in a 24-hour period
- Prophylaxis of exposed contacts may provide some protection against disease:
  - Vaccination within 5 days of exposure **OR**
  - Varicella immune globulin within 96 hours of exposure (for individuals who can't receive vaccine)
- Outbreak Threshold:
  - Cases <13 years old: 5 or more
  - Cases ≥13 years old: 3 or more
  - Cases must be epi-linked and reside in at least two separate households

Varicella – Control Measures

Single Cases vs. Outbreak

Typically, just notify high-risk individuals of exposure:

- Pregnant women
- Immunocompromised individuals

Letters or school-wide notification usually not necessary

Vaccination as needed

Identify contacts without acceptable documentation of immunity:

- 2 documented doses of vaccine
- Lab evidence of immunity
- Provider-verified history of disease
- Birth in the U.S. before 1980

Exclude susceptible contacts for 21 days following rash onset of last case

Vaccination as needed

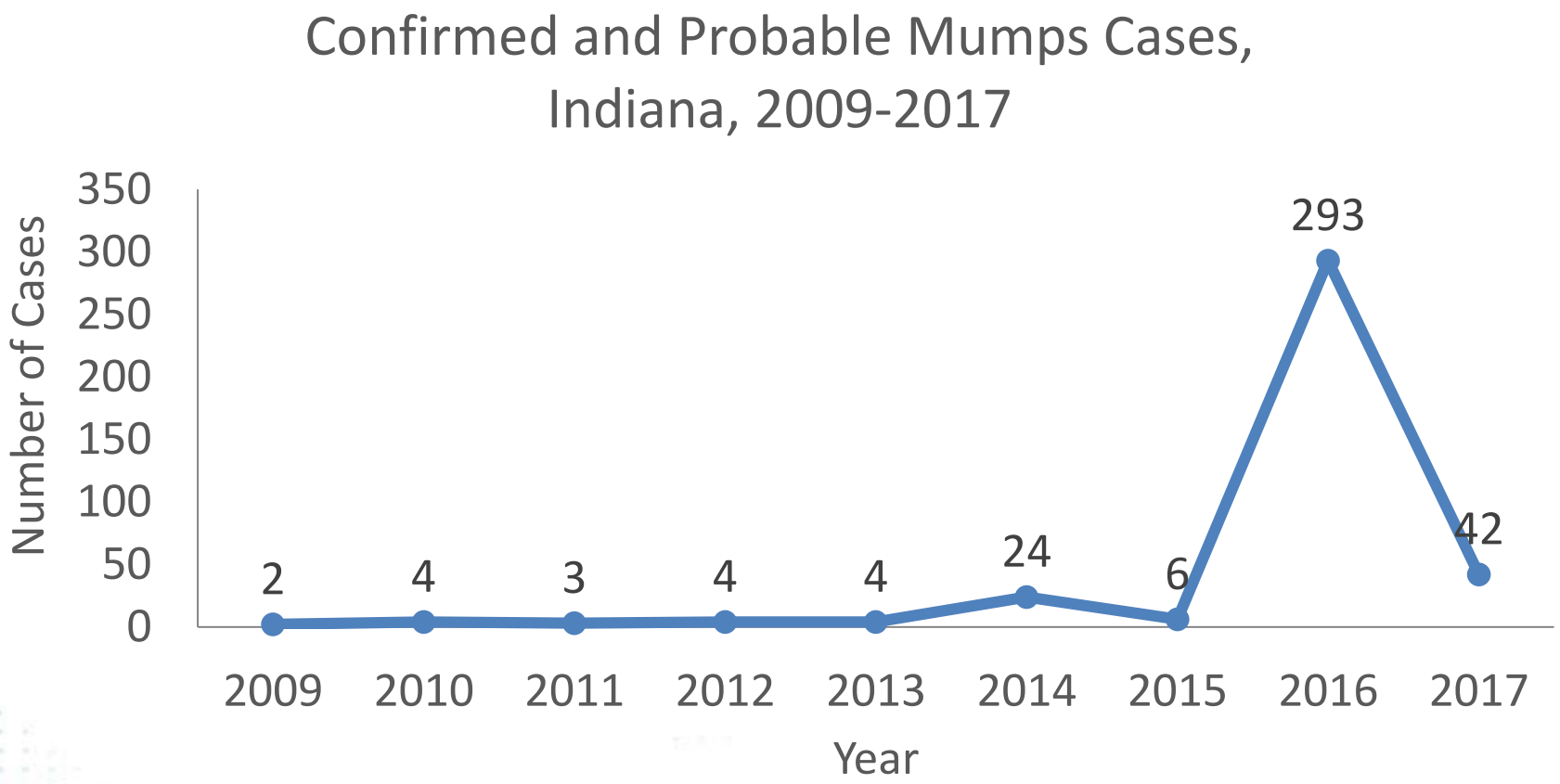
Determined by Local Health Department

Mumps

- 42 cases in 2017
- Transmission:
  - Contact with saliva or respiratory secretions
- Outbreak Threshold:
  - 3 epi-linked cases
  - At least one case must be lab-confirmed
- Case Management:
  - Exclude cases for 5 days after onset of swelling

Source: CDC Public Health Image Library

Indiana Mumps Cases



Mumps – Control Measures

Single Cases vs. Outbreak

Typically, just notify high-risk individuals of exposure:

- Pregnant women
- Immunocompromised individuals

Prophylaxis not applicable, but vaccination may protect against future exposure.

Identify contacts without acceptable documentation of immunity:

- Documentation of mumps vaccine
- Lab evidence of immunity
- Birth in the U.S. before 1957

Exclude susceptible contacts from days 9-25 following exposure

Vaccination as needed

Determined by Local Health Department

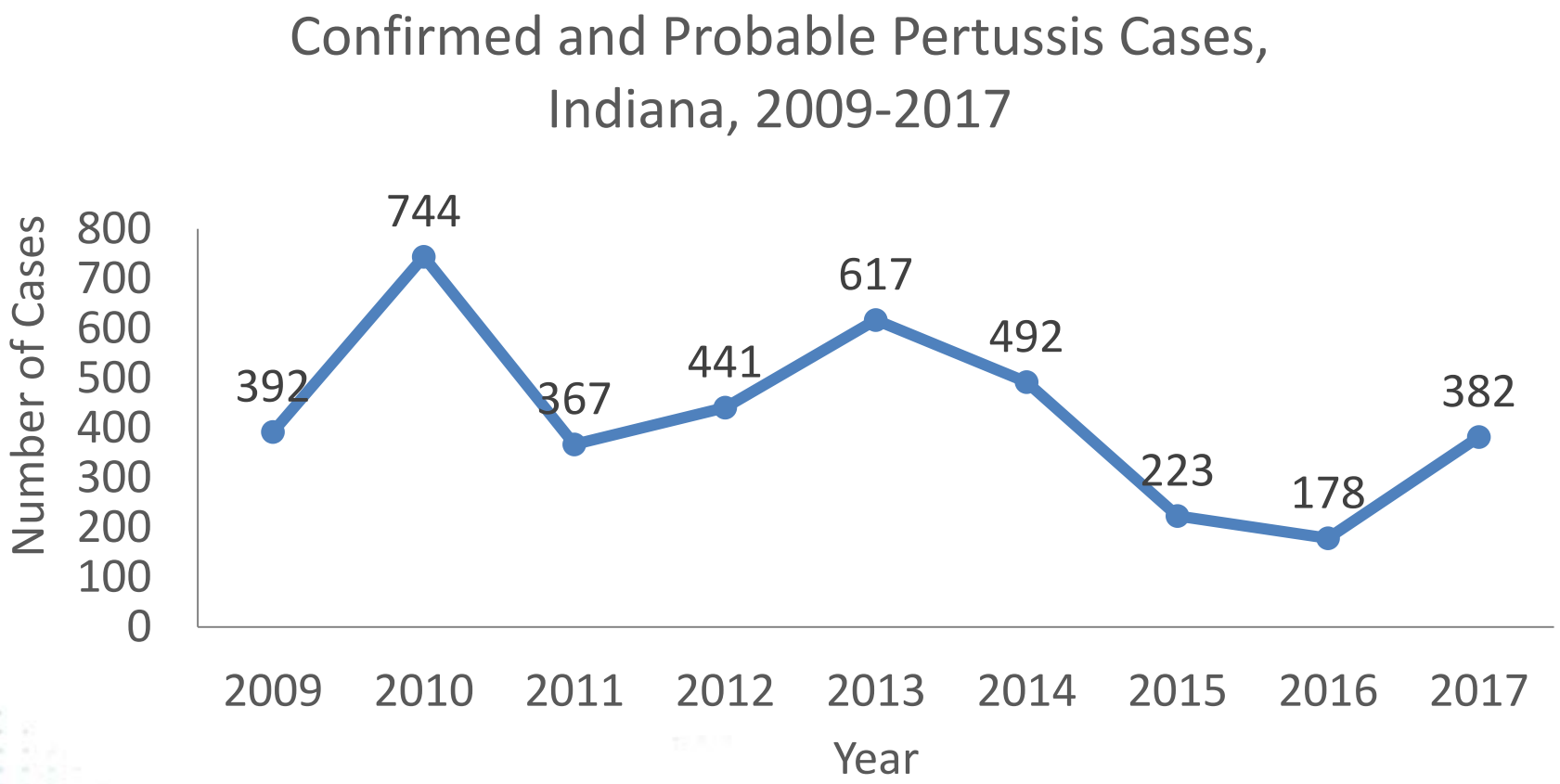
Pertussis (Whooping Cough)

- 382 cases in 2017
- Transmission:
  - Respiratory droplets
- Outbreak Threshold:
  - Cases in excess of what is expected
  - Determined on case-by-case basis
- Case Management:
  - Exclude infected persons until:
    - 5 days of effective antibiotic treatment completed

    OR
    - 21 days if not treated

Source: CDC Public Health Image Library

Indiana Pertussis Cases



Pertussis Control Measures

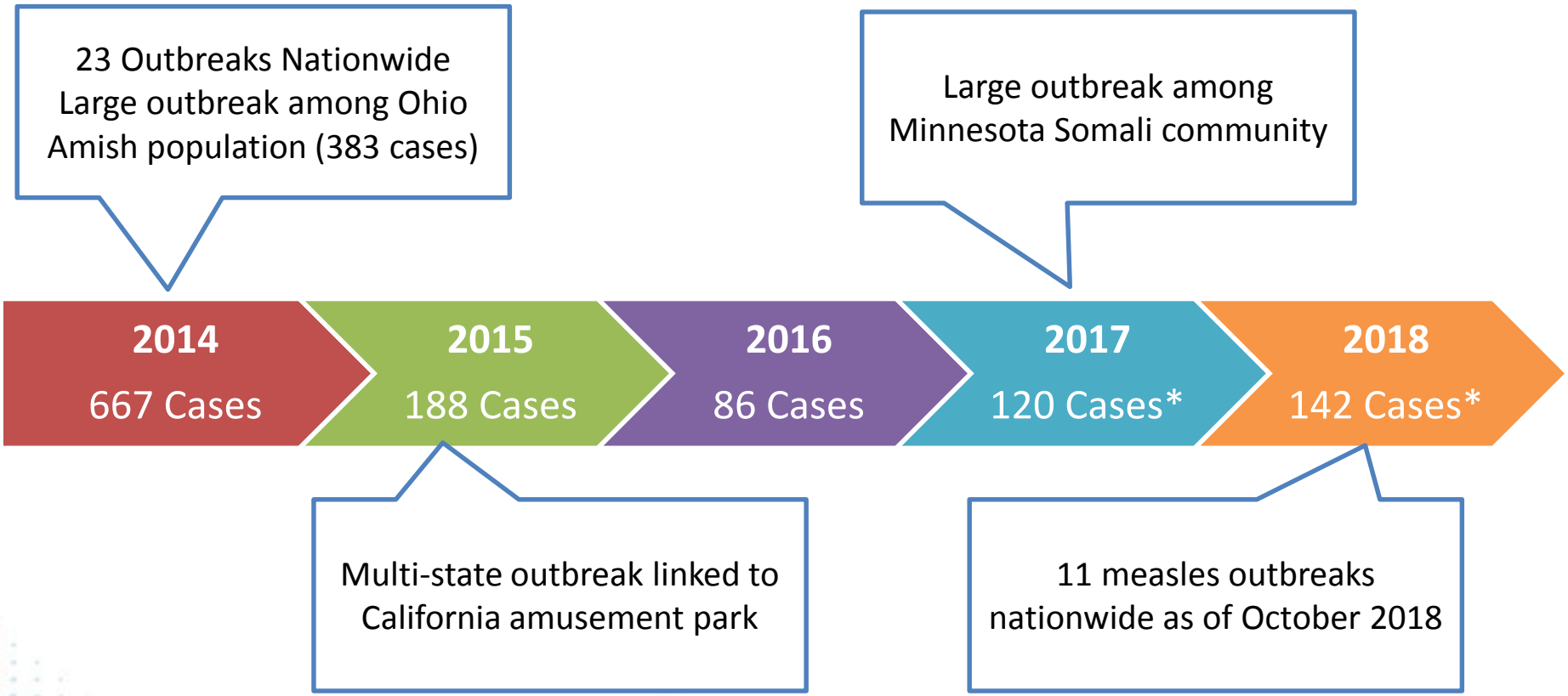
- No specific outbreak measures in CD rule
- Vaccination clinic if needed
- No exclusion of healthy, susceptible individuals required
- Prevention for contacts:
  - Antibiotic prophylaxis for all household contacts
  - Vaccinate unvaccinated/incompletely vaccinated contacts (for protection against future exposure)

Measles

- Rare:
  - Usually 1-2 cases per year in Indiana
- Transmission
  - Airborne Droplets
- No endemic transmission in US, but outbreaks still occur

Source: CDC Public Health Image Library

Notable Measles Outbreaks Nationwide



Source: CDC. Data are preliminary and subject to change.
*Case counts for 2017 are as of Dec. 30, 2017. Case counts for 2018 are as of Oct. 6, 2018.

Measles Control Measures

- A single case is treated as an outbreak.
- Exclude infected individual for 4 days after appearance of rash.
- Vaccination/post-exposure prophylaxis as needed
  - Vaccination within 72 hours of exposure **OR**
  - Immune globulin with 6 days
- Exclude susceptible contacts from outbreak setting until 21 days after onset of last case.
- Acceptable proof of immunity:
  - Birth before 1957
  - Two documented doses of measles vaccine
  - Lab confirmation of previous measles infection
  - Lab evidence of immunity

VPD Outbreaks in School Settings: General Notes

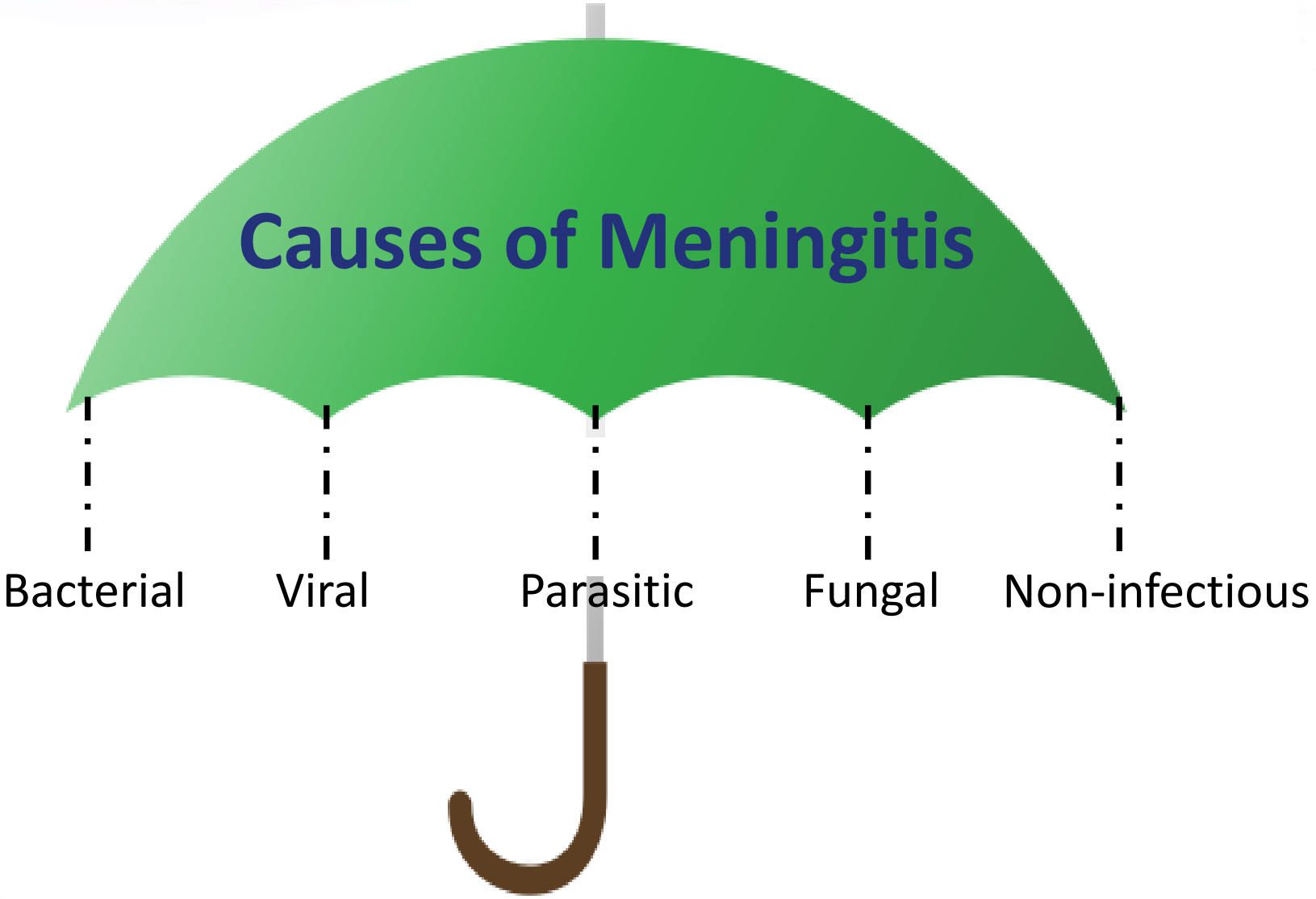
- Rules regarding documentation of immunity and exclusions apply to students **and** staff.
- Students/staff without evidence of immunity may return to school immediately after receipt of vaccine.
- Exclusion periods may be extended as new cases are identified.
- Vaccination clinics may be offered by the LHD in coordination with ISDH if deemed necessary.

Preparing for an Outbreak

- Compile documentation of vaccination/ immunity on all students **and staff**
- Review immunization records to identify susceptible students and staff who would need to be excluded in the event of an outbreak
- Build a relationship with your local health department
- Promptly report cases of reportable diseases and suspected outbreaks to your local health department and/or ISDH

Other Conditions of Concern

- Meningitis
- Influenza
- Common non-reportable illnesses


Causes of Meningitis
Bacterial
Viral
Parasitic
Fungal
Non-infectious

Meningococcal Disease

- Caused by *N. meningitidis*
- Severe illness
  - Fatal in 10-15% of cases, even with treatment
- Spread by direct contact with saliva or respiratory droplets
- Prophylaxis required for close contacts:
  - Household contacts
  - Contacts with direct exposure to saliva/respiratory droplets

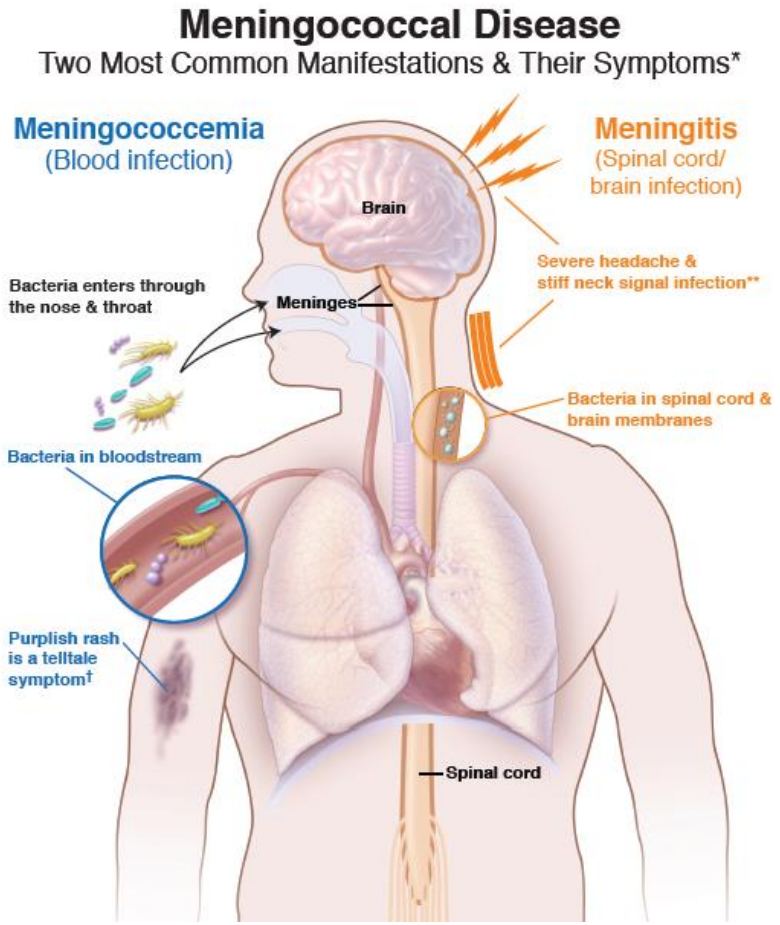
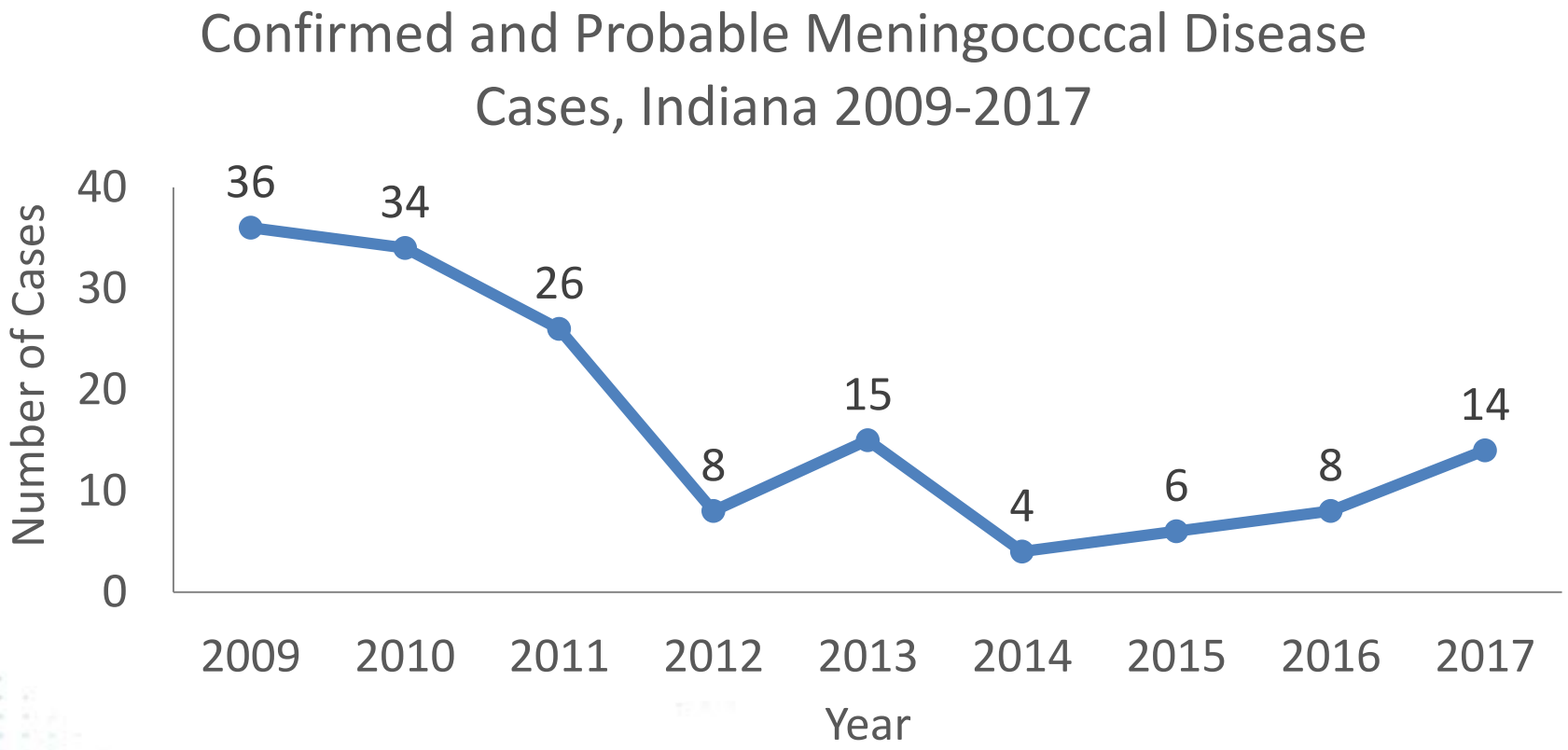


Image source: National Meningitis Association

Indiana Meningococcal Disease Cases



Meningococcal Disease Control

Prophylaxis

- Most school contacts are **not** considered high-risk
- Local health department will advise on need for prophylaxis

Communication

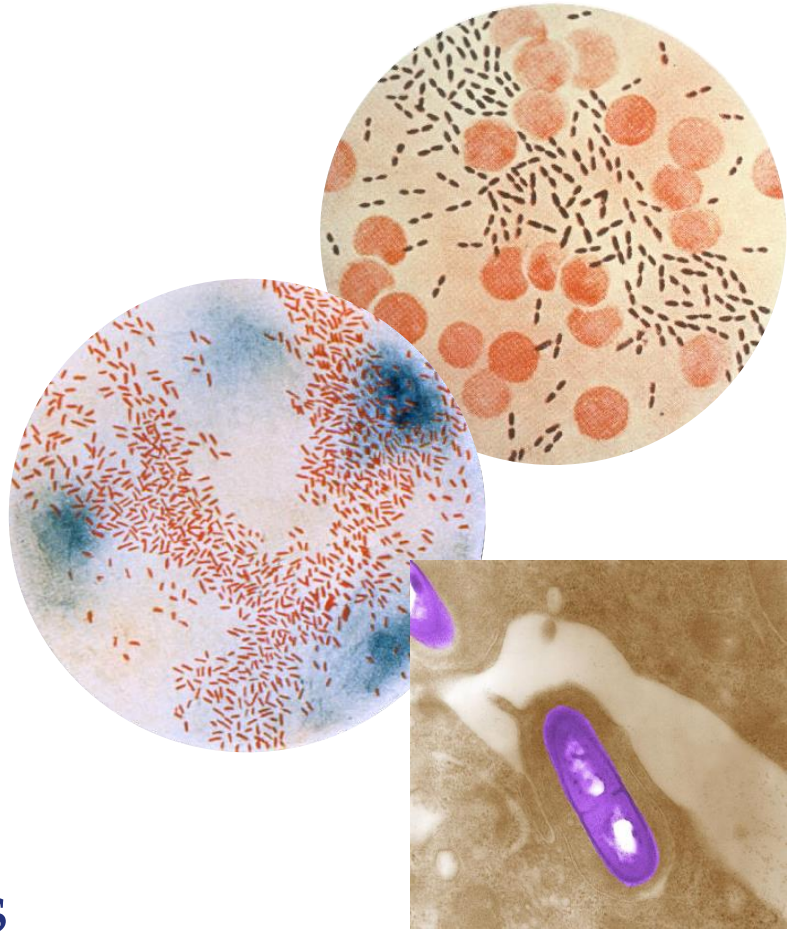
- Important for addressing concerns among parents, staff, and community
- Consult public health regarding communication needs

Outbreaks

- Outbreaks are rare.
- Only ≈2% of cases are outbreak-related.
- May consider mass vaccination in outbreak situations
- Mass prophylaxis not routinely recommended

Other Bacterial Meningitis

- Other common causes:
  - *Streptococcus pneumoniae*
  - *Haemophilus influenzae*
  - *Listeria monocytogenes*
- Usually do **not** require prophylaxis of contacts
- Public health can assist with communication needs



Source: CDC Public Health Image Library

Aseptic/Viral Meningitis

- Multiple potential causes:
  - Enteroviruses
  - Herpes viruses (including varicella-zoster virus)
  - Mumps virus
  - Arboviruses
- Prophylaxis generally not applicable
- Public health can assist with communication, if needed

Influenza

Encourage basic prevention:

- Vaccination
- 3 C's:
  - **Clean**: Frequent, proper handwashing
  - **Cover:** coughs and sneezes with elbow, upper sleeve, or tissue
  - **Contain**: Ill students and staff should stay home

Influenza

- Report excessive absenteeism (≥20%) to IDOE and local health department
  - Reporting of ≥20% absenteeism to IDOE is mandatory
  - Does **not** require automatic closure of school
  - Once report is received, IDOE will call to advise school on next steps

Influenza

- Consult local health department in situations of excessive absenteeism or suspected outbreaks.
- ISDH may offer to test nasal/NP swabs for ill students during suspected outbreaks.

Common Non-Reportable Illnesses

- Examples:
  - Enterovirus (hand, foot, and mouth disease)
  - Parvovirus (fifth disease)
  - Strep throat or scarlet fever
- Single cases not reportable
- Good practice to notify public health if:
  - Observing more cases than expected OR
  - Cases have a common connection (e.g. same sports team)

Key Takeaways

- The **local health department** is the public health decision-making authority
  - Declares outbreaks
  - Determines what control measures are needed
- Exclusions for healthy susceptible individuals apply only in outbreak situations.
- Early reporting from schools can allow for more timely response.

Key Takeaways

- Public health is here to help!
- ISDH and local health departments can:
  - Advise on prevention and control measures
  - Assist with communication needs
  - Assist with outbreak control measures (e.g. vaccination clinics)

Resources

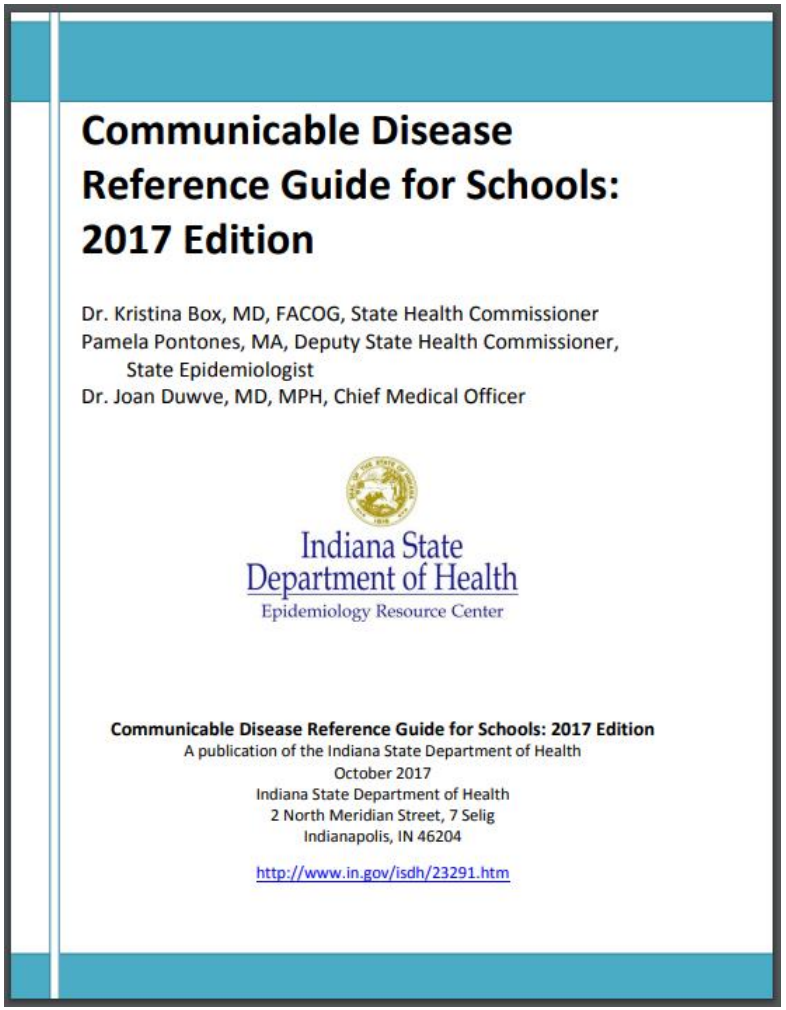
ISDH Communicable Disease Reference Guide for Schools:

https://www.in.gov/isdh/23291.htm

ISDH Epidemiology Resource Center (ERC):

https://www.in.gov/isdh/25154.htm

- Fact sheets
- Disease-specific information



QUESTIONS?

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Contact Information

ISDH Epidemiology Resource Center

Phone: 317-233-7125

Lauren Milroy, MPH

Vaccine-Preventable Disease Epidemiologist

lmilroy@isdh.in.gov

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- Varicella (chickenpox), shingles, meningococcal disease, aseptic/viral meningitis, enterovirus/HFMD, fifth disease, *Haemophilus influenzae,* Group A *Streptococcus*

Indiana State Department of Health

Contact Information

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Vaccine-Preventable Disease Epidemiologist

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- Measles, mumps, pertussis, rubella, pneumococcal disease

Sara Hallyburton, MPH

Respiratory Epidemiologist

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- Influenza, RSV, other respiratory illnesses

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