

**Joint Investigation Case Study – Participant’s Guide** *(Based on real events, but details (including names, hospitals and nationality are changed to protect confidentiality)*

INSTRUCTIONS: after introductions, participants taking turns reading paragraphs will read the case study aloud. There are a few places where role-playing is requested. We appreciate your cooperation, in simulating this potential case scenario, which is based on an actual investigation in New York City. Given each of your emergency response and on call roles, you may find yourself in a similar situation in the future when you are on duty for your agency.

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**PART I:**

**Section 1**

It is 10:00 am on Saturday. Dr. Shoe, this week’s physician on-call for the Department of Health and Mental Hygiene (DOH), receives a call from the NYC Poison Control Center, which serves as the 24-hour emergency contact number for the DOH. A physician from Gotham Hospital called the Poison Control Center to report that a 43-year-old Saudi man was admitted to the hospital and has a positive blood culture for brucellosis.

- 1) What are some ways that Dr. Shoe might learn about brucellosis and determine whether one case of brucellosis is unusual for NYC?

According to the Centers for Disease Control and Prevention (CDC, <http://www.cdc.gov/mmwr/summary.html>) there were an average of 120 (range: 104-136) cases of brucellosis per year in the U.S. and 2 (range: 1-3) in NYC from 2001-2004. Dr. Shoe does not know whether this is the first case reported this year in NYC, but until he can check surveillance records, he assumes having one case is not, by itself, extraordinary. However, he knows *Brucella* can be spread intentionally through droplets in the air, so he plans to follow up actively on the case – and will consider intentional (i.e., bioterrorism-related) as well as natural exposures.

- 2) What questions will you ask the reporting physician when you call him back?

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Section 2

By reading the fact sheet, Dr. Shoe learns that people can become infected through direct contact with blood, urine, and especially placentas and birth fluids from infected animals. People also can be exposed when they eat or drink contaminated foods or beverages. The most common source of human infection in the U.S. is unpasteurized dairy products produced from contaminated milk (i.e., from infected cows). It is generally not transmitted from person to person. The incubation period (period between exposure and symptoms) is usually 5-60 days, although it is highly variable.

Dr. Shoe obtains the following information from the patient’s physician, Dr. Kwak:

*“The patient speaks Arabic, which has limited my ability to obtain an accurate medical history. A physician trainee in the hospital from that part of Saudi Arabia assisted with translation on admission, but this physician has been difficult to find since then. What I do know is that the patient was admitted one week ago with dizziness and heart palpitations. He reported 10 days of fever, profuse sweating and diffuse joint pains prior to his admission. Tests were ordered and the patient was started on antibiotics, but until today all tests had been negative and we had no explanation for his illness. His past medical history is only significant for high blood pressure and diabetes, which are controlled by medications. He had prior gallbladder surgery.*

*The patient is acutely ill with a high fever (Temp 103°F). His pulse has been mildly elevated, and his lymph nodes and spleen enlarged. Blood tests indicate an anemia (low red blood cell count) and abnormal liver function. Today, the hospital’s clinical laboratory has reported that a blood culture specimen collected on admission is now growing Brucella. The nurses and other clinical staff caring for the patient are anxious about becoming exposed to him.”*

3) What else would Dr. Shoe want to know about this patient and his illness?

4) If you were Dr. Shoe, would you suspect bioterrorism at this time?

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Section 3

Dr. Shoe reads more about how *Brucella* is transmitted. For the most part, people do not get infected from contact with a person with brucellosis. He recommends that the staff employ standard infection control precautions (hand washing, etc). Any staff who have direct contact with the patient’s secretions/body fluids should use contact precautions (e.g., wear gowns and gloves).

Dr. Kwak calls back to report that an Arabic interpreter has been found and will be sent shortly to help interview the patient. Dr. Shoe asks Dr. Kwak to inquire specifically about the patient’s travel history, and exposure to animals and to unpasteurized milk products.

Dr. Shoe calls the Public Health Laboratory (PHL) on-call laboratorian to discuss the case. The laboratorian then tells him that polymerase chain reaction testing, or PCR, could determine whether one of a variety of *Brucella* species had been cultured but that 3-5 days would be needed to determine which species caused this illness. Dr. Shoe arranges transport of the specimen to PHL for PCR testing. The on-call laboratorian explains to Dr. Shoe that they should have results ~ 3 hours after they receive the specimen.

Meanwhile, Dr. Shoe finds more data about brucellosis on the World Health Organization website. Brucellosis is common in Saudi Arabia; 15% of the Saudi population has antibodies to *Brucella*, evidence that they were infected at some time in their lives. Apparently experts think one reason the incubation period is so variable is because initial symptoms can be subtle and patients have a hard time determining when they began. When infections are treated with inadequate or incorrect antibiotics, patients can develop lifelong, relapsing brucellosis. With relapses, the initial exposure could have been years in the past without the patient realizing it.

Three hours later, Dr. Kwak calls back with more details after re-interviewing the patient with the interpreter present:

*“The patient is still quite ill, and had difficulty concentrating during the interview with the translator present. He reports arriving in the U.S. 15 years ago but that he has traveled to the Middle East (particularly to Saudi Arabia) often. He states his last trip was about 8 months ago, but reported no exposure to animals or unpasteurized dairy products. His wife and children live in Saudi Arabia. It seems the patient has been unemployed for the last couple of months but reports working occasional construction and dishwashing jobs.”*

Shortly thereafter, the PHL laboratorian calls to tell Dr. Shoe that the PCR was positive for a *Brucella* species. She reminds Dr. Shoe that it will take up to 5 more days to confirm the diagnosis with other microbiological techniques.

5) What should Dr. Shoe do next? Should Dr. Shoe go to the hospital at this point?

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- 6) Does the information Dr. Shoe has so far warrant concerns about the possibility of bioterrorism?
  
- 7) Should FBI and/or NYPD be notified at this point? Who makes the final decision at the DOH?

Dr. Shoe, the Senior Physician on Call, and the Commissioner discuss the pros and cons of notifying law enforcement at this point in the epidemiologic investigation.

- 8) Pros and Cons:
  - a. Suggest 2 pros, 2 cons to early notification.
  - b. Suggest 2 pros, 2 cons of waiting to notify until public health has more information

	Notify early	Wait to notify
<b>Pros</b>		
<b>Cons</b>		

They decide to notify law enforcement.

- 9) How would Dr. Shoe (appropriately) notify law enforcement?
  
- 10) What would Dr. Shoe tell law enforcement about the case? Would he leave out any confidential information?
  
- 11) Is there any more information that Law Enforcement would want to know?

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Section 4

Dr. Shoe notifies the appropriate contacts for both NYPD and FBI and briefly describes the case and the concern that there is no obvious risk factor for brucellosis. They decide to conduct a joint interview.

- 12) What arrangements should be made for the agency representatives (DOH/NYPD/FBI) to meet at the hospital?
  
- 13) Who at Gotham Hospital should be notified prior to arrival? What should these persons be told?
  
- 14) What will be FBI and NYPD’s initial response to the notification?
  
- 15) How do NYPD and FBI decide how many and what level of staff to send?
  
- 16) List types of inquiries FBI and NYPD would make *before* the interview.

Detective Lether, a member of the Joint Terrorism Task Force, is sent as a representative of both the NYPD and FBI. She meets Dr. Shoe in a secure meeting room inside Gotham Hospital reserved for them by the administrator on call. They review the Joint Investigation Protocol and discuss how each of them will approach the interview.

- 17) List the objectives of the interview from both the public health and law enforcement perspectives.
  
- 18) What procedures should be agreed upon before the joint interview?
  
- 19) Who would explain the interview to the patient?

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Section 5

Dr. Shoe proceeds to the patient’s room and reviews the medical chart. He then asks Detective Lether to join him outside the patient’s room. They enter the patient’s room with the interpreter, introduce themselves and explain why they are there. Dr. Shoe explains that he and his law enforcement colleague will first ask some questions together, then Detective Lether will leave the room and Dr. Shoe will ask some medical questions without anyone else being in the room. The patient is asked if he understands and whether he first has any questions for the investigators.

20) What questions would Dr. Shoe or Detective Lether ask? (Write down 5-10 questions.)

21) What kinds of responses would raise Detective Lether’s level of suspicion and how would she proceed if she became suspicious?

22) What types of questions would Dr. Shoe ask the patient after Detective Lether leaves the room?

**ROLE PLAY** the joint interview (maximum 10-15 minutes): 1) discussing the interview outside the patient’s room 2) introducing all agency representatives to the patient, and 3) conducting the joint interview. Please take note of any difficulties.

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**Section 6**

The patient is feeling very sick and has some trouble concentrating on the interview.

Towards the end of the interview, Detective Lether is called out of the patient’s room to receive a call from Headquarters with information that the patient’s name has not resulted in “hits” in any law enforcement databases. She returns to the patient’s room.

As they near the end of the interview, the patient’s brother (who speaks English well) arrives and offers his help. The patient’s brother indicates that he accompanied the patient on his last trip to Saudi Arabia, which was 3 months ago. He says the numbers “8” and “3” sound similar in his dialect, so perhaps the non-native interpreter confused them. While in Saudi, they did both stay on a farm for one night visiting friends. He recalls having been served a special meat dish that had raw goat cheese. His brother definitely ate the dish, although he and most of the others (being vegetarian) did not.

He and Detective Lether then thank the patient and his brother for their cooperation during the interview and leave the patient’s room

- 23) What are Dr. Shoe and Detective Lether’s initial impressions regarding this case and its potential to be related to bioterrorism?

Dr. Shoe then asks the other physicians at the hospital whether any other similar cases have been admitted recently.

- 24) How could Detective Lether verify information provided by the patient’s brother?

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Section 7

Dr. Shoe tells Detective Lether that the patient could have been exposed to *Brucella* if he ate unpasteurized goat cheese on the farm in Saudi Arabia 3 months ago. Three months is closer to the usual incubation period for brucellosis. The patient also could have been infected during a prior trip to Saudi Arabia, and his symptoms could be explained by relapsing chronic brucellosis, although he found no evidence to support this. Detective Lether indicates that she needs documentation of the travel dates.

Detective Lether returns to the patient’s room and asks the patient’s brother whether he brought his and his brother’s passports with him. The brother replies that he did not but agrees to be escorted home by Detective Lether to retrieve them.

25) What steps will Dr. Shoe take to determine whether this is an isolated case?

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Section 8

Dr. Shoe receives a call from a data analyst who was sent to the office to check the Communicable Disease surveillance records. Apparently, no other cases have been reported to the DOH from anywhere else in the city in the past 4 weeks. In fact, this is the first case of the year. Given this, Dr. Shoe explains that all of the epidemiologic data suggest that this is an isolated, imported case.

Detective Lether returns from escorting the patient’s brother home and reports that the passports are legitimate. She receives information from the FBI travel database that corroborates the passports’ and the patient’s brother’s accounts of their travel.

26) What additional steps, if any, will NYPD or FBI take at this point?

Dr. Shoe explains that he plans to continue to check-in with Dr. Kwak on the status of the patient, and he will continue to monitor surveillance records for other cases of brucellosis in the city. Assuming no conflicting data emerges, and his supervisors agree with his assessment, he also plans to recommend closing the DOH case investigation.

The patient improves over the next few days on appropriate antibiotic therapy, no other suspect or confirmed brucellosis cases are reported to the DOH, and the investigation is closed.

***-- BREAK FOR SHORT LUNCH --***



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28) Describe the steps that public health used to investigate this case?

29) Describe the steps that law enforcement used to investigate this incident?

30) Describe the similarities and differences in how public health and law enforcement approached the joint interview?

31) Name one potential challenge associated with the joint investigation and strategies for how to avoid this.

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