SAND2013-10113P

# AFTER ACTION REPORT

*OUTBREAK OF UNKNOWN ZOONOTIC DISEASE*
*IN ANIMALS & PEOPLE IN YEMEN, APRIL-JUNE 2014*

**Collaborative assessment by** _____,
_____,
_____,
_____

**MONTH DAY, YEAR**

## I. Executive Summary

***[Fill in a quick, short summary of events…include timeline, pathogen, who was impacted, and what steps were taken to mitigate impact]***

## II. Objectives

1. Identify roles and responsibilities of key stakeholders based on Yemen's current national disease detection and reporting plans.

2. Identify barriers to detection and reporting a suspected incidence of human infection with a zoonotic disease, concurrent with detection and reporting of a suspected outbreak in the animal population.

3. Characterize and identify gaps and opportunities to improve current practices and procedures in disease detection and investigation (including sample collection, transport, intake, laboratory analysis, disposition, and reporting of test results), in communication, in biosecurity, in biosafety or in other aspects of addressing a zoonotic outbreak.

## III. Event Summary

During a break from Monsoon rains on April 1, 2014, a herder purchases ten sheep that recently cleared quarantine procedures at Mukalla port. He intends to take them to his pastoral grazing lands and fatten them up for sale to a trader in Saudi. He loads them into a truck with two of his neighbors and his two teenage sons. The five men and ten sheep make the journey back to his tribal grazing lands outside Tarim. Shortly after arriving home, on April 4th, one of the sheep develops respiratory distress, labored breathing, increased respiratory and oral secretions with a dry muzzle, and red eyes (injected conjunctiva/hyperemic membranes). He does not appear lethargic and is not kept separate from the other animals. On April 6th, three of the herder's original sheep develop similar symptoms and diarrhea.

In Mukha, on April 10th, several shipments of sheep and goats are loaded into a three-vehicle convoy for overland transport to markets in Sana'a and Taiz. It takes several days to make the journey due to road conditions and the convoy splits off in Taiz with two of the trucks continuing to Sana'a. The animals arrive at the main market in Taiz on April 13th.Some who are a little sickly appearing are taken straight to abattoirs at a slaughterhouse. The meat is quickly sold and the remaining animals are segregated into smaller groups that will be sent to other smaller markets in the governorate. When the animals arrive in Sana'a on April 14th, there are several dead among the herds. About half of all of the sheep have developed some respiratory distress and increased secretions. A few goat kids have also developed respiratory signs and diarrhea. The trader chooses to have a veterinarian treat the healthiest looking sheep and send the rest to slaughter.

On April 18, an adult man presents for treatment for an atypical typhoid illness in Sana'a and given the recent outbreak in Hajja where 7 children died, reports are made by hospital staff to surveillance officer who then informs the Ministry of Public Health and Population (MPHP). MPHP assembles a team to conduct an active case investigation and collect specimens, hoping to identify the source early and implement a swift response to control the outbreak. They begin by interviewing the index case at the hospital.

He is a forty year old university professor. He works in the city and recently attended a university dinner for faculty. He thinks a colleague who is jealous poisoned his food. The same night of the dinner, he experienced severe abdominal cramps.

On April 19, an adult man presents to a clinic in Sana'a with respiratory distress. He works as a truck driver and has no previous history of respiratory disease. Doctors recommend he quit smoking cigarettes and offer him options of wearing a face mask or buying medicine.

At the same time in Tarim, the hospital reported to MPHP they have seen 12 cases of severe unexplained respiratory illness in people. None of the hospitalized included young children or older adults; they are teenagers and young to middle-aged adults. A local radio show mentions there are also rumors of respiratory illness spreading nearby, outside of the city limits.

Meanwhile, in Mukha, from April 16-26, several pens of sheep and goats in the quarantine facility developed labored breathing, increased respiratory secretions, and oral lesions. No hoof lesions were identified. Quarantine officials conducted rapid tests showing negative results for FMD or PPR. A quarantine staff member even tested two specimens for avian influenza, which was negative. Animals were cleared for import if the trader was willing to pay for veterinary examination and medicine. If not, the animals were condemned. Several traders expressed outrage as their herds were not ill prior to being penned with other animals at various stages in their quarantine process.

Overall, if just one animal were sick in a pen, approximately 65% of the other hoofstock in the pen would contract similar respiratory symptoms. New animals became sick within 72 hours of being placed in a pen which housed ruminants with respiratory illness Among the smallest, weakest kids and lambs, mortality rate reached 100% prior to the completion of the 10 day quarantine; among the adult animals and healthier kids and lambs, mortality rate remained under 10% and would remain ill with respiratory symptoms for 1-3 days and would stay off feed as the oral lesions healed for an additional for 3-7 days. Neither camels nor large ruminants (cattle) developed the respiratory symptoms.

July 30, MAI reports that a total of 2000 sheep have died from this unknown outbreak; an estimated 10,000 were effected. The CVL and the public health laboratory and their international collaborators report that electron microscopy and advanced PCR has shown both the sheep and the people to have had a similar, novel parapoxvirus. No new animal cases were detected after biosecurity and biosafety measures were implemented at markets, quarantine stations and on ranches since June 15. MPHP reports 857 hospitalizations of people meeting case definition; 200 were lab-confirmed for the novel virus. Thirty deaths were attributed to this virus, including 2 staff who worked at the quarantine station and 1 veterinarian. The last hospitalized human case was reported to MPHP on June 28.

**IV. Participants in Response** (lead agency marked with **)

| Agency | Roles/Responsibilities | **Contact Person** (number/email) |
|---|---|---|
| ** | | |
| | | |
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## V. Evaluation methods

In X Month, staff from participant agency involved in the response convened to discuss the successes and areas identified as needing improvement.

A systematic assessment of the response was done by looking at objectives (see Section II) and capabilities critical to meeting each of these objectives.

The assessment was conducted in an informal format. Participants were asked to go through an evaluation of each of the capabilities listed below and to share their thoughts with the group. Prior to commencing the assessment, ground rules were provided to explain that no judgment, personal criticisms would be allowed and that any comments made would not be attributable to the party mentioning them.

A qualitative assessment of the most common themes was determined after collection of assessments and was included within this report as "key strengths" and "critical gaps."

*[**This is just an example. Note that you can include epidemiologic data, lab findings, other data elements within your evaluation of the AAR, you can include written evaluations, key stakeholder interviews, focus group conversations, or any other format you would like.]***

## VI. Results

### Objective 1

Identify roles and responsibilities of key stakeholders based on Yemen's current national disease detection and reporting plans.

### Assessment of Objective 1

Were the roles and responsibilities related to disease detection, reporting, investigation, communication, biosecurity and biosafety addressed for each of the following stakeholders?

***[Fill out chart on the following page]***

**Any Additional General Comments about Roles and Responsibilities**

_____

_____

_____

_____

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## Table 1. Roles and Responsibilities Assessed During the Response

**Please put a check mark (√) in the box if the roles and responsibilities were addressed**

| | Detection | Reporting | Investigation | Communication | Biosecurity/ Biosafety |
|---|---|---|---|---|---|
| **1. Port and Quarantine** | | | | | |
| **2. Herder/Trader** | | | | | |
| **3. Market** | | | | | |
| **4. Slaughter facility** | | | | | |
| **5. Veterinarian** | | | | | |
| **6. CVL** | | | | | |
| **7. MAI** | | | | | |
| **8. Health provider (for people)** | | | | | |
| **9. Hospital** | | | | | |
| **10. Public health laboratory** | | | | | |
| **11. MPHP** | | | | | |
| **12. External partners in country (volunteers, etc)** | | | | | |
| **13. International external partners (WHO, USG…)** | | | | | |

## VI. Results (continued)

**Objective 2**

Identify barriers to detection and reporting a suspected incidence of human infection with a zoonotic disease, concurrent with detection and reporting of a suspected outbreak in the animal population.

**Assessment of Objective 2**

Identify the top barriers in detecting and reporting a case of a human infected with a zoonotic disease and/or a case of an animal infected with a zoonotic disease.

***[In the chart on the next page , write the top 3 barriers to detecting, the top 3 barriers to reporting a case of human infected with a zoonotic disease and the top 3 barriers to detecting and the top 3 barriers to reporting a case of an animal infected with a zoonotic infection.***

***Then, place a check mark (√) in the box to say if the category of the barrier is a procedure, policy, logistics/supplies, or an external factor or other.]***

**Any Additional General Comments about Roles and Responsibilities**

_____

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## Table 2. Barriers to Detection and Reporting Human and Animal Zoonotic Disease Cases

| | Procedure | Policy | Logistics/ supplies | External issue | Other |
|---|---|---|---|---|---|
| **BARRIERS TO DETECTING HUMAN CASE OF ZOONOSES** | | | | | |
| **1.** | | | | | |
| **2.** | | | | | |
| **3.** | | | | | |
| | | | | | |
| **BARRIERS TO REPORTING HUMAN ZOONOTIC CASE** | | | | | |
| **1.** | | | | | |
| **2.** | | | | | |
| **3.** | | | | | |
| | | | | | |
| **BARRIERS TO DETECTING ANIMAL CASE OF ZOONOSES** | | | | | |
| **1.** | | | | | |
| **2.** | | | | | |
| **3.** | | | | | |
| | | | | | |
| **BARRIERS TO REPORTING ANIMAL ZOONOTIC CASE** | | | | | |
| **1.** | | | | | |
| **2.** | | | | | |
| **3.** | | | | | |

## VI. Results (Continued)

**Objective 3**

Characterize and identify gaps and opportunities to improve current practices and procedures in disease detection and investigation (including sample collection, transport, intake, laboratory analysis, disposition, and reporting of test results), in communication, in biosecurity, in biosafety or in other aspects of addressing a zoonotic outbreak.

**Assessment of Objective 3**

1) In column #2, identify the top strengths OR needs for improvement for each of the following
    a. Sample collection
    b. Sample transport
    c. Intake
    d. Lab Analysis
    e. Disposition
    f. Result Reporting
    g. Communication
    h. Biosecurity
    i. Biosafety
    j. Other
2) In the last column, list at least 1 way to make to keep strengths within response system OR to improve current practices and procedures (to fix the gap

***[Fill out chart on the following page]***

**Any Additional General Comments about Roles and Responsibilities**

_____

_____

_____

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## Table 3A. Strengths Identified During the Response

| Topic | Key Strength | Ways to Make Sure to Keep Strength in Response |
|---|---|---|
| **Sample Collection** | 1. | 1. |
| | 2. | 2. |
| **Sample Transport** | 1. | 1. |
| | 2. | 2. |
| **Intake** | 1. | 1. |
| | 2. | 2. |
| **Lab Analysis** | 1. | 1. |
| | 2. | 2. |
| **Disposition** | 1. | 1. |
| | 2. | 2. |
| **Result Reporting** | 1. | 1. |
| | 2. | 2. |
| **Communication** | 1. | 1. |
| | 2. | 2. |
| **Biosecurity** | 1. | 1. |
| | 2. | 2. |
| **Biosafety** | 1. | 1. |
| | 2. | 2. |
| **Other** | 1. | 1. |
| | 2. | 2. |

**Table 3B. Solutions for Areas Needing Improvement Identified During the Response**

| Topic | Areas For Improvement | Potential Solution |
|---|---|---|
| **Sample Collection** | 1. | 1. |
| | 2. | 2. |
| **Sample Transport** | 1. | 1. |
| | 2. | 2. |
| **Intake** | 1. | 1. |
| | 2. | 2. |
| **Lab Analysis** | 1. | 1. |
| | 2. | 2. |
| **Disposition** | 1. | 1. |
| | 2. | 2. |
| **Result Reporting** | 1. | 1. |
| | 2. | 2. |
| **Communication** | 1. | 1. |
| | 2. | 2. |
| **Biosecurity** | 1. | 1. |
| | 2. | 2. |
| **Biosafety** | 1. | 1. |
| | 2. | 2. |
| **Other** | 1. | 1. |
| | 2. | 2. |

## VII. Recommendations

[*These are examples for categories to organize recommendations. We also would recommend identifying agencies to take a lead on each of these and assigning a timeline for completion]*

### 1. Capabilities

a. Staff needs
b. Equipment needs
c. Training Needs
d. Logistical Support Needs
e. Communication Supplies
f. Lab Capacity
g. Clinical Capacity

### 2. Updates to Current Response Plans

a. Operations
b. Communications
c. Logistics
    i. Transportation
    ii. Biosafety
    iii. Biosecurity
d. Planning
    i. Additional planning staff
    ii. Standard Operating Procedures

## VIII. Acknowledgements

[*If partners help in a response but do not participate in the AAR- it is always nice to thank them formally for their assistance. You can also put a references section if you refer to outside expertise from journals, websites, etc.]*