

# The planned response to an FMD outbreak is not what it used to be

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## Abstract

The sheer size and structure of livestock operations in the United States, combined with extensive movement between production phases, presents unprecedented foot and mouth disease (FMD) control challenges. The economic impact of an outbreak would be immediate and harsh. The goal of FMD response is to control and eradicate FMD while preserving the US livestock industry, a delicate and precarious balance of priorities. Bovine veterinarians have an opportunity and responsibility to help their clients prepare for a potential FMD outbreak. The voluntary Secure Milk and Secure Beef Supply Plans give veterinarians the tools they need to help their clients implement key business continuity strategies. The biosecurity mitigations and surveillance capabilities will be essential to protect animal health, decrease disease spread, and allow some semblance of business continuity for the livestock industry.

**Key words:** foot and mouth disease, Secure Milk Supply, Secure Beef Supply, veterinarians, biosecurity

## Résumé

L'ampleur et la structure des exploitations d'élevage intensif du bétail aux États-Unis lorsque combinées avec le vaste mouvement des animaux entre les phases de production engendrent un défi sans précédent pour le contrôle de la fièvre aphteuse (FA). L'impact économique d'une flambée serait immédiat et sévère. Le but de la régie de la FA est de contrôler et d'éradiquer la FA tout en préservant l'industrie de l'élevage du bétail aux États-Unis, ce qui représente un équilibre des priorités difficile et précaire. Les vétérinaires bovins ont la chance et la responsabilité d'aider leurs clients à se préparer pour une éventuelle flambée de FA. Les programmes volontaires de contrôle de qualité du lait et de la viande de bœuf fournissent aux vétérinaires les outils dont ils ont besoin pour aider leurs clients à mettre en œuvre des stratégies clés de continuité d'entreprise. La réduction du risque par la biosécurité et les capacités de surveillance seront essentielles pour protéger la santé des animaux, réduire les chances de propagation de la maladie et pour donner un semblant de continuité d'entreprise pour l'industrie de l'élevage bovin.

## Executive Summary

The burning pyres of carcasses in the United Kingdom (UK) in 2001 still resonate in many people's minds when foot and mouth disease (FMD) is mentioned. To stop the spread of this highly contagious disease in the UK, 4 million animals were depopulated and another 6 million were culled for welfare purposes.<sup>1</sup> This "stamping out" approach was the primary response strategy in the United States for decades.

Uruguay also experienced an FMD outbreak in 2001. Only 7,000 animals were depopulated in this cattle-dense country, but approximately 24 million doses of FMD vaccine were administered to control the outbreak.<sup>2</sup> These 2 countries of similar size had 2 very different response strategies. Since those outbreaks, and many others throughout the world, the US response to an FMD outbreak has evolved – it is not what it used to be.

The last FMD outbreak in the US occurred in California in 1929. The outbreak was stopped with movement controls and depopulation. Regulation of imports and a bit of luck have kept this devastating disease from reoccurring in the US. The approach to controlling an FMD outbreak in the 21<sup>st</sup> century still includes movement controls and depopulation, but includes other strategies as well. The sheer size and structure of livestock operations in the US, combined with extensive movement between production phases, presents unprecedented disease control challenges. Strategies for the response to, and management of, an FMD outbreak will change as the outbreak progresses and will depend on the magnitude, location, and other characteristics of the outbreak. In a small outbreak, the emphasis remains on stamping out the disease as quickly as possible. In a large outbreak, alternative response strategies will be considered due to the large number of animals, public resistance to stamping out, and environmental challenges associated with carcass disposal. The goal is to control and eradicate FMD while preserving the US livestock industry, a delicate and precarious balance of priorities.

If FMD is diagnosed in the US, the sequence of events for the response is described in the USDA Foot and Mouth Disease Response Plan ([https://www.aphis.usda.gov/animal\\_health/emergency\\_management/downloads/fmd\\_responseplan.pdf](https://www.aphis.usda.gov/animal_health/emergency_management/downloads/fmd_responseplan.pdf)). One of the first tasks is notification of our trade partners

through the OIE, or the World Organization for Animal Health. This would result in the immediate halting of the trade of animals and most animal products from the United States. FMD does not pose an infectious disease public health threat or food safety concern, and processed meat and milk are safe to eat and drink. However, due to the highly contagious nature of this livestock virus, other countries will not accept the risk associated with the animals or their products that have not been treated to inactivate the virus. Based on the experience of other countries, the time to regain trade could be years. The economic impact would be immediate and harsh considering the value of US exports of meat, animals, semen, embryos, hides, and other animal products.

A US response would be managed under Unified Incident Command, which includes State and Federal Animal Health Officials making decisions for the infected animals and other premises included in the Control Area. The Control Area for FMD could be as small as 10 kilometers in diameter or as large as a state or a region depending on the characteristics of the outbreak.<sup>3</sup> All premises with susceptible species located within the Control Area will be subjected to movement controls – even those without infected animals. Producers would need to request a movement permit for feed, milk, manure, animals, and other items. Requests will be considered based on the risk of the movement and mitigations put in place. Producers who implement mitigations such as biosecurity have a better chance of protecting their animals' health and being granted movement permits to enable business continuity.

If the outbreak results in a large regional outbreak (described in detail in the "Classification of Phases and Types of an FMD Disease Outbreak and Response" available at: <http://www.cfsph.iastate.edu/pdf/phases-and-types-of-an-fmd-outbreak>), the response may quickly shift from one of stamping-out only to include vaccination. The OIE has a country designation of FMD-free with vaccination, which would allow the US to vaccinate and eventually re-gain some exports. However, vaccinating for FMD has its own implementation challenges. There are 7 distinct serotypes of the FMD virus, with approximately 65 subtypes. Vaccines made from 23 separate FMD topotypes are recommended to cover all of the potential subtypes of FMD virus around the world. The US is a partner in the North American FMD Vaccine Bank along with Canada and Mexico. That bank currently holds enough vaccine antigen concentrate for 2.5 million doses for about 10 different topotypes, not enough for even 1 livestock-dense state. If the vaccine is needed, the antigen concentrate must be sent to the manufacturer for production into a vaccine, which will take several days.<sup>4</sup> In the meantime, FMD virus will continue to spread unless producers are able to implement strict biosecurity measures.

More information about "FMD Vaccine Surge Capacity for Emergency Use in the United States" can be found here: <http://www.cfsph.iastate.edu/pdf/fmd-vaccine-surge-capacity-for-emergency-use-in-the-US>. An 8-minute video "FMD Vaccination: What Livestock Producers Need to Know"

is available also online as a resource: <https://www.youtube.com/watch?v=MKf-aMgb-y0>.

If vaccine is not readily available to help control disease spread and human and equipment resources are limited, the outbreak could escalate to widespread (Type 4) or greater. At that point, the response may transition from emergency eradication to a long-term control program like brucellosis or tuberculosis.

FMD is endemic in 96 countries, but none of them have a livestock industry comparable to the US or a similar export trade. The negative impact on animal health, trade, the livestock industry, and the economy of communities throughout the US would far exceed the cost of the most expensive animal health event in US history – the 2014-2015 highly pathogenic avian influenza (HPAI) outbreak.

Lessening this negative impact is one of the goals of the Secure Food Supply Plans for Milk, Beef and Pork. The plans focus on maintaining continuity of business for producers who have livestock with no evidence of FMD infection. The plans provide guidance to facilitate safe transport of cattle and pigs between production sites, as well as livestock and milk to processing, through effective response planning and proper implementation of mitigation strategies in an outbreak. Components of the Secure Poultry Supply Plans were implemented during recent HPAI outbreaks, and were credited with maintaining business continuity for uninfected premises.

Bovine veterinarians have an opportunity and responsibility to help their clients prepare for a potential FMD outbreak. The voluntary Secure Milk and Secure Beef Supply Plans give veterinarians the tools they need to help their clients implement key business continuity strategies. Using the resources provided in these plans, veterinarians can help producers develop whole-farm enhanced biosecurity plans based on the known exposure routes for FMD. Herd veterinarians are also a critical resource in teaching on-farm observers to recognize abnormal production parameters or clinical signs that may indicate early FMD infection and encourage them to promptly report concerns. The biosecurity mitigations and surveillance capabilities will be essential to protect animal health, decrease disease spread, and allow some semblance of business continuity for the livestock industry. To learn more and assist your beef and dairy clients with business continuity planning, visit [securemilksupply.org](http://securemilksupply.org) and [securebeef.org](http://securebeef.org).

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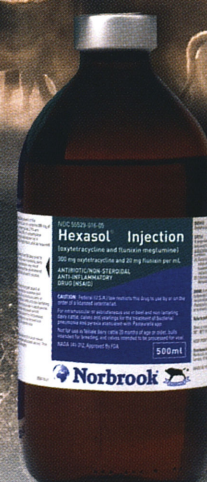
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