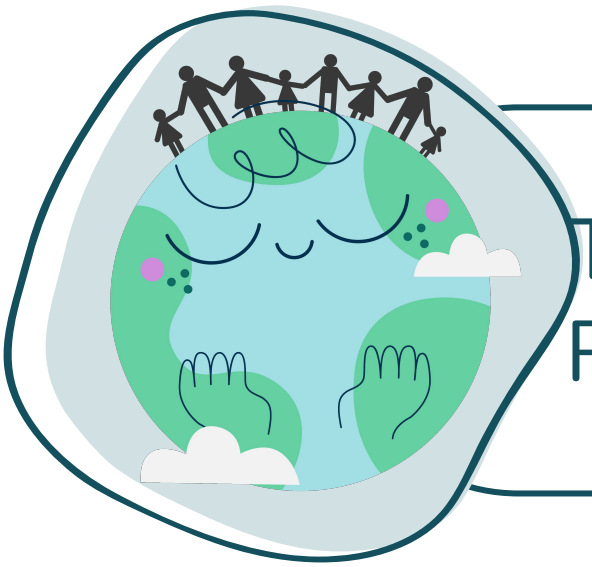


Tutorial 7: Notification/ Reporting Surveillance

This lecture was done by:

Hamad Almousa

Wish you all the best!

Color Index

- Main text
- Males slides
- Females slides
- Doctor notes
- Important
- Textbook
- Golden notes
- Extra

Editing File

Case 1: (439)

You are working in the MOH, under the department of surveillance. You have been asked by your supervisor to establish a surveillance program for breast cancer. Discuss the steps that you will undertake to launch a surveillance system for breast cancer in your area.

1. Justification
   - Breast cancer is the most common cancer among women in Saudi Arabia
   - One of the leading cause of morbidity and mortality
   - Early detection of breast cancer will lead to better prognosis, we can even prevent mortality caused by breast cancer

2. Objectives
   - **Specify**: Breast cancer
   - **Why do you want conduct?**
     - To estimate mortality caused by breast cancer
     - To estimate clusters
     - Early detection of disease

3. Description: (Who are the population ? source of data? place?)
   - Source of data: Cancer registries, death certificate, Hospital discharge data

Then we do Data collection, analysis of information, and how to interpret it.

Who we should report to with our results?
(other than MOH, because in this case we are MOH)

- Usually MOH report to other departments that is responsible for that specific condition (in this case Breast cancer) in order to increase effective screening programs and to take other appropriate measures for early detection of breast cancer.
- Related Associations (e.g. breast cancer association)

Question 1:

Assume you work in a region in which none of the following conditions is on the list of notifiable diseases. For each condition:

- ➔ **List at least one existing source of data that you need for conducting surveillance on the condition.**
- ➔ **What factors make the selected source or data system more appropriate than another?**

1 Listeriosis:

A serious infection can result from eating food contaminated with the bacterium Listeria monocytogenes. The disease affects primarily pregnant women, newborns, and adults with weakened immune systems. A person with listeriosis has fever, muscle aches, and sometimes gastrointestinal symptoms (e.g., nausea or diarrhea). If infection spreads to the nervous system, such symptoms as headache, stiff neck, confusion, loss of balance, or convulsions can occur. Infected pregnant women might experience only a mild influenza-like illness; however, infections during pregnancy can lead to miscarriage or stillbirth, premature delivery, or infection of the newborn. In the United States, approximately 800 cases of listeriosis are reported each year. Of those with serious illness, 15% die; newborns and immunocompromised persons are at greatest risk for serious illness and death.

Source of Data [1]:

- Data from hospitals records (admission or discharge)
- Data from the laboratories
- Add it to notifiable disease to become a passive surveillance

The source of data should be based on morbidity more than mortality due to the low case fatality rate.

2 Spinal cord injury:

Approximately 11,000 persons sustain a spinal cord injury (SCI) each year in the United States, and 200,000 persons in the United States live with a disability related to an SCI. More than half of the persons who sustain SCIs are aged 15–29 years. The leading cause of SCI varies by age. Motor vehicle crashes are the leading cause of SCIs among persons aged <65 years. Among persons aged ≥65 years, falls cause the majority of spinal cord injuries. Sports and recreation activities cause an estimated 18% of spinal cord injuries.

Source of Data:

- Data from hospital record (admission or discharge)
- Data from death certificate due to the high mortality rate
- Data from trauma center if it's available
- Data from the emergency medical center
- Data from rehabilitation center (if we want only the survivors of the SCI, it's NOT complete data)

The source of data should be based on the mortality rate. It's serious condition almost all patients will be hospitalized

1) We can't take it from the registry because there's no registry for infectious disease. Usually it's for chronic disease.

3 Lung cancer among nonsmokers

A usually fatal cancer of the lung can occur in a person who has never smoked. An estimated 10%–15% of lung cancer cases occur among nonsmokers, and this type of cancer appears to be more common among women and persons of East Asian ancestry.

Source of Data:

- Data from cancer registry (smoking information not shown)
- Data from health surveillance (smoking information shown)

The best source of data for a type of cancer is the registry.

Question 2:

During the previous 6 years, 10 to 15 cases per year of tuberculosis had been reported to a region health department. During the past 3 months, 25 cases have been reported. All but 4 of these cases have been reported from one sector.

➔ **Describe the possible causes of the increase in reported cases.**

1) True increase incidence due to TB exposure
2) False increase incidence because of many reasons:
   - improve the diagnostic methods
   - Enhance reporting processes
   - Change of surveillance system
   - Increase population size or increase immigrants
   - Change case definition
   - Increase awareness of physician of TB tests
   - Increase awareness of the population to seek medical attention
   - Untrained staff for testing TB

Question 3:

By 1993, E. coli O157:H7 (O157) has been recognized as an important foodborne pathogen that can cause serious illness. Numerous outbreaks across the country have been attributed to ground beef, roast beef, water, apple cider, and unpasteurized milk. Human infection occurs primarily through ingestion of food or water contaminated with bovine fecal material, but person to person transmission also occurs. The organism can survive for extended periods in water, meat
stored at subfreezing temperatures, soil, and acidic environments, but can be destroyed by thorough cooking or pasteurization.
Patients infected with O157 typically present with severe abdominal cramps, bloody diarrhea, and low grade fever. Children and the elderly are at greatest risk for complications such as hemorrhagic colitis, hemolytic uremic syndrome, and death.
In 1990, Region A added E. coli O157:H7 to its reportable disease list. The region requires reporting by health care providers, health care facilities, and laboratories. The Laboratories must also send isolates to the central Laboratory.
You are an epidemiologist assigned to the region A Health Division, and are responsible for reviewing surveillance data on a regular basis.

➔ **What basic descriptive epidemiology would you like to see to characterize the occurrence of E. coli O157:H7 in the region?**

1) patient identifying information (name, address, phone no)
2) Demographic information (age, gender, race “if need it”)
3) Clinical information (lab results, sign and symptoms, date of infection, hospitalized or not)
4) Risk factors related to infection (occupation, travel, last meal, immune status, environmental factors ex: smoking)

Question 3.2:

Following are several tables of E. coli O157:H7 August 1990 through December 1992.

- ➔ **Graph the data in Table A in two different formats (e.g., line graph, bar graph, or pie chart)**
- ➔ **On the basis of the data graphed, what are two interpretations you can make? Was one type of graph easier to interpret? Why or why not?**

Month	1990	1991	1992	Total
January	-	2	1	3
February	-	2	2	4
March	-	2	7	9
April	-	5	5	10
May	-	1	12	13
June	-	10	25	35
July	2	26	41	69
August	14	28	17	59
September	19	15	19	53
October	12	13	7	32
November	5	6	9	20
December	7	1	11	19
Total	59	111	156	326

Best data graphs:

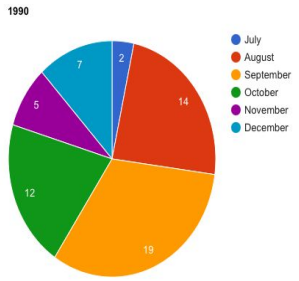
1) Bar graph
2) Line graph
3) Pie chart

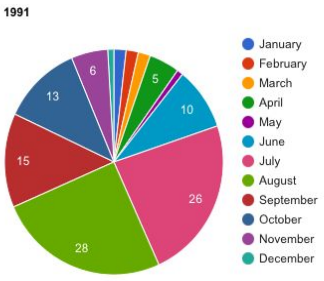
Interpretation from data graphs:

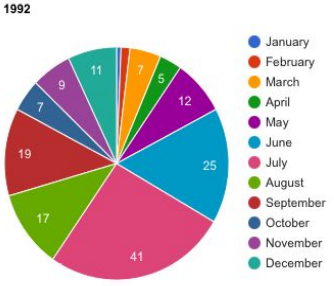
- The 2nd half of the year has higher cases than the 1st half.
- The cases increase more in the summer.
- The cases increase year after year.

The graphs are only for representation and for you it understand the idea. We tried our best but we can't guarantee the accuracy

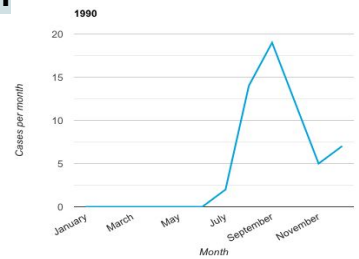
Pie chart

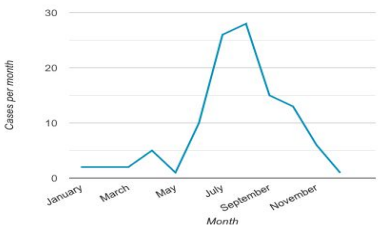


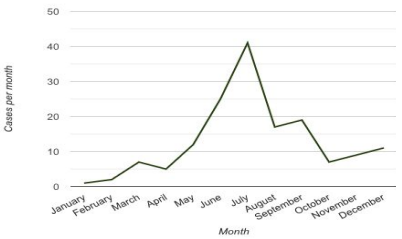




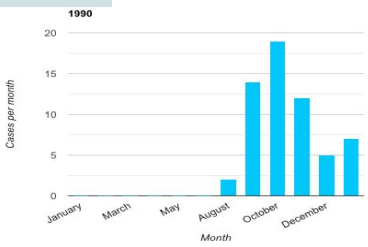
Line graph

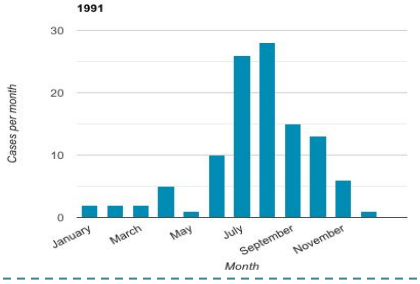


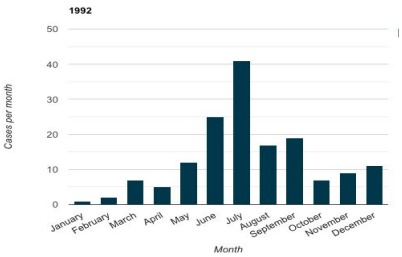




Bar graph the best







Question 3.3:

➔ **As a class, chart the previous information on E. coli O157:H7 outbreaks on a map.**

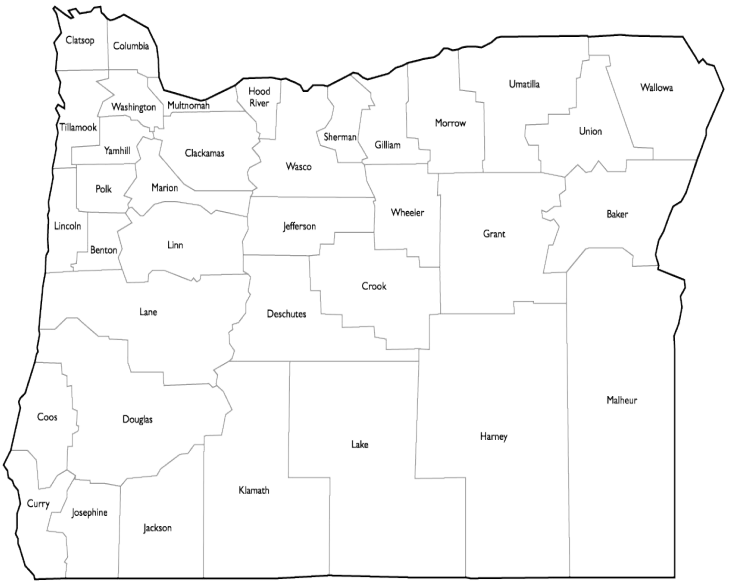
Month	1990	1991	1992	Total
Baker	0	1	0	1
Benton	1	4	11	16
Clackamas	7	11	21	39
Columbia	1	2	5	8
Coos	0	0	1	1
Deschutes	2	0	0	2
Douglas	2	4	4	10
Grants	0	0	2	2
Jackson	1	0	4	5
Jefferson	0	0	2	2
Josephine	0	0	1	1
Lane	6	9	16	31
Lincoln	2	1	1	4
Linn	4	4	5	13
Malheur	3	0	1	4
Marion	9	8	10	27
Multnomah	11	36	41	88
Polk	1	1	3	5
Umatilla	1	0	3	4
Wasco	0	2	1	3
Washington	7	26	19	52
Yamhill	1	2	5	8
Total	59	111	156	326

This question was skipped by both Dr.Shatha and Dr. Abdullah but the idea is to plot the number of total of cases on the map

Question 3.3:

Table 5. Population of all ages, all races, both sexes, by county — Oregon, 1990 (N = 2,842,321)

Item	County	Population	% of N
1	Multnomah	583,887	20.54
2	Washington	311,554	10.96
3	Lane	282,912	9.95
4	Clackamas	278,850	9.81
5	Marion	228,483	8.04
6	Jackson	146,389	5.15
7	Douglas	94,649	3.33
8	Linn	91,227	3.21
9	Deschutes	74,958	2.64
10	Benton	70,811	2.49
11	Yamhill	65,551	2.31
12	Josephine	62,649	2.20
13	Coos	60,273	2.12
14	Umatilla	59,249	2.08
15	Klamath	57,702	2.03
16	Polk	49,541	1.74
17	Lincoln	38,889	1.37
18	Columbia	37,557	1.32
19	Clatsop	33,301	1.17
20	Malheur	26,038	0.92
21	Union	23,598	0.83
22	Wasco	21,683	0.76
23	Tillamook	21,570	0.76
24	Curry	19,327	0.68
25	Hood River	16,903	0.59
26	Baker	15,317	0.54
27	Crook	14,111	0.50
28	Jefferson	13,676	0.48
29	Grant	7,853	0.28
30	Morrow	7,625	0.27
31	Lake	7,186	0.25
32	Harney	7,060	0.25
33	Wallowa	6,911	0.24
34	Sherman	1,918	0.07
35	Gilliam	1,717	0.06
36	Wheeler	1,396	0.05



Adapted from: Centers for Disease Control and Prevention (CDC). Surveillance for *E. coli* 0157:H7—information for action. Atlanta, GA: US Department of Health and Human Services, CDC, Epidemiology Program Office; 2003. Case Studies in Applied Epidemiology no. 941-903. Available at: http://www.cdc.gov/eis/casestudies/Xecoli.903.student.pdf.

Question 3.3:

Table 3. *Escherichia coli* O157:H7 cases, by 10-year age groups — Oregon, 1990–1992

Age group (yrs)	1990	1991	1992	Total
0–9	10	35	39	**84**
10–19	10	11	31	**52**
20–29	8	19	20	**47**
30–39	7	14	10	**31**
40–49	5	8	13	**26**
50–59	6	8	14	**28**
60–69	4	8	15	**27**
70–79	6	5	8	**19**
80–89	2	3	3	**8**
90–99	0	0	3	**3**
Unknown	1	0	0	**1**
Total	**59**	**111**	**156**	**326**

Adapted from: Centers for Disease Control and Prevention (CDC). Surveillance for *E. coli* 0157:H7—information for action. Atlanta, GA: US Department of Health and Human Services, CDC, Epidemiology Program Office; 2003. Case Studies in Applied Epidemiology no. 941-903. Available at: http://www.cdc.gov/eis/casestudies/Xecoli.903.student.pdf.

Table 4. Total population by age — Oregon, 1990 (N = 2,842,321)

Age group (yrs)	Population	% of N
0–4	205,649	7.24
5–9	208,902	7.35
10–14	200,742	7.06
15–19	191,070	6.72
20–24	189,859	6.68
25–29	212,127	7.46
30–34	239,715	8.43
35–39	250,218	8.80
40–44	223,537	7.86
45–49	165,811	5.83
50–54	128,860	4.53
55–59	115,362	4.05
60–64	120,704	4.25
65–69	122,332	4.30
70–74	101,583	3.57
75–79	78,200	2.75
80–84	49,383	1.74
ε85	38,267	1.34

Adapted from: Centers for Disease Control and Prevention (CDC). Surveillance for *E. coli* 0157:H7—information for action. Atlanta, GA: US Department of Health and Human Services, CDC, Epidemiology Program Office; 2003. Case Studies in Applied Epidemiology no. 941-903. Available at: http://www.cdc.gov/eis/casestudies/Xecoli.903.student.pdf.

Question 3.4:

➔ **On the basis of this new population data, why do you think Multnomah County has the highest number of reported cases of E. coli O157:H7 infections?**

They have a large population. Also, rural areas have a higher risk for foodborne transmission infections.

Question 3.5:

➔ **Which age groups reported the highest incidence of E. coli O157:H7?**

Highest risk age group from 0-9 years old.

➔ **Based on the population data, can you make a hypothesis about which age group was most at risk for E. coli O157:H7 infections? Why do you think that age group is at higher risk of the infection?**

Younger age is more vulnerable because their immunity is not yet developed, and their lifestyle makes foodborne transmission infections more easily.