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Sharing Data to Manage Animal Diseases and Assure Food Safety

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1. Background on Recent Animal Diseases

During 2003, there were a few incidences of bovine spongiform encephalopathy (BSE) in the United States and Canada, producers of more than one-quarter of global beef exports. Earlier substantial outbreaks occurred in the U.K. and Europe. Simultaneously, highly pathogenic avian influenza (HPAI) strain H5N1 broke out in Asian countries, resulting in a number of deaths in Vietnam and Thailand and leading to concern about a pandemic if the fast mutating virus crossed with an existing human influenza virus. These serious animal disease incidents have resulted in substantial economic losses as trade across national borders has been halted.

Border closings are primarily due to lack of adequate data to assure countries about the safety of products imported from unaffected regions within countries or bordering countries. Sharing data and information among scientists and policy officials through technology to facilitate international and regional biological risk management could go a long way to reducing health concerns and economic impacts. This calls for "… reappraisal of how surveillance data are reported, analyzed and interpreted by public health agencies" (Ferguson 2004) for possible avian influenza incidents in humans.

The International Society for Infectious Diseases cites unique features presenting challenges to control the avian influenza outbreak: Poultry production in backyard farms, the economic significance of poultry production in the countries involved, their lack of experience in controlling the disease, their lack of resources to devote to control and the scale of international spread. Some believe that transboundary animal diseases are a permanent threat to the livestock industry with major economic implications related to prevention and control of infection and disease outbreaks. While technical ability to control problems has advanced significantly, along with improved information exchange, new disease forms have appeared and globalization with increased movement of people and goods exacerbates the likelihood of transboundary spread (Otte 2004).

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2. Systems for Sharing Analyses and Tracking Diseases

Technology exists to track particular animal diseases, but it is not yet widely used or systematized. Technology is improving for rapid tests of individual beef animals for misfolded proteins called prions indicating BSE contamination. If an animal is found to have a serious disease, the problem then becomes one of tracing the source of the animal to identify other possibly contaminated animals. The technology is rapidly developing for individual identification using radio frequency identification tags (RFID) readable by computer (Farm Foundation 2004). This creates the basis for national identification systems to help trace diseased animals to their origin. Agreement is needed on database protocol and sharing arrangements to allow quick control of outbreaks and assure foreign buyers that meat is processed from non-contaminated sources. Whether a national identification and traceability system should be mandated through government edict or voluntary through the market system remains under U.S. debate.

A national animal identification system (NAIS) has now been embraced in concept by the U.S. Department of Agriculture (USDA). $12 million has been allocated to states for registering livestock production premises through a standardized USDA system, or through other systems that comply with NAIS data standards ..." Plans include collecting intra- and interstate animal movement records electronically; integrating data collection technologies at livestock marketing facilities and processing plants; tracking livestock import from other countries; and electronically collecting animal movement data ..." (Redding/Spillman 2004). Canada has also announced plans to enhance BSE surveillance and animal tracking systems.

On the international level, the UN Food and Agriculture Organization (FAO) and the World Organization for Animal Health (OIE) have agreed to collaborate to set up a global information and early warning system on highly contagious transboundary animal diseases, such as foot and mouth disease, avian influenza and others which cause severe economic and social impact. OIE collects official information from countries, sets standards and guidelines and issues recommendations on safety of international trade in animals and animal products, animal health and zoonoses. FAO advises countries on good agricultural practices, disease control and eradication methods. Both assist countries in building surveillance and early warning systems. Private sector nongovernmental organization (NGO) efforts have also arisen such as the Center for Global Food Issues, seeking to provide balance to the wide array of misleading information available on-line, targeting consumer fears on Mad Cow or BSE incidents. The extent to which their website, www.mad-cowfacts.com gets used by credible sources of information will determine its usefulness.

3. Policy Challenges

A major policy challenge is to create transparency in testing and tracking programs, communicating results to assure customers about the safety of food products. "Raising the bar for transparency and accountability is critical in a global food supply in which products and animals are constantly crossing borders ... The trust of consumers and trading partners, and even voter confidence in government, will be enhanced by high visibility commitments by both the food industry and government to make the food chain a safe place" (Roberts/Tucker 2004).

The USDA has adopted a policy of reporting any inconclusive preliminary tests as they occur, given the seriousness of BSE in consumers' perception. The testing goal is to minimize possibilities of false negative tests that would allow a diseased animal to enter the food chain. This increases the chance of creating false positive results with tighter test tolerances. USDA announces these potentially false positives as inconclusive until more precise testing at the National Veterinary Services Laboratory (Ray 2004). Because livestock futures and cash markets have been significantly impacted by these preliminary reports, USDA has since adopted a policy of conducting duplicate tests if the initial rapid test is reactive before announcing a test sample inconclusive.

Another policy challenge is whether animal identification systems should be voluntary or mandatory. The U.S. initially opted for a voluntary identification program to start, serving as an issuer of numbers and a storehouse for animal data. State agencies and private groups are charged with assigning numbers to producers and relaying the data to USDA. These so-called "premises" I.D. numbers identify farms, ranches, feed lots, packing plants and similar locations where animals congregate

The amount of testing to assure safety and transparency is also a policy issue. Japan requires all cattle slaughtered for human consumption to be tested for BSE. The EU requires all cattle 30 months and older to be tested when slaughtered. The U.S. requires only a sampling of apparently sick and non-ambulatory cattle brought for slaughter and reported on farms. The USDA plans to test a little over 0.10 percent of slaughtered animals for the current year, well above the World Organization for Animal Health recommendation of at least 0.01 percent of the national cattle herd over 30 months of age (Normile 2004).

Public policy must assess "... disease control and eradication on the grounds of biology, national economic interests and international cooperation. Even these specific regulations and programs must be evaluated on the basis of basic cost benefit principles" (Sumner 2004). Establishing the proper policy is not straightforward. Public opinion, politics and analysis together will determine the outcome.

4. Technology to Assure Safer Food Supplies

The outbreaks of BSE and avian flu have provided incentives to both the private sector and government agencies to better incorporate technological advances into testing and traceability systems to assure safer food supplies. “It is important to improve traceability of the infected animals by introducing both country of origin and regional labeling and preserve it throughout the supply chain...” Labeling would allow U.S. and foreign consumers to distinguish beef coming from BSE-free regions in the U.S. (Jin 2004). U.S. beef industry leaders now believe that individual animal identification will be required for world trade in the future. It is a fact for many U.S. trade partners. For fast spreading diseases like foot and mouth, timing is critical to gain control. This requires knowing every animal that may have been exposed and doing so rapidly. With BSE, timing is less critical, but the value of animal identification is in thoroughness, finding all cattle that may have been exposed to the same feed as the BSE animal. This type of tracking has become affordable with passive RFID and near universal access to computer databases in the last few years, making a national program practical compared to previously. However, as it now stands, animal identification will not carry past the slaughterhouse (Corbett 2004).

There is little doubt that incentives are developing through the market system for private sector innovation in the face of concern about BSE, avian influenza and the potential for costly outbreaks of foot and mouth disease in an increasingly global economy. Along with government-directed national systems of identification, this will lead to greater traceability of food supply from production to consumption. New technologies will undoubtedly reduce the costs of providing these services to share data and information and greatly increase consumer confidence in food supplies.

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