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Acute and Communicable
Disease Prevention

10 Steps of Outbreak Investigation

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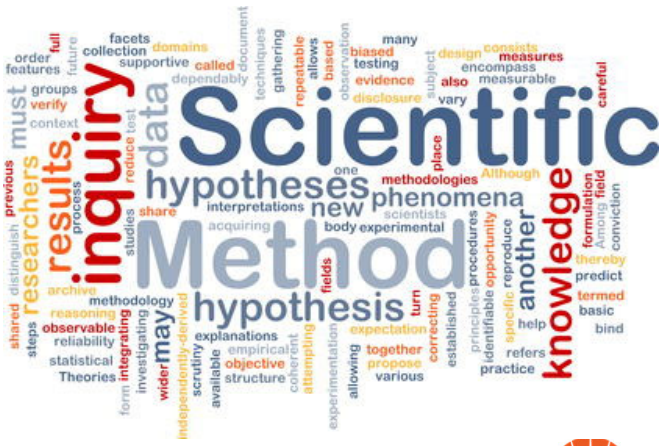
Why do we investigate outbreaks?



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Why do we investigate outbreaks?

- Determine cause of disease
- Identify source of infection
- Determine mode of transmission
- Understand who is at risk
- Control/prevention of additional illnesses

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1. Establish Existence of Outbreak

- Surveillance data
- Contact health care providers, neighboring counties, states, or national data

Don't be fooled by:

- New lab test (more sensitive)
- Increase in population size
- Increased reporting or change in how reported
- Increased awareness of disease in public

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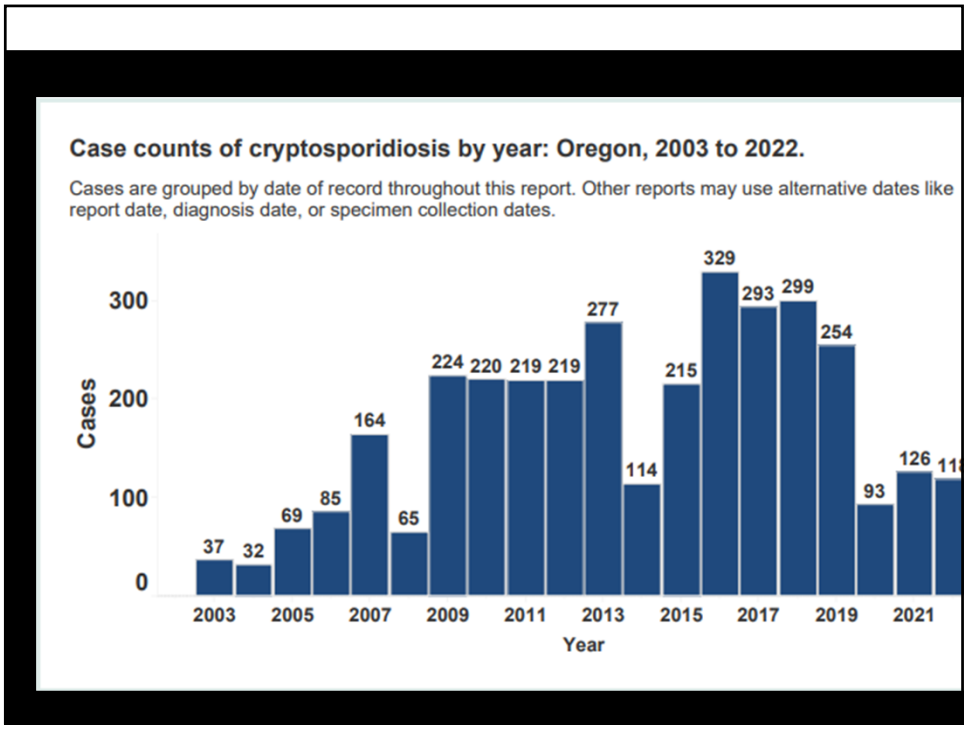

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2. Verify the Diagnosis

- Contact labs, providers and case patients
- Collect laboratory specimens
- Don't spread rumors!

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3. Define and Identify Cases

- Case definition: person, place, time and clinical information
- Make a line list

GASTROENTERITIS CASE LOG

County _____ Facility _____ Outbreak # _____

Setting of exposure: ☐ Nursing home ☐ Day care ☐ School ☐ Hospital ☐ Other _____

IDENTIFIERS						ONSET		SIGNS & SYMPTOMS								OUTCOME						
List all hospital patients, preschoolers, students, residents, and staff with any gastrointestinal illness	age	sex	patient, preschooler, resident, staff, or student	room number	sick day care (staff only)	first vomiting or diarrhea	time	nausea	vomiting	diarrhea	3+ loose stools in 24 hrs	fever (only if documented)	cramps	bloody diarrhea	duration of V or D	#days of work missed*	lab specimen collected	seen by MD	sent to ER	hospitalized overnight	died
name	years	F or M	codes below		see below	date (m/d)	am pm	check all that apply								hours	days					

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4. Descriptive Epidemiology

- Characterize the outbreak in terms of person place and time
- Make epidemic curve
- Use maps to visualize in space and time

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“Person” Characteristics

- Age
- Sex
- Race
- Ethnicity
- Medical status
- Exposures
- Occupation

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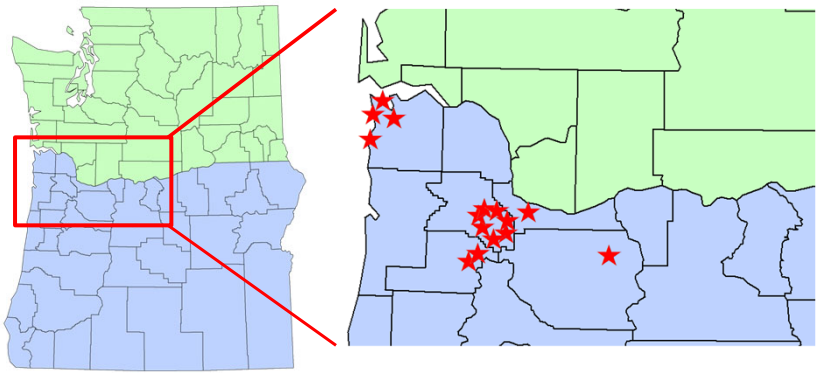
Residences of Cases



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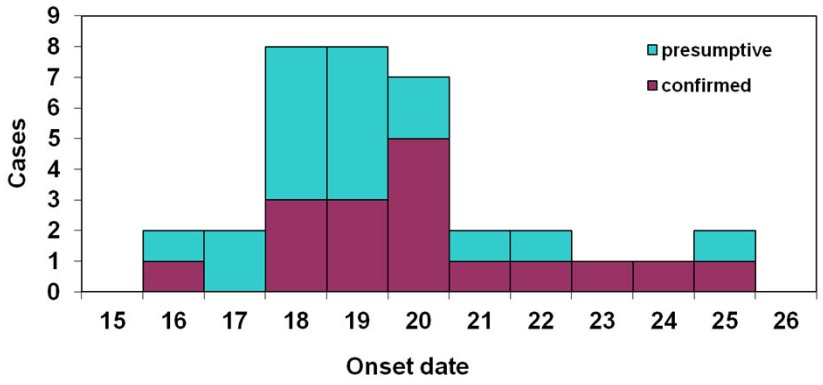
Epidemic Curve



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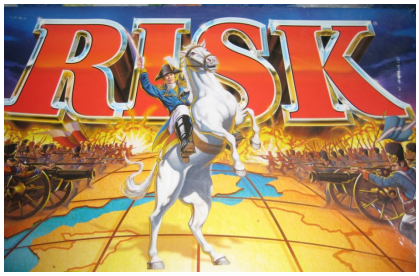
5. Determine who is at risk



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6. Develop Hypotheses

- Use descriptive epi
- Use historical information
- Source of agent – usual reservoir
- Mode of transmission
- Pertinent exposure
- Talk to patients

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7. Evaluate Hypotheses

- Design a study and questionnaire
- Use analytic epidemiology

Cohort
Case-control
Case-Case

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Cohort Study

- How are subjects selected?
  - Not based on illness
  - Based on other commonality
- When would you use this type of study?
  - Small, well-defined population
- Can calculate risks and relative risks

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Case-Control Study

- How are subjects selected?
  - Based on illness
- When would you use this type of study?
  - No small, well-defined population
- Cannot calculate risks and relative risks
  - Must use odds and odds ratios as surrogates

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8. Reconsider Hypotheses

- Do data make sense?
- If not, may need to do another study or involve further lab or environmental tests

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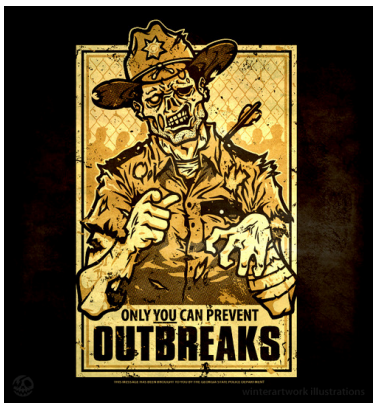
9. Implement Control Measures

- Control this outbreak
- Prevent future outbreaks



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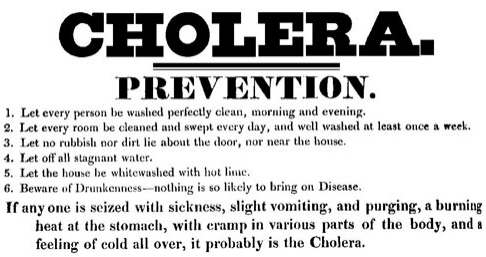
Control Measures

- Recall product
- Administer prophylaxis/vaccine
- Make environmental changes



CHOLERA.

PREVENTION.

1. Let every person be washed perfectly clean, morning and evening.
2. Let every room be cleaned and swept every day, and well washed at least once a week.
3. Let no rubbish nor dirt lie about the door, nor near the house.
4. Let off all stagnant water.
5. Let the house be whitewashed with hot lime.
6. Beware of Drunkenness—nothing is so likely to bring on Disease.

If any one is seized with sickness, slight vomiting, and purging, a burning heat at the stomach, with cramp in various parts of the body, and a feeling of cold all over, it probably is the Cholera.

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10. Communicate Findings

- Share locally, state, national and international
- Write up findings
- Present findings
- Use media

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Steps of an Outbreak Investigation

1. Establish the existence of an outbreak
2. Verify the diagnosis
3. Define and identify cases
4. Perform descriptive epidemiology
5. Determine who is at risk
6. Develop hypotheses
7. Evaluate hypotheses
8. Perform additional studies
9. Implement control and prevention measures
10. Communicate findings

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