

Introduction to Communicable Disease Surveillance and Investigation in North Carolina



Technical Aspects of Outbreak Investigations

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Learning Objectives

- Compare the terms surveillance case definition vs. outbreak case definition
- Line lists: Demographics, symptoms, labs, exposures, etc.
- Purpose of obtaining the earliest date of symptom onset



Surveillance Case Definition vs. Outbreak Case Definition

What is a case definition?

Surveillance Case Definition vs. Outbreak Case Definition

Duties of Public Health

- Reporting and surveillance of reportable conditions
- Outbreak response to reportable conditions and other infectious agents



Surveillance Case Definition vs. Outbreak Case Definition

Duties of Public Health

- Reporting and **surveillance** of reportable conditions
- **Outbreak response** to reportable conditions and other infectious agents



Surveillance Case Definition vs. Outbreak Case Definition

Surveillance

Must be maintained
daily both during
times of outbreaks and also
when there are no
outbreaks occurring

Outbreaks

Must be addressed
as each outbreak
is identified



Surveillance Case Definition vs. Outbreak Case Definition

Surveillance Case Definition

- Fixed
 - Changes only occur after approval from Public Health Commission
- Usually has a laboratory and/or clinical component
- Classifications include confirmed, probable, and in some instances, suspect
- Entered into NC EDSS

Outbreak Case Definition

- Not-fixed
 - Changes can be made often during each outbreak based on new information obtained
- Must have a component for person, place, and time
- Classifications can include confirmed, probable, and suspect.
- May or may not get entered into NC EDSS

Surveillance Case Definition vs. Outbreak Case Definition

Surveillance Case Definition (Current)	Outbreak Case Definition (Example)
<p data-bbox="478 570 743 613" style="text-align: center;">Salmonella</p> <p data-bbox="222 643 485 686">Laboratory</p> <ul data-bbox="233 711 1010 992" style="list-style-type: none">• Confirmed: isolation from clinical specimen• Suspect: detection from clinical specimen (non-culture based method) <p data-bbox="222 1019 663 1063">Case Classification</p> <ul data-bbox="233 1088 972 1333" style="list-style-type: none">• Confirmed: lab=confirmed• Probable: Clinical illness + epi-link to conf case/risk grp• Suspect: lab=suspect	<p data-bbox="1352 570 1617 613" style="text-align: center;">Salmonella</p> <p data-bbox="1094 699 1850 919" style="text-align: center;"><i>“A [___] county resident experiencing diarrhea or vomiting within 7 days of eating at [___] food establishment.”</i></p> <p data-bbox="1094 1000 1535 1044">Case Classification</p> <ul data-bbox="1104 1068 1728 1297" style="list-style-type: none">• Confirmed: case def (+) isolation of salmonella• Probable: case def (–) isolation of salmonella

OUTBREAK CASE DEFINITION (ACTIVITY)



Surveillance Case Definition vs. Outbreak Case Definition

Notification of Illness from Environment



Restaurant

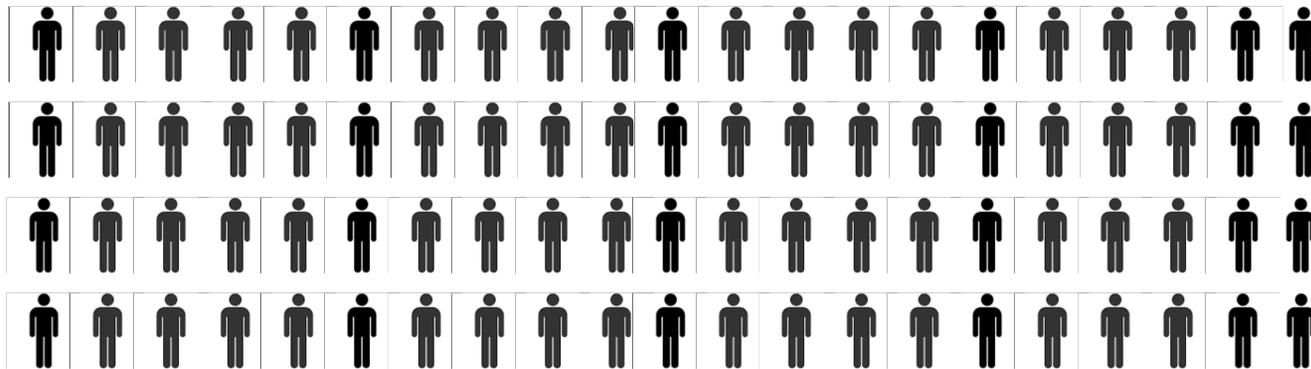


Childcare center



Long term care facility

Surveillance Case Definition vs. Outbreak Case Definition



Surveillance Case Definition vs. Outbreak Case Definition



**Your case definition determines
who goes in the box of people
you need to investigate further**

Surveillance Case Definition vs. Outbreak Case Definition



Person:

A resident of...with XYZ symptoms

A visitor to...with XYZ symptoms

A patron of...with XYZ symptoms

Surveillance Case Definition vs. Outbreak Case Definition



Surveillance Case Definition vs. Outbreak Case Definition



Time:

Since June 9th...

Within 7 days of consumption...

Between Sept 2 and Sept 19...

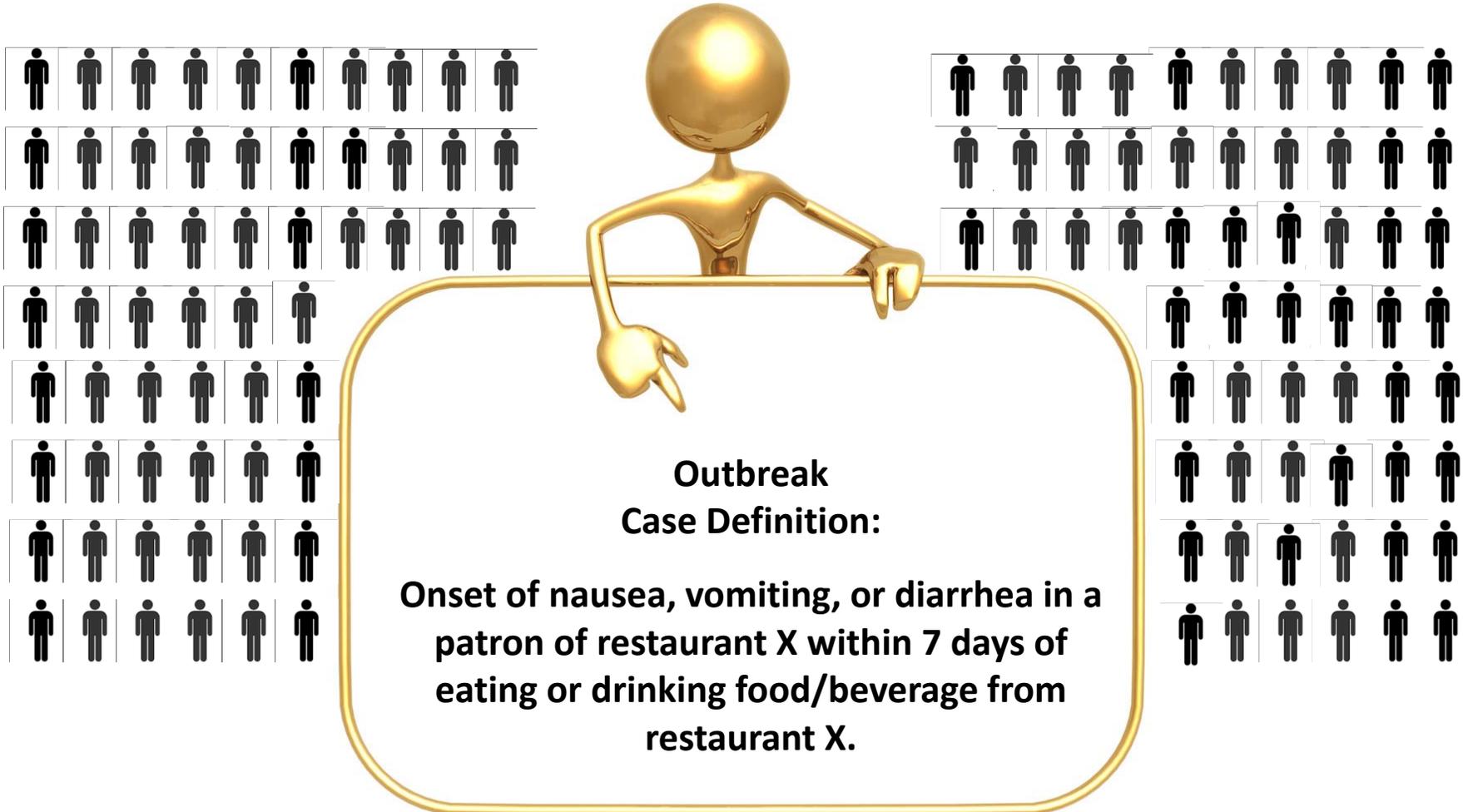
Surveillance Case Definition vs. Outbreak Case Definition



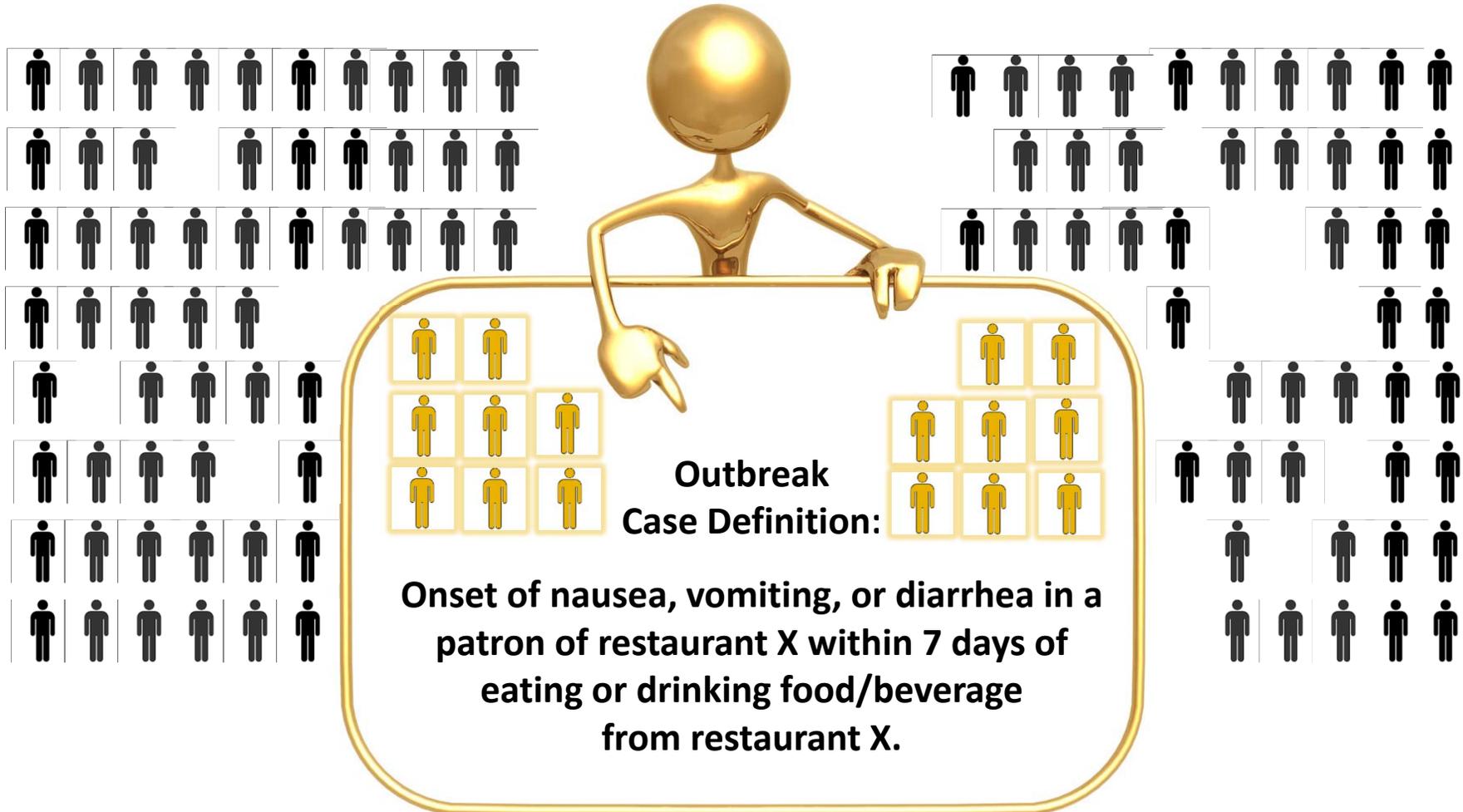
Outbreak Case Definition:

Onset of nausea, vomiting, or diarrhea in a patron of restaurant X within 7 days of eating or drinking food/beverage from restaurant X.

Surveillance Case Definition vs. Outbreak Case Definition



Surveillance Case Definition vs. Outbreak Case Definition



LINE LISTS



Line list

What is it?

- A list where each line represents an ill individual associated with an outbreak.

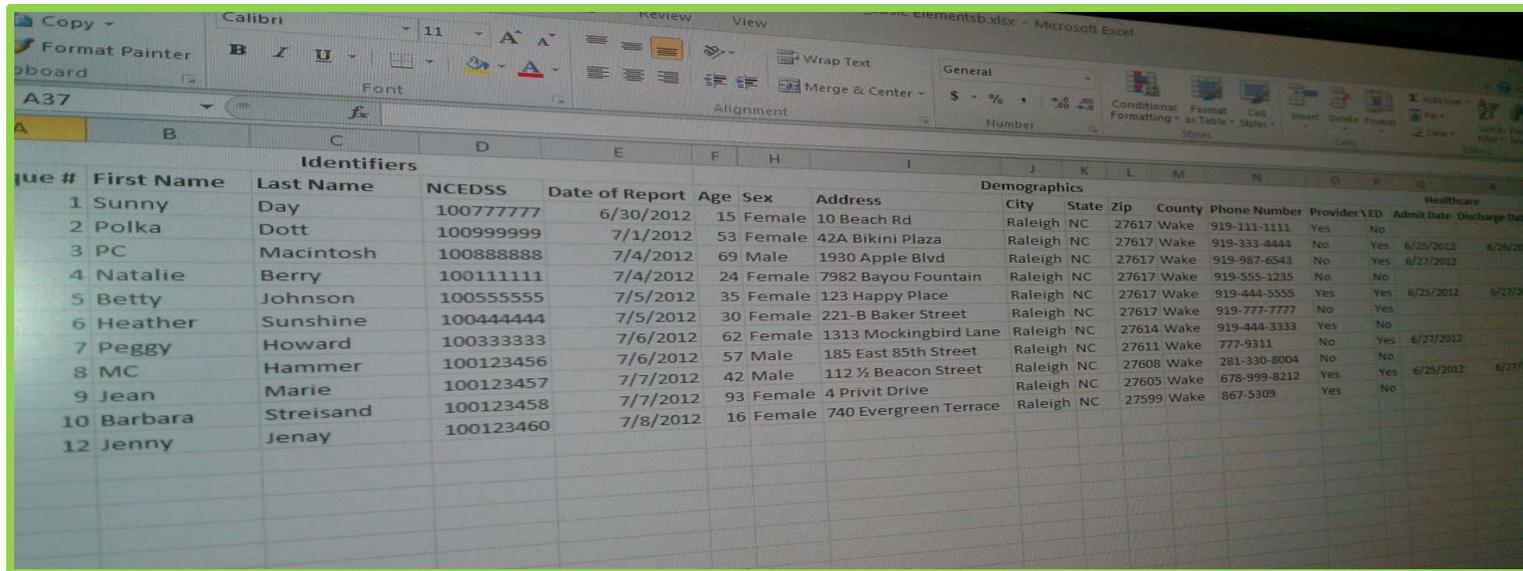
Why is it important?

- It helps organize multiple pieces of information in a format that allows you to easily summarize.



Line list: What is it?

A list where each line represents an ill individual associated with an outbreak.



Case #	First Name	Last Name	Identifiers	Date of Report	Age	Sex	Address	City	State	Zip	County	Phone Number	Provider	LED	Admit Date	Discharge Date
1	Sunny	Day	100777777	6/30/2012	15	Female	10 Beach Rd	Raleigh	NC	27617	Wake	919-111-1111	Yes	No		
2	Polka	Dott	100999999	7/1/2012	53	Female	42A Bikini Plaza	Raleigh	NC	27617	Wake	919-333-4444	No	Yes	6/25/2012	6/26/2012
3	PC	Macintosh	100888888	7/4/2012	69	Male	1930 Apple Blvd	Raleigh	NC	27617	Wake	919-987-6543	No	Yes	6/27/2012	
4	Natalie	Berry	100111111	7/4/2012	24	Female	7982 Bayou Fountain	Raleigh	NC	27617	Wake	919-555-1235	No	No		
5	Betty	Johnson	100555555	7/5/2012	35	Female	123 Happy Place	Raleigh	NC	27617	Wake	919-444-5555	Yes	Yes	6/25/2012	6/27/2012
6	Heather	Sunshine	100444444	7/5/2012	30	Female	221-B Baker Street	Raleigh	NC	27617	Wake	919-777-7777	No	Yes		
7	Peggy	Howard	100333333	7/6/2012	62	Female	1313 Mockingbird Lane	Raleigh	NC	27614	Wake	919-444-3333	Yes	No		
8	MC	Hammer	100123456	7/6/2012	57	Male	185 East 85th Street	Raleigh	NC	27611	Wake	777-9311	No	Yes	6/27/2012	
9	Jean	Marie	100123457	7/7/2012	42	Male	112 1/2 Beacon Street	Raleigh	NC	27608	Wake	281-330-8004	No	No		
10	Barbara	Streisand	100123458	7/7/2012	93	Female	4 Privit Drive	Raleigh	NC	27605	Wake	678-999-8212	Yes	Yes	6/25/2012	6/27/2012
12	Jenny	Jenay	100123460	7/8/2012	16	Female	740 Evergreen Terrace	Raleigh	NC	27599	Wake	867-5309	Yes	No		

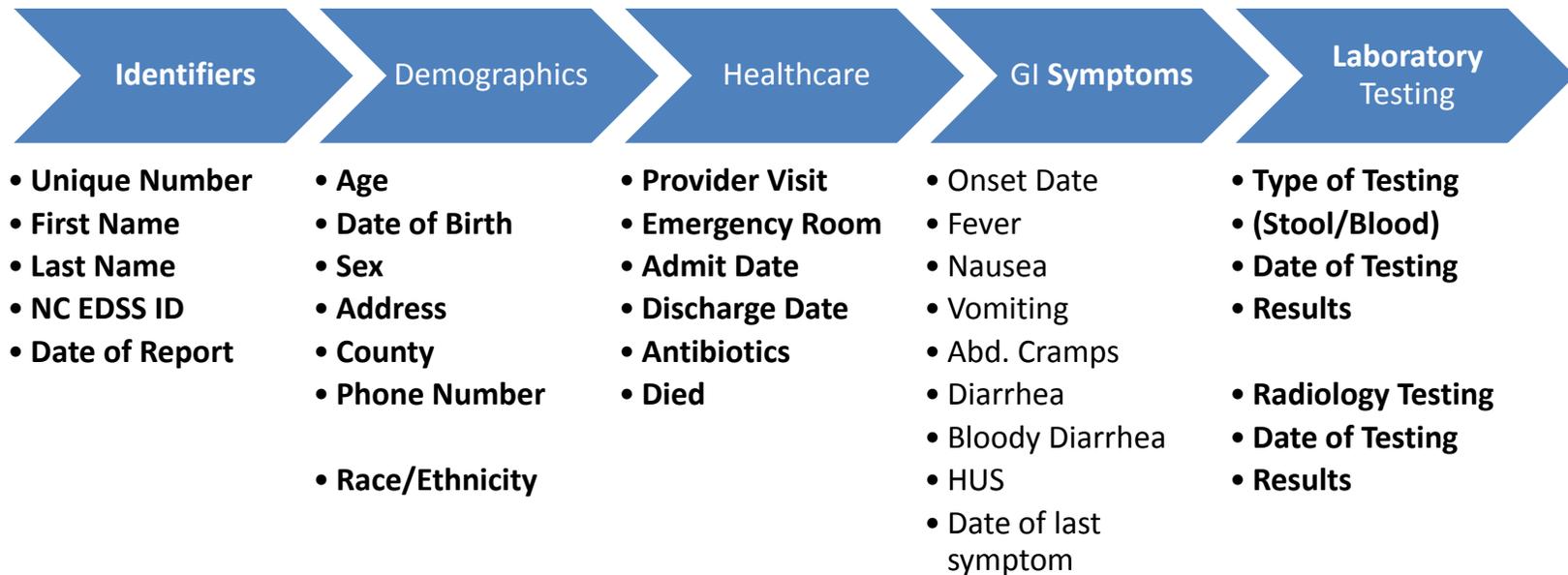
Line list: Why is it important?

It helps organize multiple pieces of information in a format that allows you to easily summarize.

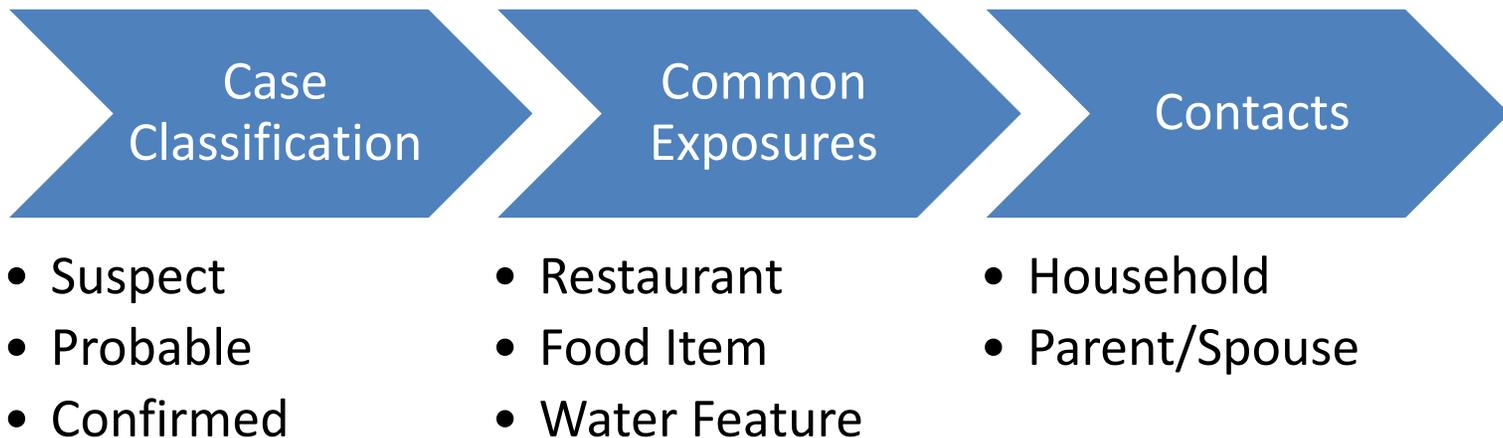


Line #	First Name	Last Name	Identifiers	NCE095	Date of Report	Age	Sex	Address	Demographics
1	Sunny	Clay		100777777	6/10/2012	15	Female	30 Beach Rd	Albany, NC 29010
2	Polka	Dott		100099999	1/1/2012	15	Female	424 Baker Street	Albany, NC 29010
3	PC	Macintosh		100000000	1/1/2012	69	Male	1000 Apple Blvd	Albany, NC 29010
4	Natalie	Berry		100111111	1/1/2012	24	Female	7902 Bayona Fountain	Albany, NC 29010
5	Betty	Johnson		100000000	1/1/2012	35	Female	123 Maple Drive	Albany, NC 29010
6	Heather	Surchem		100444444	1/1/2012	30	Female	212 & Baker Street	Albany, NC 29010
7	PHILIP	Howard		100133333	1/1/2012	62	Female	1111 Mockingbird Lane	Albany, NC 29010
8	SAC	Hammer		100124567	1/1/2012	17	Male	100 East 20th Street	Albany, NC 29010
9	Joan	Marie		100123456	1/1/2012	42	Male	112 S. Bennett Street	Albany, NC 29010
10	Joan	Marie		100123457	1/1/2012	63	Female	4 Front Drive	Albany, NC 29010
11	Joan	Marie		100123458	1/1/2012	63	Female	4 Front Drive	Albany, NC 29010
12	Joan	Marie		100123459	1/1/2012	63	Female	4 Front Drive	Albany, NC 29010

Line list: What are the Components?



Line list: Additional Components



Line list

Line lists are a fundamental part of the outbreak investigation

A good line list must

- **Contain answers to basic questions for the specific event**
- **Remove unnecessary questions**
- **Be updated on a daily basis**
- **Be complete**



PURPOSE OF OBTAINING THE EARLIEST DATE OF SYMPTOM ONSET



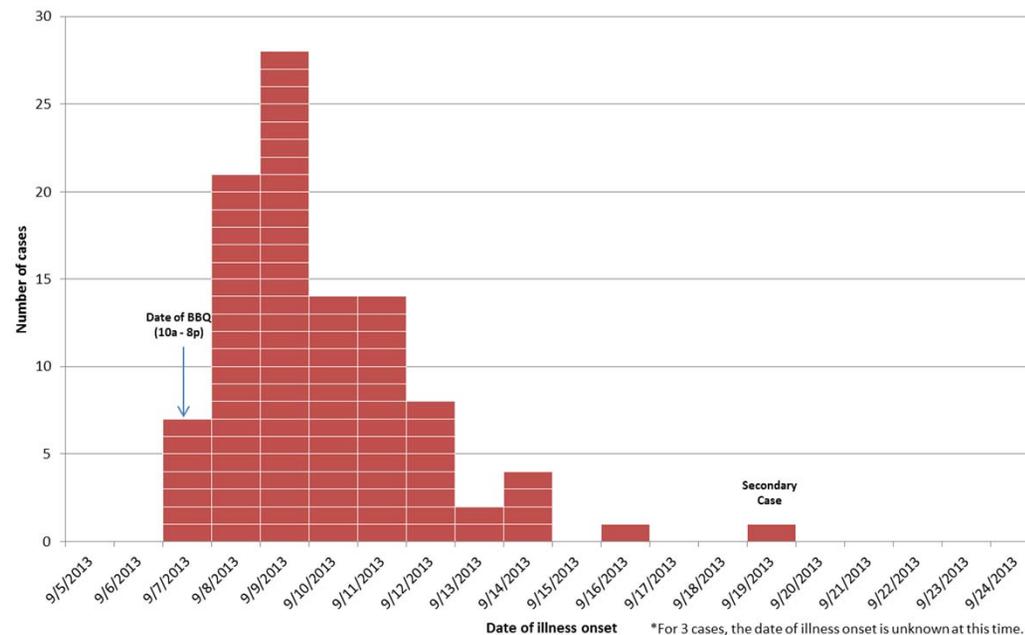
Purpose of obtaining the earliest date of symptom onset

- Infectious agents have specific characteristics:
 - Incubation period – time between exposure to an infectious agent and the start of symptoms
 - Duration of illness – time from the start of symptoms to the last day of symptoms
 - Symptomology – the various conditions a person experiences while ill (i.e. vomiting, diarrhea, fever, etc.)

Purpose of obtaining the earliest date of symptom onset

- Epi Curves
 - A graph of the number of people who started to feel ill by onset date.

Confirmed and probable cases of *Salmonella* infection
by date of illness onset and county of residence,
North Carolina, September 2013 (n=100*)



*For 3 cases, the date of illness onset is unknown at this time.

Let's review...



Learning Objectives

- Compare the terms surveillance case definition vs. outbreak case definition
- Line lists: Demographics, symptoms, labs, exposures, etc.
- Purpose of obtaining the earliest date of symptom onset



Two final points...



Communications

Conference calls

State, local, and/or partner organizations

Guidance documents

Letters to physicians, parents, staff; Press releases;
Information sheets

Assistance from State

Recognize when you will need state assistance (i.e. data entry, interviews, on-site assistance, review of materials)

Final outbreak report

To be completed within 30 days of the end of an outbreak



Laboratory

Satisfactory Stool Specimens

If you submit a stool to the State Lab make sure the sample does not go above the red line on the cup. We have a stool collection instruction sheet as a reminder.



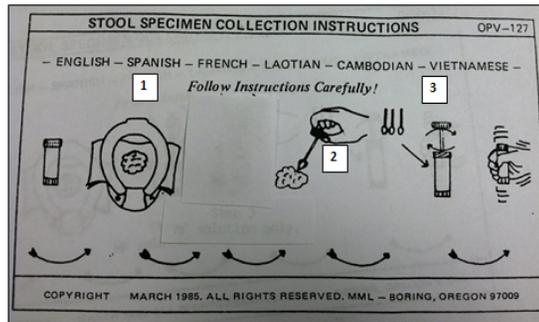
Stool Collection Instructions

Stool Collection Procedures for Testing at North Carolina State Lab for Public Health



This is a vial of Cary Blair preservative that can be used to test stool for norovirus and enteric diseases (i.e. Salmonella, Shigella, Campylobacter, Yersinia, E. coli).

Vials that are used for testing of ova and parasites are yellow and have formalin preservative in them.



1. Put plastic wrap over the toilet to catch the stool OR collect the stool in a plastic container
2. Use the spoon to add the stool to the vial of media BEING SURE NOT TO FILL ABOVE THE FILL LINE ON THE LABEL
3. Screw the top tightly and shake to ensure the media mixes with the stool

NOTE: Do not let water or urine touch the stool specimen.



It is important to have the proper ratio of stool to preservative in order to ensure that there is no overgrowth of normal flora in the stool and to keep any organisms that are in the stool viable during transport.

When stool is added to the vial of Cary Blair preservative, the total mixture should not go above the marked line on the label.

This picture is an example of what NOT to do because there is too much stool in this vial.



There is a spoon connected to the cap of the Cary Blair vial that can be used to add stool to the vial – being sure to not overfill it above the red line on the label.

Because of the amount of preservative already in the vial, you don't have to add a lot of stool in order to make sure the mixture does not go above the red line on the vial's label.

Thank you and good luck!

