INJURY SURVEILLANCE TRAINING MANUAL

ANSWERS TO EXERCISES

SESSION II
ASSESS INJURY DATA SOURCES AND
DESCRIBE THE INJURY PROBLEM

Page 8:

Exercise 1.

Data sources existing in the region (strengths and weaknesses):

Possible Data Sources in the Region

Possible Injury Data Sources	Injury Data Sources in the Region	
	Strengths	**Weaknesses**
Police/Law Enforcement		
Public Health		
Forensic Medicine		
Coroner/Medical Examiner		
District Attorney		
Transportation Office		
Emergency Departments		
Vital Statistics Office		
Nongovernmental Offices (NGO)		
Newspapers		

Possible Answers:

Strengths:
- **a.** They have available information
- **b.** Data collected are reliable
- **c.** The coverage area is the city

Weaknesses:
- **a.** The information is not systematized
- **b.** The codes used are different than the health codes
- **c.** The information is available each three months

Page 10:

Discussion:

Initiate discussion by asking the following questions:

1. If one person is hospitalized because of an injury and later dies in another another hospital in another city or state :
   - **a.** Where must the death certificate be filed?
   - **b.** Where should the investigation about the perpetrator and circumstances be conducted?
   - **c.** Where the case must be counted?

Possible Answers:

      a.   The death certificate would be filed in the last hospital, where the person died.

      b.   The investigation would be conducted in the city where the event occurred. The police or forensic medicine department should report the case in the city where the event occurred.

      c.   The case would be counted for vital statistics purposes in the place of residence of the victim and for prevention purposes in the place where the event occurred.
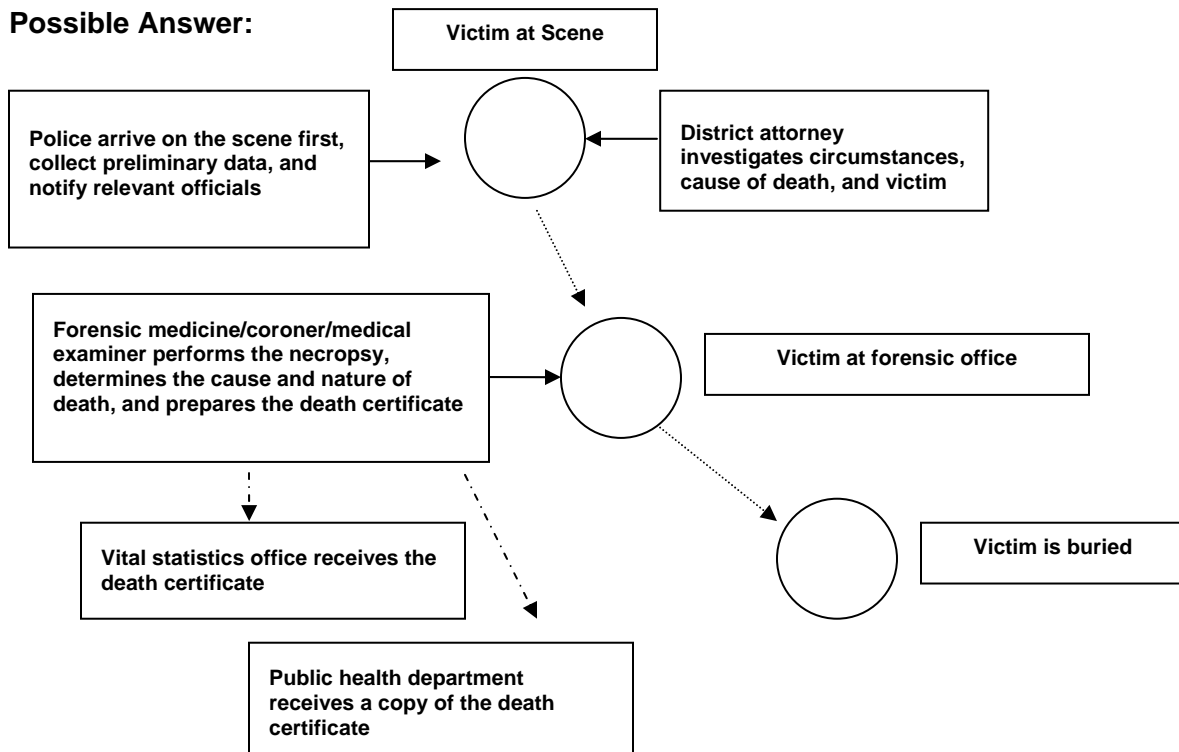
Page 12:

Discussion:

Select one participant to draw on the board the process that is followed when an injury death occurs in the city:

      a.   What do the police do?

      b.   What does the forensic office do?

      c.   What does the health sector do?

      d.   What does the district attorney do?

      e.   What does the coroner/medical examiner do?

      f.   What do the relatives do?

Possible Answer:

	Victim at Scene

Police arrive on the scene first, collect preliminary data, and notify relevant officials

District attorney investigates circumstances, cause of death, and victim

Forensic medicine/coroner/medical examiner performs the necropsy, determines the cause and nature of death, and prepares the death certificate

Victim at forensic office

Vital statistics office receives the death certificate

Victim is buried

Public health department receives a copy of the death certificate

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Discussion:

Divide the class into two groups and ask them which data source they will select for each one of the events in the Table 2.

        a.   Fatal injuries

        b.   Nonfatal injuries

Possible Answers:

        a.   Fatal injuries: police, forensic medicine, health statistics

        b.   Nonfatal injuries: data from emergency department, police, forensic medicine, nongovernmental organizations (NGOs), etc.

Which data source is more appropriate to provide information for the injury surveillance system?

        a.   Fatal injuries: forensic medicine

        b.   Nonfatal injuries: emergency department

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Exercise:

Prepare a table with the frequency of the 10 or 15 leading causes of death in the region (similar to Table 3). If local data are not available, use the data provided on the CD-ROM .

Possible Answer:

Leading Causes of Death in Colombia — 1999

Rank	Cause of Death	Number
1	Homicide and Sequelae	25,855
2	Ischemic Heart Disease	21,908
3	Cerebrovascular Diseases	13,393
4	Chronic Lower Respiratory Diseases	9,452
5	Accidents (Unintentional Injuries) and Sequelae	7,624
6	Diabetes Mellitus	6,801
7	Hypertensive Diseases	5,490
8	Acute Respiratory Diseases	5,277
9	Perinatal Diseases	4,790
10	Malignant Neoplasm	4,487
11	Digestive System Disease	4,483
12	Stomach Tumor	4,112
13	Cardiac Insufficient	3,902
14	Undetermined Cause	3,632
15	All Other Causes	62,357
Total		**183,563**

Source: National Department of Statistics – DANE - Colombia

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Discussion:

Initiate the discussion by showing injury deaths in the United States and Cali, Colombia. Ask the following questions:

    a. Are there differences in injury mortality characteristics?

    b. Are the data comparable?

    c. Which indicator (s) will you use to compare these data?

Possible Answers:

    a. Yes, there are differences. Violence-related deaths accounted for more than 20,000 deaths in Cali. In the United States, unintentional deaths accounted for almost 100,000 cases.

      b.   The data are not comparable, because the first data set corresponds to a country, and the second to a city. The denominators are also very different: 350 million for the United States and around 2 million for Cali.

      c.   It would be better to compare the United States with all of Colombia and use adjusted rates. Another approach could be to compare Cali with a city in the United States that has a similar population, and use crude or adjusted rates.

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Exercise:

Calculate frequencies with injury data from sources such as: Police, Forensic Medicine and Public Health. Summarize the data for major injury categories: homicide, suicide, motor vehicle-related, and other unintentional deaths. Compare the results.

Answer the following questions:

      a.   Are there some differences among the data from different sources?

      b.   Which events have more discrepancies?

      c.   If discrepancies are found, explain why there may be differences?

Possible Answer Using hypothetical Data from "Alarca City:"

Tables similar to Table 5 from Session II:

a. Injury Mortality Reported by the Police Department
Alarca City — 2000

Intent	Cause of Injury	Frequency
	Motor Vehicle-Related	1,229
	Other Unintentional Deaths	
Unintentional Deaths	Drowning	149
	Falls	169
	Poisoning	158
	Electric Shock	10
	Burns	15
	Firearms	35
	Blunt Trauma	26
Violence-Related Deaths	Homicides	2,696
	Suicides	415
Total		**4,902**

b. Injury Mortality Reported by the National Statistics Office
Alarca City — 2000

Intent	Cause of Injury	Frequency
Unintentional Deaths	Motor Vehicle-Related	1,347
	Other Unintentional Deaths	
	Drowning	318
	Falls	271
	Poisoning	154
	Burns	25
	Firearms	26
Violence-Related Deaths	Homicides	2,430
	Suicides	655
	Legal Intervention	2
Undetermined		20
Total		**5,248**

Compare the Data Among Data Sources:

Intent	Cause of Injury	Police Department	National Statistics Office
Unintentional Deaths	Motor-Vehicle Related	1,229	1,347
	Other Unintentional Deaths		
	Drowning	149	318
	Falls	169	271
	Poisoning	158	154
	Electric Shock	10	
	Burns	15	25
	Firearms	35	26
	Blunt Trauma	26	
Violence-Related Deaths	Homicides	2,696	2,430
	Suicides	415	635
	Legal Intervention		2
Undetermined			20
Total		**4,902**	**5,248**

Answers:

a. Yes, there are differences in almost all causes—and especially in cases of homicide and motor vehicle-related injuries.

b. The statistical office receives the death certificates from the forensic office and the physician, and it may not immediately send all death certificates. Another explanation is that not all deaths have death certificates. The police department may not report undetermined deaths and those caused by legal intervention.

INJURY SURVEILLANCE TRAINING MANUAL

ANSWERS TO EXERCISES

SESSION III
BUILD A COALITION TO SUPPORT THE INJURY SURVEILLANCE SYSTEM AND PREVENTION ACTIVITIES

Page 4:

Questions for Discussion:

1. What does "coalition" mean to you?
2. What are some other names for a coalition?
3. Do you think it's important to have a coalition to support the injury surveillance system and prevention activities?

Possible Answers:

1. People meet to agree on goals.
2. Group, meeting, committee, council, stakeholders.
3. A coalition can help to get resources or staff for the injury surveillance system and prevention activities.

Conclusions:

When the injury surveillance system begins to get data and results, the coalition will be very important for defining prevention strategies.

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Questions for Discussion:

1. What institutions in your region are working in injury prevention and control?
2. What kinds of programs or projects do they have?

Possible Answers:

1. NGOs, international organizations, local groups, community groups, etc.
2. They work with women, families, youth, neighborhood residents, etc.

Conclusions:

Summarize the information about the institutions or organizations working in injury control and prevention and the area of interest.

Questions for Exercise in Your City or Country:

1. Is it socially acceptable for a husband to hit his wife?

2. What is the relationship between the mayor and the health authorities, security authorities, and communities?

3. Are motorcyclists required to wear helmets?

4. How is drunk driving viewed?

5. Is there a regulation that applies to gun ownership?

6. Are the authorities interested in establishing an injury surveillance system in their jurisdiction?

7. In which category would you include this photo? Why would someone display this bumper sticker?

Possible Answers:

Social Framework:
Is it socially acceptable for a husband to hit his wife?

1. Yes, is acceptable; it is considered a private issue for the couple.

2. Yes, but the situation has been changing in recent years.

3. No, it is not acceptable. There are laws to protect the woman.

How is drunk driving viewed?

1. It is acceptable to drive when drunk.

2. It is not acceptable. There is a higher fine for drunk driving.

In which category would you include this photo? Why would someone display this bumper sticker?

1. It could be included in the social framework, because it reflects behaviors acceptable by the culture

2. Some people displaying this bumper sticker may want to show that they are dangerous; perhaps, the message is "stay way from me," or "don't bother me."

Political Framework:
What is the relationship between the mayor and the health authorities, security authorities, and communities?

1. The mayor has a good relationship with these institutions and has information about the injury problems in the city.

2. The mayor does not have a relationship with these institutions and does not know the situation of injuries in the city.

Are authorities interested in establishing an injury surveillance system in their jurisdiction?

1. The government authorities are not interested in knowing about the injury problem. It is considered politically inappropriate.

2. Some authorities, especially the police, transportation office, and health department, are interested in participating in an injury surveillance system.

Legal Framework:
Are motorcyclists required to wear helmets?

1. No, there is no helmet law in the city.

2. Yes, a helmet law exists, but the motorcyclists do not wear helmets.

3. Yes, a helmet law exists. The fine is high for not wearing a helmet.

Is there a regulation that applies to gun ownership?

1. No, a regulation does not exist. Every person who wants to buy a gun can buy one.

2. Yes, a regulation exists; the military issued guns are legally acceptable.

3. Yes, a regulation exists, but guns can still be purchased in some places (e.g., on the black market).

Conclusions:

Knowing the context within which the injury surveillance system is to be located helps to understand the obstacles or difficulties that may be encountered when implementing the system.

INJURY SURVEILLANCE TRAINING MANUAL

ANSWERS TO EXERCISES

SESSION IV
DETERMINE THE APPROPRIATE METHODOLOGY FOR THE SURVEILLANCE SYSTEM

Page 12:

Exercise: How would you classify and code the following examples?

If a person falls down the stairs and strikes his head on a metal door:

1. What is the principal diagnosis and the reason for admission at the hospital?

2. If a person falls, as in the previous example, but *dies* as a result of the fall, what are the immediate cause of the injury and the underlying cause of death?

Possible Answers:

1. The resulting head injury would be the principal diagnosis and the reason for admission.

2. The immediate cause of the injury is "struck against an object." It would be listed as an additional code. The "fall" would be the underlying cause of death.

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After discussion about two different emergency room-based data collection instruments used in injury surveillance systems in Central America and Argentina, ask participants the following questions:

1. Are the variables included in these forms sufficient for an injury surveillance system?

2. Are there any questions that interviewees may be reluctant to answer?

3. Is it possible to fill out these forms in emergency rooms?

Possible Answers:

1. **a.** The variables are sufficient for an injury surveillance system that collects data from hospitals or emergency rooms.

   b. The variables are too much for an injury surveillance system in emergency rooms.

2. In the questionnaire used in Argentina, it could be that some variables are hard to collect, such as those related to traffic injuries and injuries in the mouth. Also, there are other variables that could be omitted, like the specific place where the injury occurred.

   The questionnaire used in Central America has some variables about precipitating factors in self-inflicted injuries, but this information is often difficult to get.

3. Personnel in emergency rooms often have many activities to do while assisting patients. If they have to fill out forms, the forms must be as short as possible. The personnel must also be trained on how to fill out the forms.

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Exercise: Define the Criteria to Establish a Fatal Injury Surveillance System:

   Group 1: Variables

   Codes and case definition

   Group 2 Data collection instruments and frequency

   Type of surveillance system

   Personnel necessary to operate the system

Posible Answers:

   Group 1:
   Variables: Demographic variables, characteristics and context of the event.

   Codes and Case Definition: ICD-10 and definitions include in this clasification.

   Group 2:
   Data Collection Instruments: Similar to form in WHO Guidelines, in order to collect the information every month.

   Type of Surveillance: Sentinel, including only the trauma hospitals.

   Personnel: The personnel in the epidemiology office will be in charge of developing the system.

INJURY SURVEILLANCE TRAINING MANUAL

ANSWERS TO EXERCISES

SESSION V
DEFINE THE ANALYSIS PLAN OF THE
SURVEILLANCE DATA

Page 6:

Exercise: Calculate frequency and percentage of injuries using local data.

Possible Answer from Group 1:

Violence-Related Deaths in Cali — 2001

Cause of Death	Frequency	Percentage
Homicides	2,055	95.6%
Suicides	94	4.4%
Total	**2,149**	**100.0%**

Source: Fatal Injury Surveillance System, Cali, Colombia. Data from: Police, Forensic Medicine, District Attorney, Transportation Office.

Unintentional Deaths in Cali — 2001

Cause of Death	Frequency	Percentage
Motor Vehicle-Related Deaths	355	75.3%
Other Unintentional Deaths	116	24.7%
Total	**471**	**100.0%**

Source: Fatal Injury Surveillance System, Cali, Colombia. Data from: Police, Forensic Medicine, District Attorney, Transportation Office.

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Exercise: Using injury data, calculate crude rates for homicide, motor vehicle-related, and other unintentional deaths.

Possible Answer:

Number, Percentage, and Crude Rates by Injury Mortality in Cali — 2000

Cause of Death	Cali* (population in 2000: 1,945,995)		
Unintentional Deaths	Number	Percentage	Rate per 100,000 Population
Motor Vehicle-Related	467	17.9 %	23.9
Other Unintentional Deaths	104	3.9 %	5.3
Violent Deaths			
Homicides	1,961	74.9 %	100.7
Suicides	85	3.3 %	4.4
Total	2,617	100.0 %	134.4

Source: Fatal Injury Surveillance System, Cali, Colombia. Data from: Police, Forensic Medicine, District Attorney, Transportation Office.

Comparison between Injury Rates from El Salvador and the World

In both places, the crude rate for homicides is higher than for other injuries. However the rate in Cali is more than twice that of El Salvador. Compared with the crude world rate, the Cali rate is eight times higher, and the rate in El Salvador is four times higher. Rates for suicides are almost three times higher in El Salvador than in Cali. In comparison, the world rate is lower. Motor vehicle-related crude rates are similar in both countries, although slightly higher in El Salvador. Both are higher than the world rate.

Rates by Injury Mortality in El Salvador and Cali, 2000, and Worldwide, 1998

Cause of Death	Cali*	El Salvador**	World***
Unintentional Deaths	**Rate per 100,000 Population**	**Rate per 100,000 Population**	**Rate per 100,000 Population**
Motor Vehicle-Related	23.9	25.9	19.9
Other Unintentional Deaths	5.3	14.9	7.9 (approximately)
Violent Deaths			
Homicides	100.7	42.9	12.5
Suicides	4.4	12.9	16.1
Total	**134.4**	**96.8**	**97.9**

Source: *Fatal Injury Surveillance System, Cali, Colombia. Data from: Police, Forensic Medicine, District Attorney, Transportation Office.
**Injury Surveillance Workshop in El Salvador—2003. Data from: Forensic Medicine.
***Krug E. Injury: A Leading Cause of the Global Burden of Disease. WHO;1999.

Page 16:

Calculate adjusted rates using local data, such as homicide data.

Possible Answer:

Adjusted Rates for Homicides in El Salvador — 2000

Age Group (1)	Number of Homicides (2)	El Salvador Population in Each Group (3)	Ratio [(2) / (3)] (4)	Standard Population (U.S. 2000) (5)	Expected Deaths (6)	Adjusted Rate for El Salvador [Total (6) / Total (5) multiplied by 100,000]
<5	35	797,160	0.000044	18,987,000	833.64	
05–14	34	1,436,961	0.000024	39,977,000	945.90	
15–24	990	1,333,587	0.000742	38,077,000	28,266.79	
25–34	776	1,008,257	0.000770	37,233,000	28,656.19	
35–44	382	628,444	0.000608	44,659,000	27,146.00	
45–54	225	454,824	0.000495	37,233,000	18,419.05	
55–59	71	165,099	0.000430	23,961,000	10,304.31	
60+	183	451,705	0.000405	34,710,000	14,062.12	
Total	**2,696**	**6,276,037**	**0.000430**	**274,837,000**	**128,634.00**	**46.80**

Source: Injury Surveillance Workshop in El Salvador; 2003. Data from: Forensic Medicine.

The adjusted rates for Cali and El Salvador, using this standard population, do not show a big difference in the crude rates. This could mean that the population distribution in these cities is similar to the distribution of the standard population.

Page 17:

Calculate years of potential life lost (YPLL) using injury local data, such as homicide data.
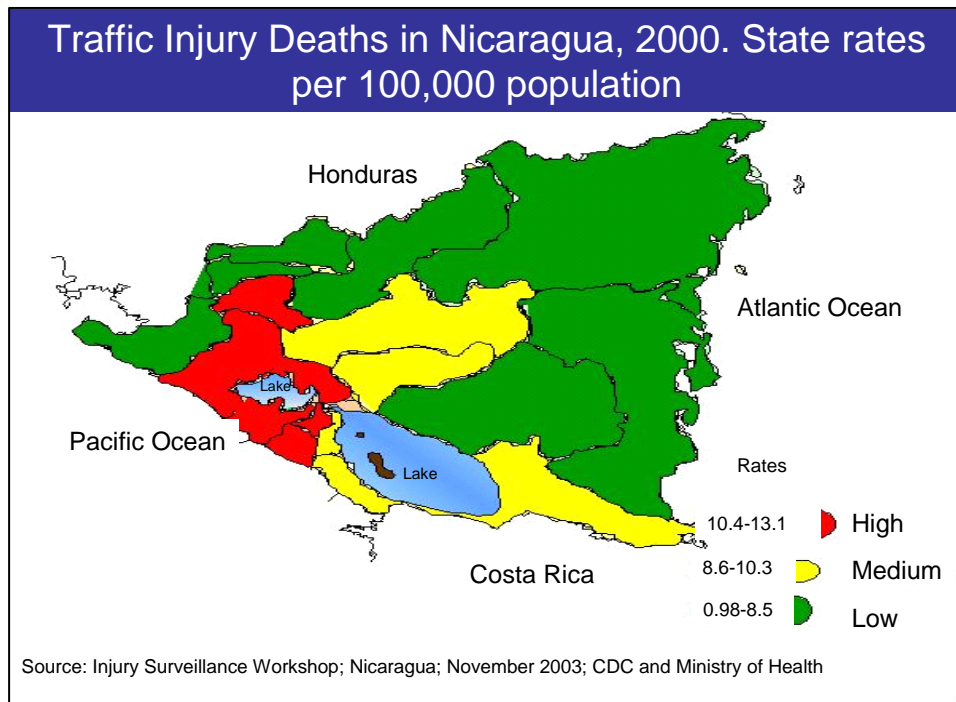
YPLL by Homicides in El Salvador — 2000

Age Group (1)	Midpoint (2)	Life Expectancy (65 yrs) Minus Midpoint (3)	Homicides (4)	YPLL [(3) x (4)] (5)
1–4	2.5	65 – 2.5 = 62.5	35	2,187.5
05–14	9.5	65 – 9.5 = 55.5	34	1,887.0
15–24	19.5	65 – 19.5 = 45.5	990	45,045.0
25–34	29.5	65 – 29.5 = 35.5	776	27,548.0
35–44	39.5	65 – 39.5 = 25.5	382	9,741.0
45–54	49.5	65 – 49.5 = 15.5	225	3,487.5
55–64	59.5	65 – 59.5 = 5.5	71	390.5
65–74	NA	NA		
75–84	NA	NA		
85+	NA	NA	183	
Total			**2,696**	**90,287.0**

Source: Injury Surveillance Workshop in El Salvador, 2003. Data from: Forensic Medicine.

Page 19:

Exercise: Ask the participants to identify the type of map and the information necessary to prepare it.

a. Traffic Injury Deaths in Nicaragua — 2000
(state rates per 100,000 population)

Traffic Injury Deaths in Nicaragua, 2000. State rates per 100,000 population

Honduras

Atlantic Ocean

Lake

Pacific Ocean

Lake

Rates

10.4-13.1 ▌ High

8.6-10.3 ▯ Medium

Costa Rica

0.98-8.5 ▌ Low

Source: Injury Surveillance Workshop; Nicaragua; November 2003; CDC and Ministry of Health
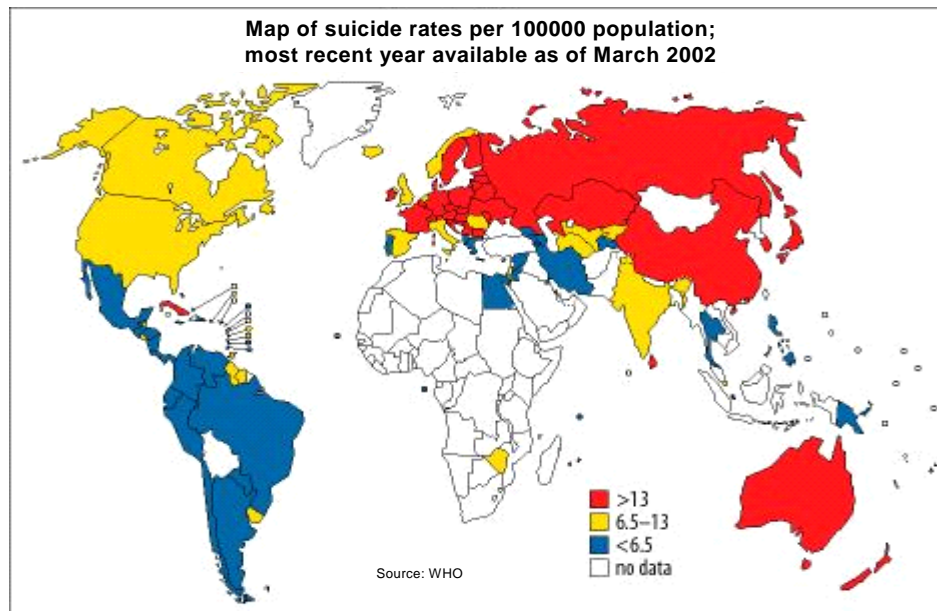
Possible Answer:

This is an area map showing motor vehicle-related deaths in Nicaragua, 2000. The data was provided by the ministry of health and the rates were classified as high, medium, and low. (In the original presentation, these rates were depicted by the colors of a traffic light; in a single-color presentation, shades of grey are used.)

The information necessary to prepare this map is the number of traffic injury deaths by state and each state's population.
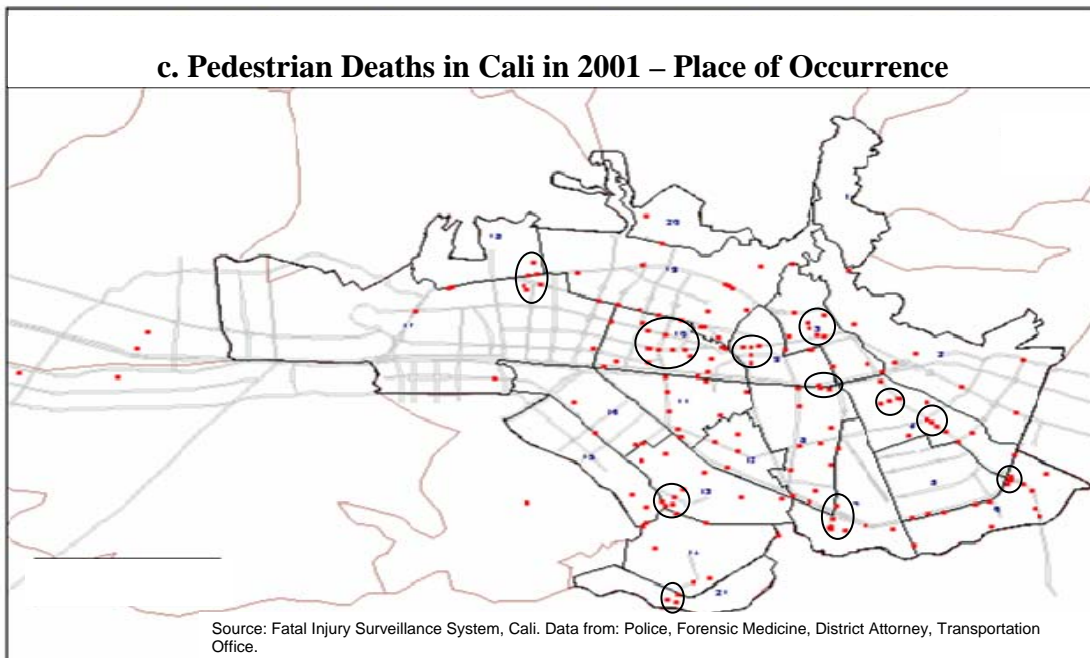
b. Map of Suicide Rates
(per 100,000 population; most recent data available: March 2002)

**Map of suicide rates per 100000 population;
most recent year available as of March 2002**

>13
6.5–13
<6.5
no data

Source: WHO

Possible Answer:

This is an area map depicting suicide rates worldwide. This map was provided by
the Pan American Health Organization (PAHO). The rates have been classified into
four categories.

The information necessary for this map is the number of suicides by country and
each country's population.

c. Pedestrian Deaths in Cali in 2001 – Place of Occurrence

Source: Fatal Injury Surveillance System, Cali. Data from: Police, Forensic Medicine, District Attorney, Transportation Office.

Possible Answer:

This is a "black spots" map, used to visualize the areas most critically affected by one event. In this case, the map depicts pedestrian deaths in Cali in 2001. The clusters show where the need for research and prevention strategies is greatest.

The information necessary for this map is the number of pedestrian deaths, the address where the event occurred, and a map of the city showing its roads.

Page 23:

Discussion Questions:

1. Which information is most important to present to stakeholders?
2. Which indicators would best show the size of the problem?
3. Do you think cost data is important to stakeholders?
4. Should you include recommendations about prevention strategies in your surveillance reports?

Possible Answers:

1. It is important to let stakeholders know how many injuries have occurred in the region over time—such as last week, one month, three months, one semester, one year, or the last five years.

2. The number and percentage of injuries among the total and a breakdown by injury type would best show the size of the problem.

3. It is very important to demonstrate the cost of injuries and how much could be saved both in economic cost and in lives saved by using prevention strategies (and what the comparative cost of prevention strategies would be).

4. Yes. It is important to provide such recommendations because most of the time stakeholders need ideas about possible strategies to apply in their region and want to know which strategies have been applied successfully in other places.

INJURY SURVEILLANCE TRAINING MANUAL

ANSWERS TO EXERCISES

SESSION VI
USE SURVEILLANCE DATA TO INFORM INJURY PREVENTION

Exercise: Prepare a table with indicators for unintentional and violence-related injuries:

1. General information

    a. Leading causes of death (frequency and crude rates), as prepared in Session II, Item 4.

    b. Frequency, proportion, and crude rates of injury deaths by intention (i.e., homicide, suicide, motor vehicle-related, and other unintentional deaths). These were calculated in Session V, Item 1.

    c. Trend of injury crude rates, with information for a minimum of 5 years.

Possible Answer:

    a. Leading causes of death:

Leading Causes of Death in Colombia — 1999

Rank	Cause of Death	Frequency	Rate per 100,000 Inhabitants
1	Homicide and Sequelae	25,855	78.08
2	Ischemic Heart Disease	21,908	66.16
3	Cerebrovascular Diseases	13,393	40.45
4	Chronic Lower Respiratory Diseases	9,452	28.54
5	Accidents (Unintentional Injuries) and Sequelae	7,624	23.02
6	Diabetes Mellitus	6,801	20.05
7	Hypertensive Diseases	5,490	16.58
8	Acute Respiratory Diseases	5,277	15.93
9	Perinatal Diseases	4,790	14.46
10	Malignant Neoplasm	4,487	13.55
11	Digestive System Disease	4,483	13.53
12	Stomach Tumor	4,112	12.41
13	Other Heart Diseases	3,902	11.78
14	Undetermined Cause	3,632	10.96
15	All Other Causes	62,357	188.33
Total		**183,563**	**554.40**

Source: National Department of Statistics.
(Departamento Nacional de Estadisticas. DANE, Colombia)

b. Frequency, proportion, and crude rates of injury deaths by intention:

Injury Deaths in Colombia — 1999
Both Sexes, All Ages

Manner of Death	Cause of Injury	Number	Percentage	Rates per 100,000 Inhabitants
Unintentional Deaths (97,900)	Overall Motor Vehicle	7,694	17.5	23.5
	Other Unintentional Deaths	5,443	12.4	16.4
Violence-Related Deaths (46,474)	Homicide	25,855	58.8	78.1
	Suicide	2,167	4.9	6.5
	Legal Intervention	241	0.5	1.0
Undetermined Intent (3,819)		2,559	5.8	7.7
Total		43,959	100.0	132.7

Source: National Department of Statistics.
(Departamento Nacional de Estadisticas. DANE, Colombia)

2. Specific information

a. Homicides: Specific rates by age group and sex (see Session V, Item 1.3).
b. Motor vehicle-related deaths: Rates by type of victim (pedestrian, vehicle occupant, motorcyclist, and bicyclist) and rates by age group and sex.
c. Trend of injury specific rates, with information for a minimum of 5 years.

Possible Answer:

Homicides rates by Age Group and Sex:

Homicides in Cali — 2001

Rates by Age Group and Sex

Age Groups	Number of Cases		Population 2001			Rates by 100,000 Inhabitants	
	Female	Male	Female	Male	Total	Female	Male
< 5	2	3	102,842	106,858	209,700	1.9	2.8
5 – 9	0	0	106,200	109,435	215,635	0.0	0.0
10 – 14	4	24	100,103	98,195	198,298	4.0	24.4
15 – 19	20	358	120,593	92,569	213,162	16.6	386.7
20 – 24	18	423	129,125	97,165	226,290	13.9	435.3
25 – 29	19	338	109,954	84,411	194,365	17.3	400.4
30 – 34	25	250	86,208	73,768	159,976	29.0	338.9
35 – 39	10	200	71,874	62,559	134,433	13.9	319.7
40 – 44	14	127	48,674	48,245	96,919	28.8	263.2
45 – 49	8	80	40,638	37,044	77,682	19.7	216.0
50 – 54	7	50	35,759	31,466	67,225	19.6	158.9
55 – 59	4	30	27,152	24,144	51,296	14.7	124.3
60 – 64	1	18	21,741	18,242	39,983	4.6	98.7
65 +	8	14	41,729	31,414	73,143	19.2	44.6
Total	140	1915	1,042,592	915,515	1,958,107	13.4	209.2

Source: Fatal Injury Surveillance System. Cali (Colombia). Data from: Police, Forensic Medicine, District Attorney and Transportation Office.

Motor Vehicle-Related Deaths: Type of victim (pedestrian, vehicle occupant, motorcyclist, and bicyclist); specific rates by age-group and sex.

Possible Answer:

Frequency and rates by type of victim:

Motor Vehicle-Related Deaths in El Salvador — 2000

Means of Transportation	Frequency	Percentage	Rates per 100,000 Inhabitants
Pedestrian	1,122	68.8	17.99
Motorcyclists	28	1.7	0.44
Cyclists	69	4.2	1.10
Vehicle Driver	106	6.5	1.69
Vehicle Passenger	258	15.8	4.13
Aviation	8	0.5	0.12
Unspecified	38	2.3	0.60
Total	**1,629**	**100**	**26.12**

Source: Forensic Medicine. El Salvador

Motor Vehicle-Related Deaths: Specific rates by age-group and sex.

Possible Answer:

Specific rates by age group and sex:

Pedestrian Deaths in El Salvador — 2000
Age Group and Sex of the Victims

Age Group	Males		Females	
	Frequency	**Rate***	**Frequency**	**Rate***
0–4	17	**4.2**	13	**3.3**
5–9	36	**9.4**	9	**2.4**
10–14	30	**8.6**	13	**3.9**
15–19	46	**13.8**	21	**6.5**
20–24	96	**28.2**	20	**6.0**
25–29	73	**26.0**	16	**5.6**
30–34	93	**44.9**	20	**8.6**
35–39	67	**43.7**	13	**7.1**
40–44	74	**55.0**	6	**3.8**
45–49	53	**46.1**	10	**7.7**
50–54	47	**47.1**	11	**10.0**
55–59	40	**51.0**	19	**21.9**
60+	216	**130.2**	63	**25.2**
Total	**888**	**29.2**	**234**	**7.3**

* Rates per 100,000 population

3. Leading Causes of Injury Morbidity: Injuries by Age Group and Sex; Nature of Injuries

Possible Answer:

Non fatal Injuries by age group, sex and intention. (El Salvador's population was used as denominator in this example)

**Injury Surveillance System in Emergency Rooms
El Salvador, May to November 2002
Intention, Age and Sex of Victim**

Intention	Age Groups												Subtotal		Total
	< 1 year		1–4		5–9		10–19		20–59		60+				
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
Unintentional	408	**316**	929	**578**	904	**449**	810	**288**	1,474	**533**	232	**238**	4,757	**2,402**	7,159
Self-Inflicted	12	**5**	15	**13**	19	**5**	14	**25**	39	**13**	1	**0**	100	**61**	161
Violence-Related	5	**3**	12	**8**	34	**12**	156	**26**	574	**78**	31	**2**	812	**129**	941
Other	2	**2**	3	**1**	5	**1**	1	**4**	8	**1**	0	**1**	19	**10**	29
Unknown	3	**0**	2	**1**	4	**1**	9	**1**	37	**2**	6	**0**	61	**5**	66
Total	430	326	961	601	966	468	990	344	2,132	627	270	241	5,749	2,607	8,356

Source: Injury Surveillance System in Emergency Department. El Salvador

Possible Answer:

Non fatal Injuries according to nature and intention:

**Injury Nature and Intention
Injury Surveillance System in Emergency Rooms
El Salvador — May to November 2002**

| Nature of injury | Intention | | | | | Total |
	Unintentional	Self-Inflicted	Assaults	Other	Unknown	
Wound/Superficial Injury	2,619	41	419	5	20	3,104
Fracture	1,955	33	123	3	10	2,124
Penetrating Injury	370	19	291	5	17	702
Abrasion	351	3	18	1	1	374
Burn	349	5	8	1	1	364
Sprain/Strain	241	5	4	0	1	251
Bite	156	0	1	5	0	162
Injury Internal Organs	97	12	38	2	6	155
Cerebral Concussion	110	3	3	0	4	120
Other	634	27	25	2	3	691
Unknown	35	0	1	1	3	40
Total	6,917	148	931	25	66	8,087

Source: Injury Surveillance System in Emergency Department. El Salvador

Exercise: Place the following etiological factors related to Pedestrian Injuries into the correct cell of the Haddon Matrix:

- No crosswalks on the roadway
- No laws related to alcohol and driving
- Children crossing the street without supervision
- Age, sex and physical condition of pedestrian
- Size and shape of the vehicle involved
- Speed of the vehicle involved at impact
- Quality of emergency communications
- Quality and availability of medical services
- Preexisting pathologies in the injured person, such as osteoporosis, disabilities, diabetes, etc.
- Brakes and tires of the vehicle

Possible Answer:

Factors Related to the Likelihood of Pedestrian Injury: The Haddon Matrix

Phases	Factors		
	Human	**Vehicle**	**Physical and Social Environment**
Pre-Event	Children crossing the street without supervision	Brakes and tires of the vehicle	No laws related to alcohol and driving No crosswalks on the roadway
Event	Age, sex, and physical condition of the pedestrian	Size and shape of the vehicle involved Speed of the vehicle involved at impact	Quality of emergency communications
Post-Event	Preexisting pathologies in the injured person such as osteoporosis, disbilities, diabetes, etc.		Quality and availability of medical services

Exercise: Place the following etiological factors related to youth violence into the correct cells of the Ecological Model:

- Inequalities of gender, economics, access to health care, or education
- Concentration of poverty
- Peers involved in crime
- Psychological and personality factors
- Impulsiveness
- Poor parenting practices
- Local illicit drug trade
- Weak police/criminal justice systems

Possible Answer:

Ecological Model of Factors Associated with Youth Violence

Level	Etiological Factors
Individual	Psychological and personality factors Impulsiveness
Relationship	Peers involved in crime Poor parenting practices
Community	Concentration of poverty Local illicit drug trade
Society	Inequalities of gender, economics, access to health care, or education Weak police/criminal justice systems

Source: World Report on Violence and Health. WHO

Exercise: Place these statements related to Bicycle-related Injury Prevention into the correct cells of the Haddon Matrix:

1. Separate bicyclists from other forms of traffic
2. Equip bike with lights, reflectors, and a horn or bell
3. Reduce size and weight of motor vehicles to decrease injury severity
4. Modify vehicle front ends to decrease injury severity
5. Teach safe bicycling practices, including use of a bicycle helmet
6. Control traffic with engineering
7. Enforce speed limits and limits on alcohol use while bicycling and driving
8. Wear bicycle helmet
9. Wear riding gloves
10. Use horns or bells when unable to stop
11. Maintain mechanical condition of bike
12. Teach cyclist to carry identification
13. Encourage use of reflective clothing
14. Provide emergency care
15. Provide adequate EMS
16. Penalize road users who broke the law
17. Inspect bicycle for safety problems

Haddon Matrix Used to Identify Prevention Strategies to Bicycle-related Injury Prevention

Phases	Prevention strategies		
	Human	**Vehicle (Agent)**	**Physical and Social Environment**
Pre-Event	Teach safe bicycling practices, including use of a bicycle helmet Encourage use of reflective clothing	Maintain mechanical condition of bike Equip bike with lights, reflectors,and a horn or bell	Separate bicyclists from other forms of traffic Control traffic with engineering Enforce speed limits and limits on alcohol use while bicycling and driving
Event	Wear bicycle helmet Wear riding gloves	Use horn or bell when unable to stop	Reduce size and weight of motor vehicles to decrease injury severity Modify vehicle front ends to decrease injury severity
Post-Event	Teach cyclists to carry identification Provide emergency care	Inspect bicycle for safety problems	Penalize road users who broke the law Provide adequate EMS

Adapted from: World Report on Road Traffic Injury Prevention, WHO

Exercise: Place the following statements related to Intimate Partner Violence Prevention into the correct cells of the Ecological Model:

- Women's crisis center and battered-women shelters
- Criminalizing physical, sexual, and psychological abuse by intimate partners
- Laws requiring mandatory arrest for domestic violence
- Treatment programs for perpetrators of intimate partner violence
- Training health workers to identify and respond to abuse
- Outreach workers visiting victims of violence in their homes and communities
- Efforts to reform the response of institutions
- Family and social networks to support battered women
- Interagency coordinating council

Ecological Model of Factors Associated with Intimate Partner Violence Prevention

Level	Prevention Strategies
Individual	Women's crisis center and battered women's shelters Treatment programs for perpetrators of intimate partner violence
Relationship	Family and social networks to support battered women Outreach workers visiting victims of violence in their homes and communities
Community	Training health workers to identify and respond to abuse Interagency coordinating councils
Society	Laws requiring mandatory arrest for domestic violence Efforts to reform the response of institutions Criminalizing physical, sexual, and psychological abuse by intimate partners

Source: World Report on Violence and Health. WHO

INJURY SURVEILLANCE TRAINING MANUAL

ANSWERS TO EXERCISES

SESSION VII
DEFINE AN EVALUATION PLAN FOR THE SURVEILLANCE SYSTEM AND MONITOR PREVENTION ACTIVITIES

Page 15

Exercise: Select basic, developmental, and research indicators for intimate partner violence (IPV):
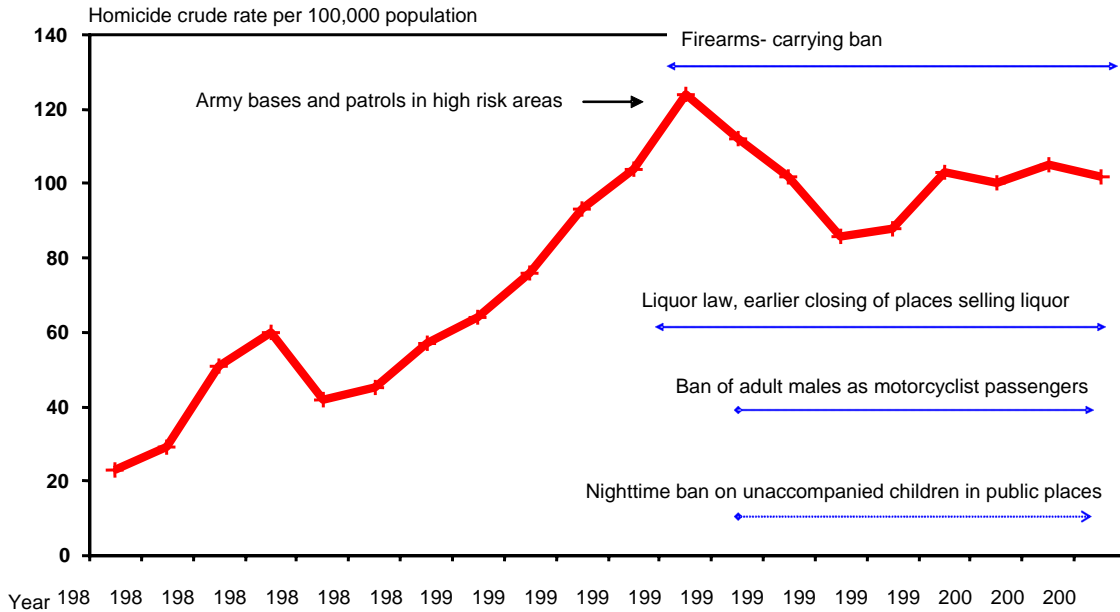
Questions:

1. Is it easy to obtain the data to build the selected indicators?
2. Do the indicators provide information that is useful for monitoring the event?
3. How can you use these indicators to monitor public health issues in your country?

Possible Answer:

Indicators	Easy to obtain the Data?	Useful to Monitor the event?	How are Indicators Used?
IPV—Basic Indicators			
1.1 Age-adjusted homicide rate among females aged 15–44 years, per 100,000 population			
IPV—Developmental Indicators			
2.1 Age-adjusted death rate due to IPV, per 100,000 population			
2.2 Age-adjusted hospital discharge rate for assault resulting from IPV, per 100,000 population			
2.3 Age-adjusted emergency-room visit rate due to assaults resulting from IPV, per 100,000 population			
IPV—Research Indicators			
3.1 Self-reported rate of IPV, per 100,000 respondents			

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Exercise: Ask the participants to give opinions about the impact of prevention strategies applied in Cali and Samoa.

a. Multiple Policies Applied in Cali

Homicide crude rate per 100,000 population

Firearms- carrying ban

Army bases and patrols in high risk areas →

Liquor law, earlier closing of places selling liquor

Ban of adult males as motorcyclist passengers

Nighttime ban on unaccompanied children in public places

Year 198 198 198 198 198 198 198 199 199 199 199 199 199 199 199 199 199 200 200 200

Source: Fatal Injury Surveillance System; Cali, Colombia; 2003.
Data from: Police, Forensic Medicine, District Attorney, Transportation Office

Possible Answer:

Since 1987, the homicide rate in this city shows a constant increase. After 1994, when some strategies were applied, the rates went down. However, in 1997 and later, the rates begin to increase slowly, eventhough some strategies continue being applied. It is necessary to have more information, for example, about the age groups most affected and the places in the city with higher rates to better determine the impact of the strategies.

b. Number of Suicides in Samoa in Relation to the Arrival of Pesticides Containing Paraquat and the Control of Paraquat Sales 1970–1988
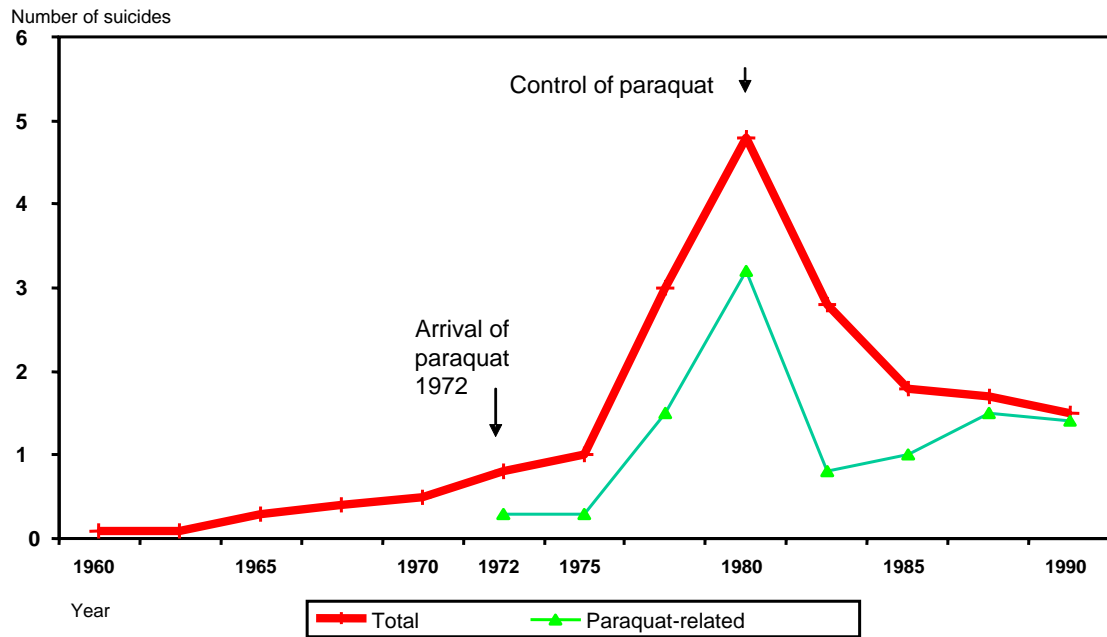
Number of suicides

Adapted from: World Report on Violence and Health, WHO

Possible Answer:

The number of suicides increased slowly after 1960. At the beginning of the 1970s, when paraquat was introduced to the island, the number of suicides increased dramatically. Around 1980, controls on the use of paraquat were established, and immediately the total number of suicides began to decrease. Suicides related to paraquat showed a trend similar to that of the total cases. Based on this information, it appears that this strategy has been successful. However, it would be useful to examine changes in rates and how they are associated with control strategies. Also, the data does not explain why the trend in suicides related to paraquat increased again after 1985.