



Nina Pham, Dr. Eleanor M. Green, Bentley, and Pham's mother, Diana

by Roberto Molar Candanosa

Taking Caring to Another Level: *A Collaborative Effort*

When Nina Pham was infected with Ebola, she was fighting for her life while also worrying about the life of her dog, Bentley. "After I was diagnosed with Ebola, I didn't know what would happen to Bentley or if he would have the virus," Pham said during a recent panel discussion at Texas A&M University. "I was frightened that I could possibly not know what would happen to one of my best friends." Now that they are together and doing well, it can be difficult to remember the fear and uncertainty of those days in October 2014, but it is a good time to remember the hard work that went into that happy ending.

Scientists face many uncertainties about Ebola and dogs, although most agree that there is not evidence dogs develop clinical disease. In the United States, the Centers for Disease Control and Prevention (CDC) say no cases have been reported of dogs becoming infected and shedding Ebola to humans—even in West Africa. However, a study in the March 2005 issue of the journal *Emerging Infectious Diseases* suggests dogs can contract the virus and do develop antibodies. Due to their fear of the virus spreading throughout Europe, Madrid authorities euthanized the dog of Madrid Ebola patient Teresa Romero Ramos.

A week after the events in Madrid, nurse Nina Pham contracted Ebola while caring for a patient in Dallas, and authorities in Texas had to decide what to do with Pham's dog, a Cavalier King Charles spaniel named Bentley. Experts came together to make decisions and assemble the right team. Dr. Eleanor M. Green, the Carl B. King Dean of Veterinary Medicine at Texas A&M University, was part of a collaboration that included the CDC, the Texas Department of State Health Services (DSHS), Texas Animal Health Commission (TAHC), the American Veterinary Medical Association (AVMA), the Emergency Operations Center (EOC),

the Governor's Texas Task Force on Infectious Disease Preparedness and Response, Dallas Animal Services, the City of Dallas, and the Texas A&M University College of Veterinary Medicine & Biomedical Sciences (CVM) and its Veterinary Emergency Team (VET).

The decision was made to have the VET deploy to Dallas to care for Bentley during his 21-day isolation—the incubation period of Ebola. Dr. Tammy Beckham, who at the time was director of the Institute for Infectious Animal Diseases, or IIAD, a Department of Homeland Security Center of Excellence, took the first shift caring for Bentley until members of the VET arrived. Dr. Wesley Bissett, founder and director of the VET, and Dr. Deb Zoran, VET chief medical officer, left for Dallas without hesitation. They knew caring for Bentley would be stressful and complicated, but as leaders of the largest and most sophisticated veterinary medical disaster response team in the country, they were confident they could do the job safely.

The support Bissett and Zoran received from colleagues in the VET, the CVM, and Texas A&M epitomized Aggie Spirit. When Bissett first discussed the deployment with Green, her first reaction was to ask him about his wife's opinion. "I'm 53 years old, and I've done a lot of different things," said Bissett, who used to work in the oil field, away from home and doing dangerous work. "But I have not once had anybody that was sending me into those situations ask me, 'What did your wife say?'" and to me that was a big deal."

Caring for Bentley

The team worked inside a small room of an empty 1920s-era house in a decommissioned military complex near Dallas. Zoran was covered head to toe, wearing a bright yellow hazmat suit, a powered air-purifying respirator, and protective boots and gloves. In the room, plastic wrapping protected the floor. Reporters filmed and shot pictures through a glass window, but the members of the VET were among the few who entered the house.

"We are an all-hazard response team, and we have the equipment, the training, and the expertise," Bissett said. "We can build a very powerful response in a community affected by disaster—whether that's an Ebola case, a fertilizer plant explosion, a historic wildfire, a tornado, or a hurricane."

Still, before seeing Bentley, Bissett and Zoran knew little about Ebola in dogs. "Our testing protocol was totally based on the human protocol, because we don't know what happens with dogs," Zoran said. Getting infected was a potential risk. "Had [Bentley] been positive, when we came back we would have been in quarantine—and that was going to have an impact," Zoran continued.

Bissett and Zoran had arrived at the house-turned-quarantine-facility on October 16. They stayed there for about two weeks, collecting and sending blood, urine, and stool samples twice (on days eight and 16) to a laboratory for diagnostic tests. To reduce stress due to isolation, Zoran often played with Bentley.

Bentley stayed in a room that was previously the kitchen of the house. That room was designated "the hot zone," or the zone with most potential for exposure, Zoran said. A door connected with the dining room, which was designated the "warm zone," where Bissett and Zoran removed their personal protective equipment. Going in and out of the hot zone, they both checked each other to ensure all equipment was properly worn and the protocol was strictly followed without cutting corners or taking shortcuts. "I depended on her, and she depended on me," Bissett said.

An Extraordinary Deployment

Bissett and Zoran were concerned with the possibility of Bentley testing positive. "I don't know what the decision would have been," Bissett said. "Certainly euthanasia was one of the things on the table." He explained, however, he would have proposed continuing testing until clearing the disease. Zoran nodded in full agreement: "There would have been a huge opportunity to answer some questions, but we had no idea of what would have happened because there was a lot of pressure, different arguments for risk, and all kinds of issues."

Although Bentley tested negative for the virus, unanswered questions remain about Ebola in dogs. "It would have been nice to learn more, but maybe Bentley was not even exposed," Bissett said. He added, "Maybe he was exposed and dogs don't shed the virus—or maybe he was exposed and he shed the virus at an earlier time." Further, studying Bentley would have required extremely secure biosafety level (BSL) 4 facilities. And once an animal enters a BSL 4 facility, it can never leave, Zoran explained.

Despite the complexity of Bentley's case, Bissett and Zoran said the most important aspect was reuniting Bentley with Pham. "The number of days we were away, the amount of time we got behind in our jobs, the number of people we disappointed because we weren't at their defenses or at their lectures—those were the downsides," Zoran said. Still, they both said it was well worth it.

Pham left the hospital on October 24. Both virus-free, Bentley and Pham reunited on November 1, 2014. Pham grinned from cheek to cheek as she hugged Bentley, and he jumped and wagged his tail in excitement. "It feels like Christmas, literally," Pham said in an interview with ABC News. "It's just such a joyous occasion and one step closer to my feeling whole again during this recovery process."

"This has really been quite an extraordinary deployment," said Bissett. "In all honesty, this is one that I would have never imagined. I know there are only two of us who are physically here, but the reality is that we are all here. We have all worked toward this very point where we are today. We are all standing behind Nina and Bentley." 🐕



Dr. Wesley Bissett, Dr. Deb Zoran, and Dr. Eleanor M. Green, the Carl B. King Dean of Veterinary Medicine, were part of an Ebola panel at The 65th Annual James Steel Conference on Diseases in Nature Transmissible to Man. The panel included representatives from many of the organizations involved in managing Bentley's case, such as the CDC, Texas Animal Health Commission, Dallas Animal Services, and the CVM.