

Case Study Exercise

Investigation and Management of Suspected Cluster of Human Cases of AI/PI

Pandemic Phase 4-5

Instructions

For this exercise, you will work with your group to complete a case study investigation. Each segment of case study information will be followed by a series of questions. Facilitator or one person in your group should read the information aloud to group members. Then, work as a group to generate possible answers for each question that the group thinks to be most appropriate. Record the answers in the space provided.

Case Study: V

October 13th

A staff doctor at Jagdamba hospital notifies the District Health Office that they have admitted three previously healthy persons, one of whom had severe respiratory illness. The doctor is concerned that his patients may have avian influenza, as confirmed poultry outbreaks have been reported in the neighbouring country and is continuing. Indiraghat borders that country and the border is porous.

Time allotted: 90 minutes

Question 1: If you, as CMO of the District, had received this call, what additional information would you want to receive from the treating physician?

Question 2: As head of the District Rapid Response Team (RRT) you have been asked to investigate the cases. You have a high degree of suspicion from your experience that it could be avian influenza. What all resources and supplies will you think of adding to your inventory list? Where would you obtain these resources?

October 14th

The RRT arrives at Indiraghat and goes directly to the Jagadamba hospital to begin investigation of the family cluster with severe respiratory illness. The RRT learns that the Jagadamba Hospital's microbiologist had taken the naso pharyngeal swabs of the first case admitted to the hospital on 11th itself (after getting advice from his friend working in the ICMR lab at Kolkata) and dispatched it to that lab and that report is awaited. She said she acted fast on her own because the child had visited a village across the border two weeks back which is endemic for H5N1.

The medical charts and chest x-rays for the suspect avian influenza cases are provided to the investigative team.

Abstracted Data from Medical Charts for Case 1-3

Case - 1

Five year old male presented to the hospital on October 11th with fever, cough, shortness of breath and diarrhoea.

Date of symptom onset: October 8th

Vitals upon admission:

Temperature = 39° C

Heart rate = 120

Respiratory rate = 30

Blood pressure = 90/60

Oxygen saturation = 88%

X-ray on 11th: small patchy infiltrates in the lower zones of both lungs.

Incubated on October 11th and placed on mechanical ventilation.

Case - 2

55 year old female admitted on October 11th

Full time caretaker and grandmother of Case - 1

Onset of fever, cough on 10th and shortness of breath

Alert, oriented, anxious

No other significant medical history, except to be hypertensive on regular medication for past three years.

Initial blood count reveals low lymphocytes and leukocytes.

Vitals upon admission:

Temperature = 38.5° C

Respiratory Rate = 28

Blood Pressure = 180/100

Oxygen Saturation = 90%

Lab results pending.

Case - 3

Eight year old male presented to the hospital on October 13th with fever, cough, and diarrhoea

Date of symptom onset: October 11th

Friend of case-1, had been playing together in the past one week.

Vitals upon admission:

Temperature = 39° C

Heart Rate = 120

Respiratory Rate = 30

Blood Pressure = 90/60

Oxygen Saturation = 94%

Chest X-ray Normal

Lab Result Pending

Child CXR on admission (Case - 1)



(Image from Faculty of Medicine, Chinese University of Hong Kong; Copyright © 2002-2006. Department of Diagnostic Radiology and Organ Imaging)

You immediately ring up ICMR lab at Kolkata and you are informed that Naso pharyngeal aspirates are positive for H5 influenza by real-time RT-PCR

Question 3: Do any of these cases meet the WHO case definition for influenza A/H5? If so, would these cases be classified as confirmed, probable, suspect or under investigation?

Question 4: Is any additional information needed to classify these cases?

You observe that the hospital is crowded the staff nurses in the hospital ICU where the case no 1 is admitted is not following universal precautions. The other two cases are in the general ward where relatives and well wishers of the admitted patients have overcrowded the ward.

Question 5: What infection control precautions you would immediately put into place?

Update

The district RRT was concerned that there may be other human cases of avian influenza in Indraghat District that have not been recognised. Interview of the relatives of case 2 and 3 at the hospital reveals that they never had any exposure to dead poultry or have not visited the neighbouring country. They also convey that two of the neighbours who visited the grandmother during the initial part of her illness are also perhaps running fever. The RRT decides to conduct epidemiological investigations.

Question 6: How would the RRT find out if there are additional cases and what case finding strategies will the RRT use?

October 16th

The two neighbours who had visited the grandmother at her residence have been indeed running high fever and one of them has difficulty in breathing. The blood samples of the grandmother and the other child in the hospital (case 3) has tested positive by RT-PCR for H5. Two staff nurses who attended case 1 have also become febrile. You appraise the state Nodal point for Avian Influenza. He alerts the state health department and the central government. You are informed of the decision of the government to depute the central and state RRT.

Question 7: The central RRT activates the containment plan. An event based active surveillance need to be put in place. What would be the major procedures that would be followed by the RRT?

Question 8: The contingency plan suggests mass chemoprophylaxis with Oseltamivir. But the stock is not even enough to provide the same to one third of the population in the containment zone. Who will be prioritised to receive antiviral prophylaxis?

Question 9: Public demands surgical masks. There is limited availability. What will you recommend for personal protection if surgical masks are not available?

November 12

Several other suspect AI cases have been reported in the area, and you are worried this may signal the beginning of an outbreak, maybe even with human-to-human spread of the virus.

Question 10: Should case's families be quarantined?

Question 11: How long should contacts remain at home voluntarily during quarantine?

Question 12: Should any events be cancelled to reduce transmission among children?

Question 13: What are some pros and cons of each of the following non-pharmaceutical interventions (NPI)? Consider them in your local context. That is, what are some problems that can arise or things that can facilitate use of the NPI based on the situation in your state?

Question 14: What would be the RRTs advice to the civic authorities enforcing isolation and/or quarantine when citizens are unwilling to follow the orders?

Question 15: What are some practical problems that you envision with implementing social distancing measures? What are some ways to overcome these problems? Again consider these questions in the context of your particular state's situation.

Question 16: What legal provisions exist in your district/municipality to provide authorisation to implement isolation, quarantine and other social distancing measures? Ensure all group members understand what the law says you can and cannot do.

November 24th

Several suspect ILI cases have been reported in the neighbouring two satellite towns. The Government is worried that this may signal the beginning of a pandemic, perhaps human-to-human spread of the virus. The Government decides to start the containment on a war footing. The population as per the census in the containment zone is 3,15, 42.

Question 17: The Government has a stock of 20,00,000 doses of oseltamivir. Would this be enough to give mass chemoprophylaxis?

Question 18: What would be the central RRTs recommendation to the Government?

Question 19: If the Central RRTs/state RRTs are told that it would be difficult immediately to increase the availability of Oseltamivir, how would you plan to modify the containment operation?

Question 20: What would you communicate to the public at this stage?