ISDS One Health Surveillance (OHS) Case Study

CASE STUDY TITLE			
Anthrax in Human and Livestock: Investigation and Response, Turkana-Kenya, 2012			
PROJECT/ACTIVITY TITLE			
Anthrax Outbreak investigations in Turkana-Kenya, 2012			
CONTACT INFORMATION			
NAME:	Dr. Mark Odhiambo Obonyo		
ORGANIZATION:	Field Epidemiology and Laboratory Training Program		
COUNTRY:	Kenya		
Email:	mobonyo@feltp.or.ke		
WHAT DOMAIN(S) DO YOU WORK IN?	___x Human health	___x Animal health	__x_ Environmental health
OHS AREA(S) OF FOCUS ADDRESSED BY CASE STUDY	x___ Cross-Agency Communication and Collaboration	___ Training and Resources	___ Technologies and Methodologies
	___Other: ___ N/A_____		
PROBLEM DESCRIPTION (150 word maximum)			

Summarize the problem/situation that was addressed with a OHS approach.

On 03/09/2012: A joint team from affected district comprising of a clinician, public health officer, nursing officer, medical laboratory technician and animal health technicians visited the affected area to carry out situation analysis. The animal technicians collected blood samples from three dead cattle and the medical team collected blood samples from suspect case-patients for laboratory testing. The medical team also treated suspect human case. The team jointly carried out public health education on dangers of handling and slaughtering dead/sick livestock and on proper disposal of dead animals.

On 20/10/2012 the DVO launched ring livestock vaccination in adjacent and affected areas to contain the spread of the disease. VSF-Germany and Catholic diocese of Lodwar provided logistical support. The campaign targeted only cattle and a total of 7,350 were vaccinated.

On 26/10/2012, a joint national team from Ministry of health and Ministry of livestock development visited the affected area to carry out investigations. The team assisted by local community leaders and community animal and human health volunteers, line-listed all suspected human cases and documented numbers of affected animals. Suspect human case was defined as a painless skin lesion and/or abdominal pain, vomiting, diarrhea and/or death occurring in a resident of Liwan sub-location from July 1, 2012; whereas for animals, a case was defined as per-acute death in any livestock species in Liwan sub-location followed by oozing of blood from orifices, rapid bloating and absence of rigor mortis from July 1, 2012.The team also carried out focus group discussion (FGD) with livestock owners, key informant interviews (KII) with health and veterinary officials and face to face interview with suspected case-patients to collect demographics, clinical and exposure information. Relatives of those who died were also interviewed to obtain information on the deceased. The livestock owners reported that the first animal cases/death occurred in late July/ early August whereas human cases from mid-August. A total of 17 suspected human cases were reported of which the median age of case-patients was 27 years (range: 7-70 years); 10 (59%) were female and 13 (75%) were persons <40 years. Fourteen (82%) reported ulcerative skin lesions and three gastrointestinal (GI) symptoms. All the three with GI symptoms died giving a case fatality rate of 18%. All case-patients were exposed by either handling, slaughtering and/or consuming meat from sick/dead animals or by sleeping on hides/skins of a suspect animal. Approximately 169 livestock died from the outbreak.
No laboratory confirmation was done on either human or animal samples collected due to loss of sample integrity in the field associated with harsh weather conditions and poor sample handling. The team clinically diagnosed the disease in humans and animals as anthrax. Following the joint intervention, the community being pastoralists, moved away from the affected area to other sites. No more further human cases were reported. However livestock cases continued to be reported but incidence was low.

ACTION TAKEN (500 word maximum)

Describe how the problem was addressed and how the action taken was measured. Please include a description of the collaborators and the data sources used.

Good collaboration between the veterinary and human health officials in investigations and response into the outbreak.
-Involvement of the affected community and community animal/human health volunteers in the outbreak investigations and response.
-The community were very knowledgeable about the disease and they were able to point out very accurately outbreak timelines and signs/symptoms in both human and animals
-Involvement and participation of various partners in the outbreak response through purchase of the anthrax/blackquarter vaccine and financial support to the joint team to carry out situation analysis and veterinary team to carry out livestock vaccinations.

FACILITATORS AND BARRIERS (100 words max each)

Please list and describe any factors that contributed positively to this project/activity.

Good collaboration between the veterinary and human health officials in investigations and response into the outbreak.
-Involvement of the affected community and community animal/human health volunteers in the outbreak investigations and response.
-The community were very knowledgeable about the disease and they were able to point out very accurately

outbreak timelines and signs/symptoms in both human and animals
-Involvement and participation of various partners in the outbreak response through purchase of the anthrax/blackquarter vaccine and financial support to the joint team to carry out situation analysis and veterinary team to carry out livestock vaccinations.

Please list and describe any factors that were a challenge or barrier to overcome.

-Sample handling and lack of laboratory capacity for the veterinary team to carry out field diagnosis. The disease was only clinically diagnosed and possibility exists that there could have been possibility of other causes of sudden livestock deaths and human illness.
-Delay in raising resources hampered both local and national teams to respond to the outbreak quick enough.
-The terrain was rough due to poor road infrastructure and area was isolated and a security risk zone due to bandits and cattle rustlers.

LESSONS LEARNED (250 word maximum)

Please describe any lessons learned or best practices identified by this project/activity.

Timely outbreak response requires effective early warning and surveillance systems. This investigation points out the important role that livestock keepers can play in veterinary surveillance. The investigation revealed that pastoralists had good traditional knowledge concerning livestock diseases in general and anthrax in particular. They provided detailed and accurate clinical descriptions of the disease, had greater appreciation of the risk factors associated with the disease, and showed a stronger recall of the outbreak history. They also noted human cases consistent with anthrax well in advance of detection by the public health surveillance system. This suggests that veterinary surveillance systems could have detected the outbreak earlier by taking advantage of livestock owner knowledge and integrating it with the existing surveillance system.

Weaknesses in both preparedness and response by veterinary and public health offices were highlighted by this investigation. Late detection of the disease in both animals and humans meant that the disease was well established in the livestock population before veterinary and public health interventions were initiated. Timelines show that outbreak of anthrax in livestock was occurring as far as late July and alarm bells were only raised after human deaths occurred. Although the veterinary office carried out ring vaccination, the intervention was late and opportunity to control the outbreak was long gone. More importantly, the investigation highlights the importance of a one health approach with strong linkages between the public health, veterinary officials and other stakeholders as a critical part for prompt adequate prevention and control of zoonotic diseases.

ADDITIONAL COMMENTS (75 words max)

Summarize the problem/situation that was addressed with a OHS approach.

The outbreak investigations also highlighted the need for strengthening surveillance of zoonotic diseases. This can be achieved by the integration of the community animal/human healthvolunteers especially in hard to reach areas and predominantly pastoral communities.