TAB M
POSTDISASTER VACCINATION GUIDELINES

Introduction

Four basic processes may occur independently or in combination and may create the conditions favoring development of a disease in a postdisaster environment. First, the disaster may transport the disease agent to a susceptible population. Second, changes in environmental conditions, subsequent to the disaster, may allow increased exposure of susceptible populations to the disease agent. Third, there may be increased interaction between reservoir animals and susceptible animal populations as a consequence of the disaster. Fourth, effects of the disaster may increase the susceptibility of the animal to the disease agent.

- Transportation of the disease agent by a disaster may occur anytime a vector or fomite is involved. An example would be the possible spread of African Horse Sickness from Africa to Europe via insects carried on strong wind currents.

- Environmental changes that allow propagation of an organism may be exemplified best by anthrax. The complex mix of environmental conditions required for the propagation of the organism accounts for the sporadic nature of anthrax cases. Another possible example of increased exposure to a vaccine-preventable disease after a disaster is *Clostridium chauvoei* infection (blackleg). Disruption of soil by disasters such as felling of trees or building of earthen dikes may increase spore ingestion by animals, which could lead to increased incidence of blackleg.

- Increased interaction between reservoir animals and susceptible animals may occur through displacement of animals by the disaster or through the evacuation of animals from affected areas. Rabies would be an example where an endemic reservoir (raccoons) could be displaced by flooding along a river and dispersed throughout domestic animal habitat. Another example of increased exposure might include displaced feral swine coming into contact with commercial swine who are not protected in confinement causing the potential spread of pseudorabies to a susceptible population.

- Disasters may directly or indirectly affect the susceptibility of the animal to the agent. Direct effects could include the radiomimetic effects of a disaster involving nuclear material that could cause immunosuppression in the animal. Indirect effects could involve an increase in susceptibility caused by starvation, exposure to the elements, or overall increase in stress level of the animal.

Major factors that impact on the decision of whether to vaccinate or not include the propensity of the disease agent for a propagated outbreak, the impact of the disease, and the risk aversion profile of decision-makers dealing with the disease.

- Propensity for a propagated outbreak relates to the contagious nature of the disease agent. If the disease agent or process gains a foothold in the population, will it behave as an outbreak or be sporadic? What type of peak incidence is likely to exist among the population at risk, and, over time, what proportion of the population is likely to become infected?

- Impact of the disease is directly related to the morbidity and mortality of the disease agent. The behavior of the disease in the population (and other species' populations) and the likely economic damage should be used to temper the decision to vaccinate. What are the effects at the county, state, regional, or national level? The mere existence of a vaccine for the disease agent, does not necessarily justify use of the vaccine?

•Risk aversion profile takes into account the mental status of the individual farmer or the local, regional, or national authorities. As an example taken from human public health, is it worth vaccinating the entire population of the Mississippi flood plain for tetanus because of the remote possibility of a case of tetanus in a human being after a flood? An appropriate question to ask would be what is the expected incidence of a disease in the population if the disaster did not occur?

Establishing vaccination guidelines for animals after disasters is not a simple matter of listing the disaster and vaccines that should be given. Preparing for and responding to disasters are dynamic activities. The disaster itself does not create the disease, but creates the conditions that favor expression of the disease in the animal population. Vaccination decisions are not based entirely on biological questions. Economics, political palatability, and societal pressures will certainly be taken into consideration in any vaccination decision.