Bellwether Magazine

Volume 1
Number 50 *Summer 2001*

Article 6

7-1-2001

Penn Faculty Involved in International Disease Control Effort

Helen Aceto
University of Pennsylvania

This paper is posted at ScholarlyCommons. http://repository.upenn.edu/bellwether/vol1/iss50/6
For more information, please contact libraryrepository@pobox.upenn.edu.

Penn Faculty Involved in International Disease Control Effort

by Dr. Helen Aceto, V'97

Whether you are talking about travel, international trade, communication, or farming practices, the last three decades have witnessed sweeping changes and an inexorable move toward globalization. There are countless examples where these trends in human activity are a double-edged sword. Consider disease control. Clearly the rise in international traffic of people, animals or things increases the risk of importing "exotic" diseases. At the same time, ease of communication and travel makes it possible to mobilize assistance at an international level, as was the case in the UK foot-and-mouth disease (FMD) epidemic. When, in early March, the UK Ministry of Agriculture Fisheries and Food (MAFF) called for help, veterinarians and other disease experts from around the world offered their services. Penn's Veterinary School was represented in this international effort by two members of the Center for Animal Health and Productivity at New Bolton Center, **Dr. Linda Baker, V'84**, and myself.

This story begins on February 19, 2001, when pigs suspected of having FMD were identified at a slaughterhouse in Essex, in the southeast of England. Presence of disease was confirmed the next day. The viral serotype (subdivision) involved was subsequently identified as the pan-Asian type-O strain described by the United Nations Food and Agriculture Organization as "pandemic." Since its appearance in northern India in 1990, type-O has spread widely displacing other FMD serotypes and is present in most of Asia, Japan, Taiwan, the Middle East, Russia, Mongolia, parts of both Africa and South America, and now Europe.

On surveillance or tracing visits vets had to suit up for each farm, disposable coveralls were left there and boots disinfected several times before visiting the next farm. In most parts of the country, after being on an infected farm vets were considered "dirty" for 72 hours. "Dirty" vets either did nothing until they were "clean" again or continued working only on declared infected or contiguous premises slated for depopulation. Initially the dirty period was 5 days (equivalent to USDA guidelines) but as the epidemic progressed this was gradually reduced to 72 hours. In Cumbria life was chaotic with over 750 cases and at the height of the crisis the "dirty" period decreased to overnight.

Grim work for field veterinarians included supervision of animal slaughter.

The initial Essex case was not, however, the source of the epidemic. All evidence points to the fourth case found, a cull-sow fattening operation in the northeast of England that sent animals several hundred miles to slaughter at the index site where the disease was first discovered. Disease was most likely caused by feeding improperly treated pigswill. Although the farm in question was feeding swill from a licensed processor, the amount required exceeded that purchased from the processor, and farm inspection revealed items such as paper plates and food wrappers that would not have been present if only properly processed swill were fed. Although the precise nature and origin of the infectious material remains unknown, it seems certain that one or several illegal actions resulted in the appearance of FMD in the UK. Equally, it is difficult to imagine that globalization of commerce and travel were not important factors in the initiation of the outbreak and in its subsequent spread to Ulster, the Republic of Ireland, France, and the Netherlands.

Presence of lesions meant extension of the contiguous cull to the next farm.

Dr. Baker and I played out parts in this story between April 5th and May 4th when we were in the UK assisting with and researching the outbreak. Dr. Baker worked for MAFF under the auspices of the USDA, and was assigned to Lancashire in the northwest of England. With support from Dean Alan Kelly, I was based in the northeast less than five miles from the source of the epidemic. Dr. Baker worked at a local level seeing how policies such as contiguous culling (i.e., infected premises depopulated

within 24 hours, all susceptible animals on contiguous premises slaughtered within 48 hours) as well as protocols for control, surveillance, disease tracing, case identification and reporting, animal disposal, and animal movement were implemented in the field. I gathered information on how national policies were derived and the way in which they influenced local efforts. I also examined epidemiological, legal, social, and international aspects of the outbreak. This combination of local and more global views provided a series of valuable insights and observations that neither one alone could have achieved. Our experiences of what did and didn't work, how procedures might be improved or modified to fit the US situation, particularly with respect to Pennsylvania agriculture, have already been presented at a Regional Emergency Managers Workshop.

The peak of the epidemic actually occurred around the time that we arrived in the UK. During that week there were an average of 40 new outbreaks per day, with 80,000 animals slaughtered and 83,000 carcasses disposed of on a daily basis. By the time we left in May, the average daily cases had decreased to 7 per day, daily slaughter and disposal statistics were down to 16,000 and 21,000, respectively, and the epidemic was declared fully under control. Nevertheless, the disease continues to smolder and in the week ending July 15 (day 146) there were still an average of 4 new cases per day, with daily slaughter and disposal at 7,000 and 6,000, respectively. The long "tail" of the disease is perhaps the most difficult time for control as lapses in vigilance and biosecurity become more common. Overall, there have been 1,854 outbreaks, but the contiguous culling policy has resulted in depopulation on 8,758 farms. More than 3.5 million sheep, cattle, pigs, goats and other susceptible livestock have been destroyed representing 8% of the UK national herd, when welfare and voluntary culls are included, this figure rises to 12% (a further 1.3 million animals). The numbers are staggering. Even for the best informed of us, without first hand experience it is impossible to imagine the logistical and organizational resources necessary to conduct a disease control effort of this magnitude. While many may argue with the UK approach, and it was obvious serious mistakes were made, particularly early on, it was also clear that current technology for FMDV testing and vaccination is inadequate for disease control requirements.

Literally thousands of carcasses required disposal.

Unquestionably, FMD has been a national disaster for the UK, coming as it does after the BSE epidemic and a 2000 outbreak of classical swine fever. Yet, as a lesson for both disease prevention and preparation for the unthinkable, international cooperation in disease management issues exemplified by our time in the UK will be invaluable in protecting animal health in Pennsylvania and the rest of the US.

For sheep, heavy lanolin-coated fleece made burning unsatisfactory and the primary means of disposal was burial, either on-site or at designated locations. There are several sites in the UK where between 100,000 and 300,000 sheep are buried.

FMD Websites

http://aleffgroup.com/avisfmd/

http://www.iah.bbsrc.ac.uk/virus/Picornaviridae/Aphthovirus/fmd.htm

http://www.maff.gov.uk/

http://www.oie.int/eng/en_index.htm

http://www.fao.org/waicent/FaoInfo/Agricult/AGA/AGAH/EUFMD/default.htm

http://www.fao.org/

http://www.pighealth.com/

http://news.bbc.co.uk/hi/english/in_depth/uk/2001/foot_and_mouth/default.stm

http://www.itn.co.uk/

http://www.guardian.co.uk/footandmouth/0,7368,441391,00.html

http://www.aphis.usda.gov/oa/pubs/fsmd00.html