

Profile

I was born in Sacramento, California and earned my Bachelor's degree in biology at the University of California Irvine. I initially wanted to go to medical school, but a research experience in my junior year changed my career motivations. I worked with the California Department of Public Health studying an endemic arenavirus outbreak along the border of California and Mexico. By the end of the summer I realized that trying to understand how an outbreak starts and spreads was more interesting than working in a clinic. After undergrad I decided to pursue a Doctorate of Public Health at the University of California Berkeley where I studied the spread of antibiotic resistant bacteria among school children in northern California. After graduation, I joined the Epidemic Intelligence Service where I am now beginning my second year as an EIS officer at the CDC in Atlanta.

How did I get involved?

I was brought into this case after a Navy Petty Officer and his wife became ill after visiting family in the Philippines. The Petty Officer presented with symptoms a week after coming home from vacation, and his wife a few days after him. His doctors at the naval hospital in Norfolk sent samples of the Petty Officer's blood to Bethesda for testing. EIS sent officers to Norfolk to collect samples from the Petty Officer's house and interview people that had contact with the couple. We soon heard about other cases of people getting sick: 5 in California, 2 in Chicago, 3 in Canada and a husband and wife in Germany. Symptoms and progression in these cases were like the Petty Officer's and all were vacationing and visiting around Subic Bay, Olongapo City and the surrounding forest preserve. The Philippine government was worried about the outbreak, the effects on its people and impact on the tourism in the area asked the US government to help. The CDC sent me and two other EIS Officers. We are tasked with interviewing the locals and family of the patients, collecting samples from the environment for testing back home and working towards determining where the outbreak originated and how it is spreading.

Transcript of EIS voice recorded notes

- "...Because the forest plays such a prominent role in the area, it's logical to assume that the thing causing the outbreak may be zoonotic (pron. "zoo-notic") in origin. I read some the doctors reports, and my intuition tells it is a virus that is causing this. It may have jumped from a reservoir animal to humans directly or through another vector. The virus might shares tropism (pron. "tro-piz-im") with humans and its host like we saw in Zaire in 1995. Or worse, it could be a virus that changed its tropism to more effectively infect humans, like we saw with Avian Flu..."
- "There are quite a few viral diseases that one could get in the Philippines. Yellow fever and other mosquito borne viruses are prevalent. Clusters of Nipah (pron. "Nee-pa") virus, have been found in Malaysia and Bangladesh, and its close cousin, Hendra Virus, is still around Australia to the south. It's only a matter of time before we see one of these in the Philippines. Coronaviruses have been isolated in the Philippines, but there are no reports yet of any endemic Coronavirus from the Philippines jumping into humans like SARS-CoV did in China in 2003. *Reston ebolavirus*, a member of the Filovirus (pron. "Fee-lo-virus") family and cousin of Ebola, is also endemic in crab-eating macaques (pron. "ma-cack") in the Philippines and has made appearances in monkey colonies first in the US in 1989 and later in Italy. The virus may not be any of these things...it may be something new..."

- “...Some of the first patients to become ill were members of a logging company and workers at a couple of pig farms in the area. I met with the doctor responsible for treating some of the first patients to get sick. The doctor gave me samples taken from the patients and had interesting observations regarding the progress of the disease...”
- “...illness hit the loggers and pig farm workers within a week of each other, indicating that the initial point of infection may have been around the same time. The logging company is in the City of San Fernando, but after talking with the boss of the company, I found out that 5 of the employees that got sick traveled and camped at the forest preserve outside Olongapo city a few weeks back. Evidently, the five were moon-lighting as tree poachers. The pig farms also happen to be nearby. We collected blood, feces and tissue samples from live and recently killed pigs at the Salvador Pig farm...the area where the pigs were slaughtered barely looked clean at all...”
- “...illness among the pig farm workers first hit those who butchered and handled the pigs. It spread among immediate family and customers who handled the raw meat. Kevlar gloves are filthy, and facemask usage is rare during the slaughtering process. I saw evidence of bush meat being processed on the same counters that was used with the pigs...”
- “We found evidence that bats, flying foxes and monkey have frequented the area. With the help of an American wildlife biologist that was already working in country, we were able to collect blood samples from a few flying foxes in the area and collect feces from their roosting locations on the farm’s property. We found several dead macaques near the Salvador farm and one dead macaque on the outskirts of another pig farm about 1.5 miles away from the Salvador farm.”
- “...the wildlife biologist and their team from the University of the Philippines helped collect wildlife samples from the surrounding forest preserves. They were efficient and collected far more samples than we could have in the same time. We both agreed to send the wildlife samples that they collected to a lab in Australia. The samples that I and my team collected from the pig farm and the logging company were sent to a lab in Bethesda for processing. With any luck both Bethesda and Australia will get similar hits and we can narrow down what is causing this...”
- “...on my way back stateside with the samples, I found out that the Petty Officer has shown progress. It was brought to my attention by the Navy doctors in Norfolk that due to the Petty Officer’s specific role in the Navy, he was given an experimental vaccine for Marburg and the Zaire Ebolavirus developed at USAMRIID. The doctors believe the vaccine has some effect on the Petty Officer’s progress. The wife was given Ribavirin and is showing signs of getting better. Given this information, I now have something to focus on for my report...”

I have summarized notable details from outbreak victims that I learned on this trip. This list is not comprehensive. There are more people sick and several deaths that have not been documented on this list

Location (# infected)	Description	Gender (M / F)	Dead / Recovering	Notes
Norfolk, VA, US (2)	Naval Officer and wife	1 / 1	0 / 2	Petty officer given experimental vaccine prior to exposure. Had prophylactic effect. Wife administered Ribavirin and is recovering slowly
Hamburg, Germany (2)	IT Specialist and husband	1 / 1	1 / 1	Wife went into severe shock and died. Antiviral therapy with pegylated interferon and Ribavirin had some effect, but therapy was enacted too late.
Winnipeg, Manitoba Canada (1)	Student	1 / 0	0 / 1	Showed symptoms at the later end of the outbreak. Given Ribavirin quickly after discovered that he went to the Philippines. Recovering
Chicago, IL, US (5)	Store owner and family	2 / 3	2 / 3	Visited family in Subic Bay area. Went on a tour of the forest preserve outside Olongapo City. Ate bush meat given to them by the tour guide. Bike tour of local farms in the area.
San Diego, CA, US (3)	Students	3 / 0	3 / 0	They were Backpacking through Western Luzon. Point of infection unknown
San Fernando, Philippines (10)	Workers at the Jimenez Logging	9 / 1	6 / 0	5 were illegally poaching trees outside Olongapo. Brought back bushmeat. Wife of one of the 5 died as well.
Olongapo City, Philippines (7)	Workers at Salvador Pig Farm	7 / 0	3 / 4	Those infected were responsible for slaughtering the pigs and working with fresh carcasses.
Olongapo City, Philippines (3)	Catayas Pig Farm	3 / 0	3 / 0	Those infected were responsible for slaughtering the pigs and working with fresh carcasses.
Subic, Philippines (2)	Backpackers	1 / 1	0 / 2	Frequent hikers to the area

Points to Ponder prior to discussion:

From your profile, what are some important facts you know about the outbreak?

What do you need to know about the outbreak?

What do you believe is the cause and source of outbreak? Why?

How do you think the virus is being transmitted?

Are there any terms on the previous pages that are unfamiliar to you? If so define them