

State & Local Legal Authority to Address Emerging & Zoonotic Infectious Diseases



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Introduction

Purpose of Project

The intent of this project is to examine the legal authorities that can affect preparedness for and response to emerging and zoonotic infectious diseases (EZID) in different state, tribal, local, and territorial (STLT) jurisdictions. The COVID-19 pandemic underscored the critical role that STLT health departments play in our national public health infrastructure.¹ STLT sectors such as public health, animal health, and environment must have the authority to protect the public's health through effective preparedness, response, prevention, and control activities for EZIDs.^{2,3}

Many jurisdictions are making changes to the authority of public health departments.⁴ In the face of this changing legal landscape, it is critical to analyze and understand the legal authority of all departments responsible for responding to EZIDs, and how that authority might affect their ability to respond to future EZIDs. In addition to legal authority, practitioners also note the importance of funding to support effective preparedness, response, prevention, and control activities for EZIDs.

Methodology

In partnership with the National Center for Emerging and Zoonotic Infectious Diseases (NCEZID) at the Centers for Disease Control and Prevention (CDC), content for this report was generated by ChangeLab Solutions (CLS), researchers from Arizona State University, and a subject matter expert group (the SME group).

In conducting background research for this report, CLS identified no existing resources – such as databases, 50-state surveys, or legal epidemiological studies – on legal authorities to address EZIDs in STLT jurisdictions in the United States. While some surveys of discrete issues or diseases related to EZIDs exist, they do not match the scope of this report regarding the broader authority of jurisdictions to address EZIDs.⁵ To fill this gap, research partners from the Center for Public Health Law & Policy at the Sandra Day O'Connor College of Law at Arizona State University (the ASU team) surveyed state laws with respect to EZID response.

In collaboration with CDC, CLS, and the SME group, a subset of 10 representative states were identified for the ASU team's research. The states selected were Alaska, California, Delaware, Florida, Kansas, Montana, New York, Tennessee, Texas, and Wisconsin. These states were chosen for their geographic and sociopolitical diversity, as well as the varying structures underpinning their authority to respond to EZIDs.

The ASU team's research aimed to answer questions such as:

- How do state laws define or address animals, EZIDs, and the locations where EZID response may occur?
- Which agencies are tasked with EZID or animal control?

- How is responsibility assigned between agencies?
- What specific powers do agencies have to control EZIDs and animals, and at which locations may they exercise those powers? When must they exercise those powers?

The ASU team compared legal authorities across multiple jurisdictions to identify high-level trends regarding EZID response. Were they the same across all states, could some states be grouped together, or was each state unique?

The SME group members were selected from multiple jurisdictions. They were particularly selected for their knowledge of and experience in both EZID preparedness and EZID response, and also the legal authority of STLT health departments and other relevant departments. Their expertise included general legal elements of public health authority and specific areas relevant to EZID response, including the authority of animal, agricultural, and environmental officials, as well as zoonotic disease investigations. The SME group helped to identify best practices for EZID preparedness and response, guide the analytical approach, and review the current legal authorities.ⁱ

Finally, to answer questions remaining after the ASU team's research and the SME group's input, CLS conducted research on federal, state, and local law, and reviewed academic and gray literature. The research spanned five issue areas of importance to EZID response: definitions (of animals, EZIDs, and locations); specified control powers; agency coordination; transportation and importation of animals; and data sharing. CLS identified potential gaps in legal authority for each issue area based on best practices, as described in further detail in the **Best Practices** section.

Overview of EZIDs

Zoonotic diseases (also known as *zoonoses*) are infectious diseases that are transmitted between animals and humans. They are caused by pathogens such as viruses, bacteria, parasites, and fungi. Zoonotic pathogens are spread through several modes of transmission, including direct contact (e.g., bites or scratches from infected animals, or contact with fecal, oral, or other bodily fluids from an infected animal) and indirect contact (e.g., coming into contact with contaminated areas, objects, or surfaces).^{6,7} They can be vector-borne, waterborne, airborne, or foodborne.^{6,7} Some examples of zoonoses include Ebola, rabies, Lyme disease, and SARS-CoV-2 (the virus that causes COVID-19). Zoonoses are considered emerging when a projected or noticeable increase in transmission develops.⁶

EZIDs are increasing in prevalence and severity due to rising animal-human interactions, climate change, and the prevalence of adverse comorbidities in the general population.⁸ Zoonoses now account for approximately 60% of communicable diseases worldwide⁹ and “up to 75% of emerging human pathogens.”¹⁰ The reasons for this increase in prevalence and severity include, but are not limited to, the following:

- An increase in the number of EZIDs (including Ebola, SARS-CoV-2, swine flu viruses, avian influenza, and hantavirus) that have expanded their geographic range and range of hosts.⁸ For example, climate change has led to an increase in the range of vector-borne diseases (pathogens transmitted by vectors including mosquitoes, fleas, and ticks) such as dengue viruses, malaria, and West Nile virus.¹⁰

ⁱ In the remainder of the report, we refer to discussions with the SME group broadly, without citing specific meetings or advisors. Further information about the SME group proceedings is on file with the authors.

- A growing number of individuals who, due to advancements in medical treatments for certain diseases and conditions, are living in an immunocompromised state, and therefore have an increased risk of infection.¹¹
- An increase in the number of household pets, including among immunocompromised individuals who are at risk of severe complications from an infection.¹¹ Another complicating factor is the increasing popularity of exotic pet ownership.¹⁰ The growing number of households rearing backyard poultry also increases the potential for avian influenza to spread.^{12,13}
- An increase in urban sprawl, international travel, and wilderness adventuring, which may lead to more contact between humans and wildlife that can spread novel diseases to humans.⁸
- An intensification of livestock farming, which can lead to disease transmission through untreated animal waste, as well as through environmental pathways (e.g., “ventilation systems [that] expel material, including pathogens such as *Campylobacter* and avian influenza virus”).¹⁴
- An increase in habitat disturbance, especially in biodiverse regions, which can cause more animals and vectors (and the pathogens they carry) to come into contact with humans.¹⁵
- An increase in the prevalence of antibiotic-resistant infections, due in part to the overuse of antibiotics, which allows some bacteria to adapt and become resistant to antibiotics.¹⁶ Each year, “2.8 million antimicrobial-resistant infections occur” in the United States, and “more than 35,000 people die as a result.”¹⁶

On the global scale, the United Nations Environment Program (UNEP), in partnership with the International Livestock Research Institute (ILRI), has identified seven human-mediated drivers of zoonotic disease emergence.⁸ The drivers are:

1) increasing human demand for animal protein; 2) unsustainable agricultural intensification; 3) increased use and exploitation of wildlife; 4) unsustainable utilization of natural resources accelerated by urbanization, land use change and extractive industries; 5) increased travel and transportation; 6) changes in food supply; and 7) climate change.”⁸

Together, these drivers affect disease emergence, transmission, and longevity. Aside from the drivers, other factors such as disease mutation and susceptibility to disease of at-risk populations lead to an increased incidence of EZIDs over time.¹

ⁱ According to UNEP and ILRI, susceptibility to disease among humans and animals may vary. Factors such as age, health, sex, physiology, nutritional status, exposure history, immunocompromised status, and comorbidities can influence a human individual’s susceptibility to disease. For animals, their physiological characteristics, social behavior, and relatedness to humans can make them more or less likely to harbor zoonotic pathogens.

Overview of One Health

CDC defines *One Health* as “a collaborative, multisectoral, and transdisciplinary approach – working at local, regional, national, and global levels – with the goal of achieving optimal health outcomes recognizing the interconnection between people, animals, plants, and their shared environment.”¹⁷ One Health can be utilized across the United States at the STLT and federal levels.¹⁸ As a result, many public health, agricultural, and wildlife agencies routinely collaborate on a One Health approach, which can:

- *Prevent outbreaks of zoonotic disease in animals and people.*
- *Improve food safety and security.*
- *Reduce antimicrobial-resistant infections and improve human and animal health.*
- *Protect global health and security.*
- *Protect biodiversity and conservation.*¹⁷

For the One Health approach to be successful at “achieving optimal health outcomes,” it requires multisectoral and interdisciplinary collaboration across “local, regional, national, and global levels” from “experts in human, animal, environment health, and other relevant disciplines and sectors.”¹⁷ This is especially important in an increasingly interconnected and globalized world. Experts in the following subjects are particularly needed:

- *Human health (doctors, nurses, public health practitioners, and epidemiologists),*
- *Animal health (veterinarians, paraprofessionals, agricultural workers),*
- *Environment (ecologists, wildlife experts), and*
- *Other areas of expertise.*¹⁷

Moreover, these agencies must have the necessary support, funding, and infrastructure to allow rapid communication and collaboration. A lack of these supports makes enforcement and surveillance untenable for most animal and human health agencies.

COVID-19: A CASE STUDY

SARS-CoV-2, the virus that causes COVID-19, is zoonotic and serves as an example of the importance of addressing EZIDs.¹⁹ Since early 2020, SARS-CoV-2 has infected millions of people²⁰ and thousands of animals, including production animals, companion animals, and wildlife (including those in captivity).²¹ The magnitude of the COVID-19 pandemic and its lasting impact across the globe underscores the importance of examining, analyzing, and optimizing disease surveillance for EZIDs.²² Additionally, the pandemic demonstrated that EZID threats are growing, especially in a hyper-connected world of travel and trade. Combating future EZID threats in the United States requires holistic, One Health collaboration across human, animal, and environmental sectors, as well as collaboration across STLT jurisdictions and different levels of government.

At the height of the COVID-19 pandemic, the One Health approach was crucial to understanding SARS-CoV-2 cross-species transmission and identifying interventions to prevent and manage human-animal transmission of SARS-CoV-2. In the United States, the CDC's One Health Office played an important role in coordinating local, state, and national efforts during the pandemic. The office supported local officials' on-the-ground investigations of animals, "developed SARS-CoV-2 surveillance and reporting infrastructure" to track the rapid increase in transmission of the virus, and coordinated health officials across the country.²³ The COVID-19 pandemic led to the establishment of the One Health Federal Interagency COVID-19 Coordination (OH-FICC) group.²⁴ The OH-FICC convenes "public health, animal health, and environmental officials from more than 20 federal agencies to collaborate and exchange information."²⁴

Originally focused on the One Health aspects of COVID-19, the OH-FICC expanded in 2022 to address other zoonotic disease threats, including mpox, Ebola, zoonotic influenza, and related threats.²⁴ With the expansion, the group was renamed the One Health Federal Interagency Coordination Committee (using the same acronym, OH-FICC). Regular coordination calls are scheduled with OH-FICC members and STLT partners from public health, animal health, and environment sectors, as well as with non-governmental One Health partners from academia, non-governmental organizations, and the private sector. STLT partners are crucial frontline collaborators and are the primary points of contact at the onset of EZID outbreaks. Although EZIDs remain a persistent threat, emergency preparedness, response, and coordination has improved through the gradual adoption of a One Health approach across the United States and the world.

Equity Implications

The 10 Essential Public Health Services, as identified by the CDC, strive to achieve equity and to “protect and promote the health of all people in all communities,”²⁵ including those affected by emerging and zoonotic infectious diseases.²⁶ Attaining health equity “requires focused and ongoing societal efforts to address historical and contemporary injustices; overcome economic, social, and other obstacles to health and healthcare; and eliminate preventable health disparities.”²⁷ Various sociodemographic factors are drivers of health inequities and disparities.²⁸ Factors such as race, socioeconomic status, occupation, and level of education may affect risk of EZID exposure, transmission, susceptibility, and expression, as well as the ability to access care or treatment.^{28,29} More marginalized communities bear higher risks in this context.^{28,29} When environmental and animal health are integrated alongside public health, additional disparities become apparent, due to factors such as climate change,³⁰ agriculture and food security,³¹ and antimicrobial resistance.³² Legal and policy measures taken to mitigate or prevent the spread of EZIDs may also have a disproportionate impact on different populations,³³ and must center equity, including equity in implementation and enforcement.

Not only can EZIDs have a direct impact on health inequities and disparities, but EZID outbreaks can also exacerbate the effects of existing inequities or disparities. During the COVID-19 pandemic, the effects of preexisting inequities compounded and disparately affected communities of Black, Indigenous, and other people of color (BIPOC) as well as other marginalized populations.³⁴ For example, analysis of data from 2020 suggest that Black individuals contracted COVID-19 at three times the rate of white individuals, and were six times more likely to die from COVID-19 than white individuals.³⁴ “This trend [was] most pronounced in rural Black communities,” as well as among Black individuals with comorbidities such as hypertension, cardiovascular disease, and diabetes.³⁴ This inequity was caused by a myriad of factors, such as limited access to testing and vaccination sites, medical mistrust and patient hesitancy due to past racism and discrimination, and working in essential frontline occupations.³⁴ Frontline workers, many of whom are BIPOC, faced higher risks of exposure and, as a result, higher incidence of disease transmission and death.³⁵ Within the first few months of the pandemic, more than half of confirmed cases among health care workers were BIPOC.³⁵ As of April 2021, 3,607 US health care workers had died due to COVID-19, with 64% of deaths among BIPOC health care workers.³⁶

The implementation and enforcement of EZID laws and policies may produce further disparities. From an equitable enforcement perspective, public health containment efforts, such as the use of quarantine for EZIDs like COVID-19, can have disproportionate effects on individuals and families with low income. The messaging related to social distancing and quarantine efforts during the COVID-19 pandemic was “safer at

Factors such as race, socioeconomic status, occupation, and level of education may affect risk of EZID exposure, transmission, susceptibility, and expression, as well as the ability to access care or treatment.

home.” However, many low-income individuals live in substandard housing conditions that increase exposure to pests and mold, which in turn can exacerbate respiratory illnesses.³⁷ Additionally, quarantine and isolation in unsafe housing conditions can also expose individuals to crimes of domestic violence and physical and sexual abuse.³⁸ Finally, in contrast with other populations, families with low income often cannot not bear the loss of income associated with an absence from work when required to quarantine or isolate. During the COVID-19 pandemic, the lack of social safety nets – such as paid sick leave, emergency funds, child care, and health insurance – made it difficult for low-wage workers, particularly frontline workers, to quarantine or isolate and miss work, due to acute financial needs such as paying for food and rent.³⁹

Implementation and enforcement of EZID laws and policies can also have disproportionately negative impacts on marginalized populations in rural communities. EZID outbreaks that circulate primarily among animal populations but that have zoonotic potential, such as avian influenzaⁱ and swine influenza viruses, happen more frequently on farms with intense livestock rearing.^{40,41} In many cases, if an outbreak happens among farm animals, they may be euthanized or quarantined to contain the spread. For farmers with limited access to resources such as loans and capital – many of whom are Black – mass quarantine and euthanasia of infected animals can be financially devastating.^{42,43}

Lastly, foodborne outbreaks from contamination of raw food products can occur anywhere along the food production chain.ⁱⁱ Outbreaks can result in product recalls to mitigate the spread of disease and maintain public health and safety.⁴⁴ Even outside the context of human transmission, animal diseases can lead to price increases for basic and necessary food items such as meat, eggs, milk, and other animal products, which can have disproportionately negative impacts on families with low income who are experiencing food insecurity.^{45,46}

i It should be noted that avian influenza outbreaks can occur and spread through backyard flocks as well. US Department of Agriculture Animal and Plant Health Inspection Service. Confirmations of highly pathogenic avian influenza in commercial and backyard flocks. May 29, 2024. Accessed 2024. <https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/avian/avian-influenza/hpai-2022/2022-hpai-commercial-backyard-flocks>.

ii According to the CDC, food contamination can occur at all stages of food production (production, processing, distribution, and preparation), causing foodborne outbreaks. Centers for Disease Control and Production. How food gets contaminated: the food production chain. April 24, 2024. Accessed 2024. <https://www.cdc.gov/foodborne-outbreaks/foodproductionchain>

Best Practices

To contextualize the laws and policies examined throughout this report, CLS began with a survey of identified best practices for EZID surveillance, preparedness, response, prevention, and control systems. These best practices are meant to provide a backdrop against which the current legal and policy landscape in the United States can be compared. This section provides an overview. See [Additional Resources](#) at the end of the report for further detail on specific studies, approaches, tools, and frameworks. Of note, after the research for this report was complete, the World Health Organization published a new guide on One Health implementation, which should be considered in future research on these topics.⁴⁷

Legal Best Practices

There is a gap in information about legal best practices with respect to EZIDs, despite wide international consensus on the need for foundational enabling legislation for EZID surveillance, response, and prevention, in accordance with International Health Regulations (IHR) and their implementation.⁴⁸ While this is a nascent and developing field of legal research, some examples exist. For instance, researchers have used legal epidemiology to code legislation in sub-Saharan African countries that they felt was needed to implement Global Health Security Agenda (GHSA) recommendations.⁴⁹ However, researchers and practitioners are still attempting to determine how the details of various law and policy choices, and the implementation of those choices, affect EZID surveillance and response systems. This research project is part of the effort to expand legal research in this space and identify best practices.

Policy Best Practices

While research on legal approaches to address zoonotic diseases is still developing, several studies, approaches, and frameworks provide guidance on best practices for implementing effective EZID surveillance, preparedness, response, prevention, and control systems.

Ensuring that various levels of government have the capacity and capability to surveil and respond to EZIDs is an important best practice. When considering program design and surveillance policy, a multi-pronged approach can ensure more effective assessment and response. The US Government Accountability Office has also conducted research that supports the need for risk assessments and ongoing surveillance of EZIDs.⁵⁰ While resources and staff availability must always be considered, for effective prevention and response it is essential to conduct ongoing risk assessments and monitor potential EZIDs that pose a significant health threat.

Best practices for surveillance systems include having documented, consistent definitions and protocols that incorporate the latest guidance from the CDC and global health organizations.⁵¹ Additionally, these systems should incorporate evaluation mechanisms

to assess reporting systems and information sharing. Documented policies should also include procedures and mechanisms for how to share data among agencies, as well as how to disseminate information to the public.⁵¹

Building laboratory capacity as part of public health infrastructure is another key component of surveillance. Countries and subregions should establish “central and regional laboratory capacity; specimen referral systems for rapid, safe, and reliable specimen transport; laboratory training programs that promote workforce development and retention; and affordable, flexible laboratory accreditation schemes to ensure lab quality.”⁵¹ Building out these systems allows more effective identification of potential outbreaks, greater capacity for testing to confirm if an outbreak is occurring, and the ability to implement various control measures. All agencies and organizations involved should have clear, written policies that define roles, responsibilities, and procedures. Additionally, adequate funding is critical to shore up the nation’s veterinary diagnostic lab system, which may be overlooked in discussions about the broader public health system. Lastly, education and information sharing are important within animal industries with potential exposure to zoonotic diseases, such as production animal facilities, research facilities, and veterinary practices. These strategies can help ensure that those with frequent animal contact are aware of zoonotic disease risks, appropriate prevention measures, and best practices following potential exposure.

Collaboration

Best practices in EZID surveillance and preparedness should also incorporate multisectoral collaboration, as well as coordination between multiple levels of government, to further build capacity and ensure effective prevention, response, and control. There are different ways to approach collaboration, depending on regional context, staffing, and resources.

The CDC and the Global Health Security Agenda implemented zoonotic disease programs to enhance global health security in 17 countries in Asia and Africa, using a One Health approach. In 2017, the CDC assessed these programs, and results from this study further support the need for collaboration and multisectoral partnership, particularly between animal and human health agencies.⁵¹ While existing responses and approaches employed by various countries were not examined, the findings of the study helped provide more detailed recommendations for improving surveillance and response using a One Health approach. An effective One Health approach must include interdisciplinary, multisectoral partnerships at all levels of government.⁵¹ Maintaining consistent communication among partners builds relationships and increases transparency. Further, it provides opportunities to collaborate in addressing potential or emerging outbreaks and identifying diseases that may pose a higher risk. It may also help in strategizing on how to most efficiently use resources, especially when resources may be limited.⁵¹

INTERNATIONAL LAW

International law generally plays a limited role in the US legal system, as “the effectiveness of international law depends on the consent of states” and nations may “agree to an international legal obligation without any serious intent of fulfilling it.”⁵² However, the United States has adopted some international laws that set a basic framework for emergency disease response, including the International Health Regulations (IHR).⁵³ These regulations “identify minimum core capacities required at the local, intermediate (regional/provincial), and national levels” related to “preparedness, detection, and response” with respect to disease outbreaks.⁵⁴ Scholars have criticized the IHR for gaps related to EZIDs.⁵⁴

In 2014, the United States joined over 70 countries in developing the Global Health Security Agenda (GHSA) and the Joint External Evaluation (JEE) – an assessment to determine whether nations meet their obligations under the IHR, including necessary legal measures.^{49,55} The GHSA includes more express components related to zoonotic disease.⁴⁹ The United States underwent the JEE in 2016, receiving a perfect score of 5 in the parameters of legislation, policy, and financing.⁵⁶ The GHSA now includes a new 2024 framework that, in terms of zoonotic disease, focuses more on facilitating collaboration within and between countries as a matter of practice, rather than on the legal specifics of such arrangements.⁵⁷

International developments in the One Health framework also seek to improve EZID surveillance, response, and prevention. In terms of law and policy, the One Health Joint Plan of Action (2022–2026) developed by the Quadripartite Organizationsⁱ is seeking to develop “methodologies, tools and pilot tests for the identification of policy and legislative instruments relevant to One Health, including sector-specific and cross-cutting legislation” and “the assessment ... of governance and regulatory gaps.”⁵⁸

Against this backdrop, as discussed throughout this report, researchers and practitioners have identified many ways in which law and policy may be used as tools to improve EZID surveillance and response systems. For additional discussion of these international laws and frameworks, see the **Best Practices** section.



ⁱ The Quadripartite Organizations consist of the Food and Agriculture Organization of the United Nations (FAO), the United Nations Environment Programme (UNEP), the World Organisation for Animal Health (WOAH), and the World Health Organization (WHO).

Legal Authorities to Control Emerging, Infectious Zoonotic Disease: U.S. Assessment of 10 States

Research for this report began with the ASU team's assessment of EZID authority in a selection of 10 states, which is summarized in this section. The 10-state legal assessment and input from the SME group then informed additional research conducted by CLS, which informs the remaining sections.

As described in the **Methodology** section, the ASU team examined legal authorities with respect to EZID response in the following 10 socio-politically, geographically, and legally diverse states: Alaska, California, Delaware, Florida, Kansas, Montana, New York, Tennessee, Texas, and Wisconsin. Research for the legal assessment was conducted between June 1, 2022, and November 30, 2022, and reflects laws that were in effect during that time. The assessment collected only state statutes and regulations, not local or federal laws. The full results of the legal assessment, containing all relevant laws from the 10 states, can be found in **Legal Authorities to Control Emerging, Infectious Zoonotic Diseases – U.S. Assessment of 10 States** (Legal Authorities to Control EZIDs table). This section provides a brief overview and makes some preliminary conclusions based on trends identified in that research. Note that many states may also have broader public health and animal health powers related to diseases, which could be used to address zoonotic disease in the absence of more specific laws. However, this assessment only encompasses laws that expressly deal with zoonotic disease and did not capture broader catch-all provisions.

Across all 10 states, the ASU team compiled a total of 1,220 laws relevant to EZID response and control. On the high end, states like California and Texas had 343 laws and 263 laws, respectively. On the low end, Alaska had 33 laws, while totals in the remaining 7 states ranged from 56 to 109 laws. There were some commonalities and also many differences between the animals, zoonoses, and locations these laws addressed.

- State laws addressed anywhere from 9 specified animals or categories of animals (in Florida⁵⁹) to over 40 specified animals or categories of animals (in Montana⁶⁰).
- State laws addressed anywhere from 4 specified zoonoses (in Wisconsin⁶¹) to over 15 specified zoonoses or categories of zoonoses (in Texas⁶²).
- At least 2 specific zoonoses were regulated in all 10 states: brucellosis⁶³ and rabies.⁶⁴
- Animals, or categories of animals, that were regulated across many of the states included bats, domestic animals (like cats, dogs, or ferrets kept as pets), game animals, livestock (like sheep, swine, cattle, and goats), mosquitos and other vectors, pet birds, poultry, reptiles, and wildlife or feral animals.
- Common locations addressed by these state laws included animal shelters, child care centers, farms, dairies, poultry hatcheries, slaughter or preparation establishments, sales yards, livestock dealers, and wildlife rehabilitation facilities.

- Common powers that these laws gave to agencies to address EZIDs included the following. (See the [full Legal Authorities to Control EZIDs table](#) for definitions and explanations of these terms.)
 - programs/requirements for control
 - destruction
 - movement restrictions
 - quarantine/isolation
 - testing/screening
 - governmental coordination
 - reporting
 - registration/licensing/certification

While a comprehensive analysis of the implications of over 1,200 laws was beyond the scope of this research, it was possible to make the following preliminary conclusions about trends in the data:

While a comprehensive analysis of the implications of over 1,200 laws was beyond the scope of this research, it was possible to make preliminary conclusions about trends in the data.

Diseases



Rabies: Eight of the 10 states gave authority related to rabies to multiple agencies,⁶⁵ while Alaska⁶⁶ and California⁶⁷ gave authority to address rabies only to their state departments of health. Common powers for addressing rabies were destruction, quarantine/isolation, programs/requirements for control, governmental coordination, and seizure/removal.



Brucellosis: Eight out of 10 states gave authority related to brucellosis to their department of agriculture or livestock,⁶⁸ while Alaska gave this authority only to its department of environment,⁶⁹ and Texas to its Animal Health Commission.⁷⁰ The most common powers to address brucellosis provided by law include vaccination, testing/screening, and programs/requirements for control, followed by quarantine/isolation and movement restrictions.

Animals



Domestic animals: State laws generally give authority to address EZIDs in domestic animals to the state department of health, the state department of agriculture, or to both of these agencies. The most common powers these laws gave to address EZIDs in domestic animals included vaccination, testing/screening, and programs/requirements for control, followed by quarantine/isolation and movement restrictions.



Cattle: Eight of the 10 states gave exclusive authority to the state department of agriculture or livestock to address EZIDs in cattle.⁷¹ In Alaska, this authority was given to the department of environment,⁷² while in Texas it was given to the Animal Health Commission.⁷³ Movement restrictions were a common power related to cattle.



Wildlife: State approaches and authority seemed most diverse with respect to wildlife. Authority to address EZIDs in wildlife could be given to the state health, environmental, agriculture, or wildlife departments. The most common powers for addressing EZIDs in wildlife included movement restrictions and destruction, followed by programs/requirements for control and government coordination.

In addition, some significant broader trends were identified across the 10 states. For example, public health code sections and regulations seemed to focus more on human presentation of disease, while agriculture and wildlife laws were more likely to address animal presentation of disease. One clear exception to this trend is rabies; public health codes and regulations are concerned with the presentation of this disease in domestic animals. The following are some of the most significant high-level trends:

- Many EZID-related powers across the states were permissive (allowing agencies to act on EZIDs with discretion)⁷⁴ as opposed to mandatory (requiring agencies to take action under specific circumstances).⁷⁵
- Laws often delegated response authority to local agencies.⁷⁶ Although a few examples were identified, it was very rare that state laws expressly required interagency cooperation.⁷⁷
- Public health departments often had ample discretion to determine which diseases should be reportable,⁷⁸ whereas departments of agriculture were more likely to have restrictions on their ability to add diseases to their reporting lists based on some external criteria, such as standard epidemiological practice, credible scientific research, or legislative oversight.⁷⁹

The implications of some of these trends, as well as other trends identified in the 10-state legal assessment, are discussed in the sections below. This research confirms that there is no singular approach to EZID response and control, or types of powers used, across states. However, additional research is needed to determine whether states can be grouped or categorized based on their EZID laws and approaches to response, or whether every state is sufficiently different to require individual consideration. Among the 10 states examined, there was too much variation to identify obvious typologies of legal structures. Broader trends or different conclusions could be drawn from research into EZID authorities across more states.

Animal Definitions, Diseases & Locations

The classification of animals is important to EZID response because it can affect which agency is responsible for surveillance, reporting, and other response activities, in addition to general oversight and management. Animal classification varies, and is based on various factors, including their use and/or relationship to humans. For example, exotic pets, chickens, and goats kept as companion animals may be classified differently from the same species raised for consumption or production, or held captive in a zoo. Animals also may be classified differently depending on the diseases they can carry and the potential impacts on human health or the commercial food supply.

The highest order of animal classification at the federal level draws a distinction between domesticated animals and wildlife. Animal domestication refers to the selective breeding and genetic adaptations of animals to live alongside humans.⁸⁰ Animal domestication is further classified based on the animals' use and relationship to humans, whether production (livestock) or companionship (pets).

Federal law has multiple definitions for livestock, depending on the topic. For example, laws concerning packers and stockyards defines livestock as cattle, sheep, swine, horses, mules, or goats.⁸¹ However, laws concerning animal health protection define livestock as all farm-raised animals.⁸² These animals are sometimes referred to as farm animals, and include the following species: cattle, sheep, pigs, goats, llamas, alpacas, and horses. Even though some livestock animals may be treated as pets, they are still classified as livestock, and CDC strongly recommends against keeping them indoors with humans due to potential zoonotic diseases.

Birds used for production are classified as poultry. The US Department of Agriculture (USDA) defines poultry as “any domesticated bird used for food. Varieties include chicken, turkey, goose, duck, Rock Cornish hens, and game birds such as pheasant, squab and guinea fowl. Also included are huge birds such as ostrich, emu, and rhea (ratites).”⁸³

A pet is a “privately owned companion animal not intended for research or resale and includes only [the following] animal groups:

- Dogs
- Cats
- Ferrets
- Rabbits
- Rodents
- Hedgehogs/Tenrecs
- Reptiles
- Amphibians
- Birds (not all types)”⁸⁴

Not all birds are pets, even if they are kept as companion animals. Many of the birds listed in the definition of poultry above – in addition to swans, pigeons, doves, grouse, partridges, pea fowl, and quail – are always classified as poultry, due to their ability to “transmit certain diseases to the U.S. poultry industry.”⁸⁴ Doves, swans, and pigeons are included in the poultry classification, although they rarely meet USDA’s definition of poultry, insofar as they are not commonly used for food.

At the state level, most jurisdictions maintain classifications for production animals (or livestock), companion animals (or pets), and wild animals (or wildlife).⁸⁵ Some jurisdictions have additional categories for assistance animals such as service dogs or draft animals (work animals) such as horses and buffalo. While this structure appears straightforward, animal classifications can differ across state lines, leading to potential for miscommunication. For example, emus are expressly classified as livestock in Kansas but not in Tennessee.^{86,87} However, Tennessee has a broader definition of livestock than Kansas: all equine and all animals which are raised “primarily for use as food or fiber for human utilization or consumption including, but not limited to, cattle, sheep, swine, goats, and poultry.”⁸⁷ The broad language in Tennessee’s definition of livestock – “including, but not limited to” – requires additional analysis to determine whether emus (or other uncommonly consumed animals) are indeed consumed in Tennessee. Importantly, this has implications for which department is responsible for disease reporting. If emus are classified as livestock, then disease reporting would likely fall on Tennessee’s state agriculture department. However, if they are not, then it may fall on wildlife. This is one example of the uncertainty of disease reporting when it comes to animals that are not clearly defined either within or across states.

Non-domesticated animals are classified as either wildlife or exotic. A wild animal is an indigenous non-domesticated animal, meaning it is native to the country where it is located. An exotic animal is wild, but from a different country than where it is currently located.⁸⁸ At the federal level, the US Fish and Wildlife Service (FWS) is responsible for conservation and habitat preservation for US wildlife, while the US Geological Survey (USGS) is the lead federal agency responsible for wildlife disease research and surveillance. Both FWS and USGS are agencies of the Department of the Interior (DOI). A third agency, the Animal Plant Health Inspection Service (APHIS) of the USDA, participates in wildlife disease monitoring and surveillance through the National Wildlife Disease Program.

Exotic animals are regulated at the state level, and rules vary greatly as to who can own exotic animals, whether a private citizen or an institution like a zoo or aquarium. State laws may also specify which exotic species can be owned by private citizens. For example, private citizens can own pet monkeys in 17 states.

Cervids (mammals of the deer family) are also difficult to classify because of regional differences in how they are typically treated (left in the wild, farmed, held in captivity, or more than one of these). Captive cervids have the greatest variation in classification at the state level. When classified as wildlife, the state wildlife agency is responsible for regulation, surveillance, and reporting; when classified as livestock, they are considered domesticated animals, and the department of agriculture is the agency that is generally responsible for oversight and regulation.

States where captive cervids are classified as wildlife:⁸⁹

Alabama
Arizona
Georgia
Idaho
Maryland
Massachusetts
Mississippi
Missouri
New Jersey
New York
Texas
Virginia

States where captive cervids are classified as livestock:

Colorado
Delaware
Florida
Indiana
Iowa
Kansas
Kentucky
Louisiana
Maine
Michigan
Minnesota
North Carolina
North Dakota
Ohio
Oklahoma
Pennsylvania
Vermont
West Virginia
Wisconsin

States where captive cervids are classified based on a hybrid system that varies from state to state:

Arkansas
Illinois
Rhode Island
South Dakota

States that ban captive cervids:

Nebraska
New Hampshire
South Carolina
Tennessee
Wyoming

Further inconsistency in definitions of animals occurs at the local level. For example, the City of Los Angeles Municipal Code defines an *animal* as “any animal, poultry, bird, reptile, fish or any other dumb creature” and *cat* as “any cat of either sex, or any age.”⁹⁰ These ambiguous local definitions do not always align with state or federal definitions.

Diseases Addressed

Laws in various jurisdictions also inconsistently address various diseases. For example, federal regulations address scabies in cattle,⁹¹ but Delaware law is silent on the issue. While state or local laws may only address the EZIDs or types of animals most prevalent in their respective regions, this could also lead to inconsistency in approaches to EZIDs. Further inconsistency comes from the fact that some states adopt federal regulations by reference when they cover the same topic⁹² or defer to the federal requirements,⁹³ while others make no reference to federal law or regulations.

Inconsistency also arises among diseases addressed at the local level. For example, the Fort Collins, Colorado, Municipal Code addresses the care and control of different types of animals, but the only specific EZID referenced is rabies.⁹⁴ Further, the local code does not provide extensive guidance on the appropriate procedure for addressing EZIDs when they emerge. The section that addresses the control of rabies only states that an infected animal “shall be summarily destroyed.”⁹⁵ State law may provide guidance or govern on some of these issues, though at times local regulations can offer additional nuance or enforcement mechanisms.

Locations & Facilities

The locations or types of facilities where federal, state, and local agencies have authority to act also vary greatly between federal, state, and local laws. For example, the federal Animal Welfare Act and corresponding regulations provide authority for federal agencies to regulate and monitor the use of animals in research facilities⁹⁶ or regulate holding areas for the use of guinea pigs,⁹⁷ but state and local law may not address these types of facilities at all. Further, as discussed above, state or local law may not address the same types of animals or diseases with respect to certain types of facilities. In Johnson County, Kansas, the local code prescribes requirements for a veterinarian administering the rabies vaccine to animals,⁹⁸ despite federal law largely remaining silent on the specifics of the issue.

Agency and governmental control over specific locations or facilities also may not be clear or consistent across different levels of government. In Kansas, the state Department of Agriculture has some authority over boarding and training kennels,⁹⁹ and localities may have additional regulations or local laws pertaining to kennels.¹⁰⁰ However, the requirements set forth in state and local laws and regulations may not be aligned, and authority might not be clear. Definitions also may not be consistent. For example, state and local law may define *kennel* differently. Local law might only address kennels that house dogs, while state law is inclusive of kennels that house any type of domesticated animal.

Gaps in Animal Definitions, Diseases & Locations

The inconsistencies in federal, state, and local animal definitions, diseases addressed, and locations may lead to gaps in surveilling and responding to EZIDs. As discussed above, animal definitions at state and local levels often do not mirror federal language. For example, some federal regulations use *ruminant* as a broad definition,¹⁰¹ whereas Alaska has separate definitions for cattle and goats.¹⁰² Further, some federal and state laws do not address the same EZIDs. As noted above, federal regulations address scabies in cattle,⁹¹ but Delaware law is silent on the issue. While some states have adopted federal regulations by reference when they cover the same topic,⁹² or defer to the federal requirements,⁹³ this is not a uniform or consistent practice by all states. Research for this report did not identify an example of state or local law that adopted all federal requirements or definitions for every animal and disease. Some state laws are not comprehensive, and updating existing laws and regulations can be time-consuming or difficult. While such laws were outside the scope of the ASU research on legal authorities to control EZIDs, states may have broad public health and animal health powers that can be used to address EZIDs but that are not covered by existing laws. However, if there are gaps in the specificity of laws, a state may be less prepared to address an emerging disease. Additionally, if an EZID is affecting two or more neighboring states, they may have conflicting approaches, or no legal mechanism for coordination between states, across agencies, or across levels of government. Without alignment of definitions, there may not be alignment of the requirements and responsibilities to address a disease, which may leave gaps in surveillance and response.

Specified Control Powers

As is discussed throughout this report, there are a variety of statutory and regulatory approaches to addressing EZIDs, including not only the use of general public health authority held by the federal government, states, and localities, but also express authority granted through legislation. This express authority exists at all levels of government. While federal powers are relevant in specific circumstances, state and local powers take precedence in certain instances, or fill gaps in or expand upon federal law.

Federal Authority

The following list includes some of the multiple federal agencies involved in the reporting and surveillance of EZIDs of concern in the United States:

■ US Department of Health and Human Services (HHS)

- US Centers for Disease Control (CDC)
- US Food and Drug Administration (FDA)
- Office of the Assistant Secretary for Preparedness and Response (ASPR)

■ US Department of Agriculture (USDA)

- Animal and Plant Health Inspection Service (APHIS)
- Food Safety and Inspection Service (FSIS)
- Agricultural Research Service (ARS)

■ US Department of the Interior (DOI)

- US Geological Survey (USGS)
- US National Park Service (NPS)
- US Fish and Wildlife Service (FWS)
- Office of Emergency Management (OEM)
- Environmental Protection Agency (EPA)

■ US Department of Commerce (DOC)

- National Oceanic and Atmospheric Administration (NOAA)

Federal law sets the floor, or baseline, in circumstances pertaining to national security and emergency preparedness, which can involve a combination of health, ecological, economic, or food security concerns. The most relevant federal laws include the Public Health Service Act, the Lacey Act, the Endangered Species Act, and the Animal Health Protection Act, as shown in Table 1.⁵⁰

Table 1: Summary of Relevant Federal Laws

Federal Law	Agency Powers
Public Health Service Act	Grants authority to HHS/CDC to issue regulations “to prevent the introduction, transmission, or spread of communicable diseases from foreign countries into the States,” including zoonotic diseases. ¹⁰³
Lacey Act	Grants authority to US FWS to prohibit the import of animals listed in the statute or deemed by FWS regulation to be “injurious to human beings, to the interests of agriculture, horticulture, forestry, or to wildlife or the wildlife resources of the United States.” ¹⁰⁴
Endangered Species Act	Grants authority to FWS to prohibit the import of animals listed as threatened or endangered species and implements other related international agreements. ¹⁰⁵
Animal Health Protection Act	Grants authority to USDA “to detect, control, or eradicate any pest or disease of livestock,” enhance surveillance for diseases in animals, and prohibit imports of certain animals as a preventive protection for agricultural animals. ¹⁰⁶ Regulations under this authority also require “accredited veterinarian[s] ... to immediately report to the Veterinary Official and the State Animal Health Official all diagnosed or suspected cases of a communicable animal disease for which APHIS has a control or eradication program ... and all diagnosed or suspected cases of any animal disease not known to exist in the United States.” ¹⁰⁷

Federal law generally gives the designated agencies authority to conduct surveillance of zoonotic diseases; regulate the transportation, sale, and handling of certain animals;¹⁰⁸ and quarantine when animals are being imported into the country at designated ports of entry^{109,110} or are being transported across state lines.¹¹¹ In line with these laws, the federal government requires and issues a wide variety of permits for both the importation of animals from other countries¹¹² and the interstate movement of animals.¹¹³ The required permits or certifications depend on the type of animal and/or diseases being tracked.¹¹³

In the case of EZID outbreaks and pandemics, the federal government has three vehicles for declaring an emergency and ultimately redistributing funds and resources to aid an EZID emergency response. First, the Secretary of HHS can declare a public health emergency (PHE) under Section 319 of the Public Health Service Act.¹¹⁴ Second, the President can declare a disaster or emergency under the Robert T. Stafford Disaster Relief and Emergency Assistance Act.¹¹⁵ Lastly, the President can declare an emergency under the National Emergencies Act.¹¹⁶ Importantly, “the declarations provide for different types of responses and can be made concurrently.”¹¹⁷ State or local PHE declarations operate similarly, and can be issued by the governor or corresponding local executive, often with input from state and/or local health authorities.

State Authority

As with federal authority, state – and sometimes local – authority to prevent and respond to EZIDs is split across agencies that address human and animal health. Those agencies include health departments, departments of wildlife, and departments of agriculture. Under the 10th Amendment of the US Constitution, states retain all the powers not specifically delegated to the federal government. This broad and undefined legal authority retained by the states – and, by extension, local governments when delegated by states – is often referred to as the *police power*. Despite its name, the police power encompasses more than just the power held by law enforcement. It refers to state and local governments' expansive authority to promote the public's health and safety and the general well-being of the community, and it underpins authority for EZID laws and regulations.

Governance can take different forms with respect to public health departments. This is also true for the relationship between a state's health department and its analogous regional or local counterparts, as can be seen in the following section. In the United States, all 50 states, 5 territories, 3 freely associated states, and the District of Columbia have a health department or health department equivalent.¹¹⁸ Regardless of the state's governmental structure, all 50 state health departments oversee or work in partnership with local and/or regional departments. Together, state and local public health departments protect and promote health within a state's borders. They fulfill a wide range of responsibilities, including policy development, resource stewardship, legal compliance, community engagement, and oversight.

Every state also has an agency responsible for wildlife management.¹¹⁹ Some states have a stand-alone wildlife agency, like California's Department of Fish and Wildlife (CDFW).¹²⁰ Other states have a wildlife agency that is part of a larger natural resources or environmental department. For example, Alabama's Wildlife and Freshwater Fisheries Division is a subagency within the Alabama Department of Conservation and Natural Resources.¹²¹ As in public health, many wildlife agencies have local branches. For example, CDFW oversees seven regional management divisions.¹²² Wildlife agencies play key roles in expanding the knowledge of diseases among wildlife, observing the effect of disease on wildlife populations, and monitoring the health of wild animals. Wildlife departments work collaboratively with public health departments in the event of a wildlife disease outbreak that may pose a risk to humans.

In addition to public health departments and wildlife departments, all states also have agriculture departments.¹²³ At the local level, states have local branches; state employees responsible for specific regions across the state; or state boards of animal health responsible for livestock and/or companion animal regulations. For example, the California Department of Food and Agriculture maintains district and field offices in 32 counties across the state.¹²⁴

TRIBAL AUTHORITY

Tribal authority regarding EZIDs requires considering separate rules and levels of oversight. Although tribal authority is an important part of the legal and regulatory landscape, such considerations were beyond the scope of this project. In locations where tribal authority is at play, it is particularly important to understand the relationship between federal, state, local, and tribal law and authority. The official listing of all federally recognized tribes is located in the Federal Register and is published by the Bureau of Indian Affairs.¹²⁵ Tribal Epidemiology Centers perform critical public health services for American Indian & Alaska Native populations; more information is available on their website and through the Indian Health Service (IHS).¹²⁶

More information about tribes, tribal organizations, and tribal public health is available on CDC's website.¹²⁷

In Iowa, the Department of Agriculture's Animal Health Division has district veterinarians who are designated as state employees and responsible for regions across the state.¹²⁸ Meanwhile, North Dakota has a State Board of Animal Health made up of the agricultural commissioner, veterinarians, and livestock industry experts who meet quarterly to create and enforce their animal health regulations.¹²⁹ These state and local agencies fulfill regulatory and compliance responsibilities pertaining to non-wildlife animals – such as companion animals and livestock – usually through a department division or office specifically dedicated to animal health, such as the California Department of Food and Agriculture's Animal Health and Food Safety Services Division, and the Maryland Department of Agriculture's Office of Marketing, Animal Industries and Consumer Services. Agriculture departments work collaboratively with public health departments when an animal disease outbreak poses a potential risk to humans. Specifically, veterinarians “are often the first line of defense against” the spread of infectious disease, through their surveillance, containment, and eradication programs.¹³⁰

State laws related to EZIDs empower agencies to take targeted control, surveillance, and response actions “concerning (1) specific animal populations (e.g., domestic, livestock, wild/feral); (2) specific locations [or facilities] (e.g., farms, dairies, retail establishments); and (3) specific zoonoses (e.g., rabies, salmonella, brucellosis).”¹³¹ Commonly used legal authorities or powers to control EZIDs include, but are not limited to inspection, investigation, requirements for control, quarantine and isolation, reporting, seizure and/or removal, destruction, testing and screening, and treatment.¹³¹

As noted above, the research on legal authority to control EZIDs points to some high-level trends, with many of the same animal and location categories appearing across all 10 states. For instance, the assessment found the following animal categories appeared across all 10 states: bats, domestic animals, game animals, livestock, pet birds, poultry, reptiles, mosquitos and vectors, and wildlife or feral animals. The following location categories appeared across all 10 states: animal shelters, barns/stables, child care centers, farms/dairies, poultry hatcheries, slaughter/prep establishments, sales yards and livestock dealers, and wildlife rehabilitation facilities.

In 8 out of 10 states, authority to respond to EZIDs was shared among the state department of health, department of agriculture, and department of wildlife. In terms of specific diseases, all 10 states had EZID response laws pertaining to rabies. Across these states, agriculture departments almost exclusively regulated the locations of slaughter establishments, fairs, exhibitions, and markets. All 10 states had EZID response laws pertaining to cats, dogs, and ferrets, but the agencies which oversee these animals varied by state. Some states vested the authorities solely in the health department, others solely in the agriculture department, and others shared between agencies. Authority over cattle fell solely under the agriculture department in 8 out of 10 states.

Another important trend revealed by the legal research is that most powers related to EZID response were permissive or discretionary instead of mandatory. Discretionary powers, sometimes called *permissive powers*, are not binding on the agency – meaning that while there are limits attached to these powers when used, they do not impose an obligation on the agency to exercise them. Permissive powers are usually indicated by the word “may” in the statute, whereas the words “must” or “shall” indicate a mandatory power or a legal authority that is binding. It is important to keep in mind that differences among states reflect differences in state resources, agency hierarchies and structures, and whether the environment is rural, suburban, or urban. Laws similarly shift priorities based on regional characteristics in localities.

Local Authority

Local authority plays an important role in state EZID response and control efforts, as state efforts often occur in partnership with local health departments (LHDs), local boards of health (LBHs), local health officers (LHOs), and law enforcement officers (LEOs). As with state departments of health, governance in partnership with localities can take different forms, but generally, there are four types of structures for public health governance:

1. *Centralized or largely centralized structure: local health units are primarily led by employees of the state.*
2. *Decentralized or largely decentralized structure: local health units are primarily led by employees of local governments.*
3. *Mixed structure: some local health units are led by employees of the state and some are led by employees of local government. No single structure predominates.*
4. *Shared or largely shared structure: local health units might be led by employees of the state or by employees of local government. If they are led by state employees, then local government has the authority to make fiscal decisions and/or issue public health orders; if they are led by local employees, then the state has authority.¹³²*

The extent to which localities play a role in EZID response and surveillance is first determined by state law. Then, the degree to which a locality exercises the authority delegated to it is based on the needs of the locality. These needs are largely dependent on the environment of the locality. Because local powers must be delegated by the state, the degree to which local governments can act autonomously varies greatly. Some states – like Florida and Illinois – give local governments broad authority, also known as *home rule*. In those states, local governments can directly enact laws that affect the general public, without relying on a specific delegation of power from the state legislature. Other states, like Virginia, greatly limit local authority and allow cities and counties to act only within the powers specifically granted to them by the state legislature, known as Dillon’s Rule. To examine the variability of local authority, CLS looked at localities with distinct environments, specifically (1) highly urbanized cities,¹³³ and (2) rural farmland, often with large livestock populations.

Highly urbanized cities in temperate climates have a diverse range of potential zoonotic hazards because of the prevalence of large human population density in proximity to birds, rats, mosquitoes, mesomammals, and ticks – all of which can harbor and transmit zoonotic pathogens.¹³³ Some cities, like New York City, Los Angeles, and Miami, have relatively temperate climates with high population densities in close proximity to the named potential vectors above. Also, these cities maintain a higher likelihood of contact with exotic animals due to the entertainment industry, the distribution of wealth and social status of exotic pets, and proximity to the wildlife trade (with roughly half of declared US imports coming through the ports in NYC, LA, and Miami).^{134,135} Given these circumstances, local authority to regulate animals and control disease spread in these cities and counties is especially prevalent, and includes many specific powers or other provisions to supplement state law.¹³⁶

For example, New York City law has an entire Article, with 25 sections, dedicated to animal control.¹³⁷ The Article is made up of prohibitions on wild animal ownership for individuals, permit requirements, and restrictions on domesticated animal ownership.¹³⁷ For dog

ownership, the law includes requirements to obtain a dog license from the NYC Department of Health and Mental Hygiene, and to vaccinate for rabies.¹³⁸ Additionally, any boarding kennels, groomers, or training establishments, according to their permits, must require proof of vaccination against rabies, as well as “distemper, adenovirus, parainfluenza, parvovirus, and Bordetella” for each dog provided services.¹³⁹

While urban jurisdictions prioritize disease prevention, rural jurisdictions tend to have more robust protections for private livestock and agricultural organizations, and local authority can be limited when it comes to regulation of disease prevention, unless it is specifically to protect livestock.¹⁴⁰ Additionally, large agribusiness industries in rural jurisdictions are often major employers and landowners, which may make their influence over local policy more prevalent. For example, localities in Iowa are explicitly preempted from regulating agriculture in multiple state code sections. One such preemption, for example, exempts farms and farm buildings from zoning ordinances and building codes, which may be interpreted as protections for agribusiness.¹⁴¹ Most notably, Iowa Code § 331.304A forbids any county regulation of “a condition or activity occurring on land used for the production, care, feeding, or housing of animals [unless] expressly authorized by state law.”¹⁴²

Gaps in Specified Control Powers

A major gap in the laws on distribution of authority is whether an agency holds mandatory or discretionary powers, and what actions an agency is required, or permitted, to take based on its authority. When agencies have discretion, or are not bound to exercise their permissive powers, it can create scenarios in which it is not clear who, if anyone, will act to respond to EZIDs.

Because of the potential for many different agencies to be involved in the event of an outbreak, there is a need to clarify their authorities and responsibilities, specifically (1) who must act during a zoonotic disease outbreak; (2) who may act during a zoonotic disease outbreak; and (3) who is prohibited from acting during a zoonotic disease outbreak. In other words, what are specific agencies required to do, permitted to do, or prohibited from doing? In the case of discretionary powers, especially, when lack of funding and resources are also factors, agencies may choose to not take any action – which will be further discussed below.

The need to clarify agency authority and responsibility is also dependent on several factors, including but not limited to the public health governance structure, the origin of the disease (e.g., contaminated food, contact with an infected animal or person), the nature of the outbreak (e.g., in animals, people, or both), the type of animal involved (e.g., livestock, companion pet), the location of the outbreak (e.g., farm, pet shop, processing plant), and the severity of the outbreak. All of these factors determine different agency involvement and provide context needed to clarify authority and responsibilities.

Agency Coordination & Collaboration

Federal law generally requires and encourages coordination between agencies when it comes to the surveillance of EZIDs.¹⁴³ Some state laws also require cooperation among different agencies, including federal agencies, but do not necessarily provide a statewide plan or enforcement mechanisms.¹⁴⁴ Effective use of regulatory authority in this space requires the coordinated and collaborative efforts of more than one federal agency, and often more than one sector and level of government.⁵⁰ For example, EZIDs are monitored and identified using surveillance systems that are reliant on reporting, and reporting often occurs at state and local levels. Which agencies are involved can be determined by whether the cases of disease are limited to animals or involve risk of or actual spillover to humans.^{50,130}

Effective use of regulatory authority in this space requires the coordinated and collaborative efforts of more than one federal agency, and often more than one sector and level of government.

Federal Reporting & Surveillance Efforts

In January 2024, the US One Health Coordination Unit convened for the first time, bringing together representatives from over 20 agencies from multiple federal departments to coordinate across the federal government on zoonotic diseases and other issues related to One Health. CDC's One Health Office continues to host the monthly One Health Federal Interagency Coordination Committee (OH-FICC) call, bringing together representatives to share updates and collaborate on One Health topics. Outputs of the OH-FICC include guidance for veterinarians, pet owners, STLT public health officials, state agriculture officials, and wildlife officials, as well as outbreak response and control plans and other deliverables. CDC has also been charged to

*coordinate with the Secretary of Agriculture and the Secretary of the Interior to develop a One Health coordination mechanism at the Federal level to strengthen One Health collaboration related to prevention, detection, control, and response for zoonotic diseases and related One Health work across the federal government.*¹⁴⁵

The federal agencies listed in the **Federal Authority** section respond to EZIDs depending on the type of vector, environment, or method of introduction to the United States. Table 2 summarizes the zoonotic diseases of concern in the United States, their human and animal burdens, and the various federal agencies involved in reporting and surveillance.

Table 2: Federal Reporting and Surveillance of Zoonotic Diseases of Concern in the United States

Disease	Human Disease Burden	Animal Disease Burden	Reporting and Surveillance
Zoonotic Influenza	Most zoonotic influenza viruses that circulate in animals are rarely transmitted to humans; on the rare occasion that they are, human-to-human transmission is limited. Humans infected with a zoonotic influenza virus can have no symptoms, mild illness, or severe disease that can result in death.	Most often detected in poultry and pigs. Other animal hosts include mammals like whales, horses, seals, dogs, cats, and others. Some animals can be infected without showing clinical signs, whereas others experience mild to severe disease with high mortality.	<ul style="list-style-type: none"> • USGS and other DOI partners conduct surveillance and research related to influenza in wild birds. • USDA APHIS surveillance monitors highly pathogenic avian influenza (HPAI) in wild, commercial, and backyard birds. • USDA APHIS IAV-S (Swine Influenza A) surveillance monitors genetic changes in influenza viruses in swine. • CDC Influenza Division monitors animal and zoonotic influenza outbreaks domestically and internationally.
Salmonellosis	Infects 1.2 million people annually, resulting in about 23,000 hospitalizations and 450 deaths. Most infections are associated with retail food products.	Has been detected in livestock and poultry, pet reptiles and amphibians, and songbirds (contaminated bird baths and bird feeders). Animals often do not show clinical signs.	<ul style="list-style-type: none"> • CDC's NNDSS (National Notifiable Diseases Surveillance System), FoodNet, and PulseNet track <i>Salmonella</i> cases and outbreaks. • USDA's National Animal Health Monitoring System surveils livestock population. • USDA's Salmonella Testing Program continually samples poultry establishments. • USGS's National Wildlife Health Center diagnoses and monitors <i>Salmonella</i> in wildlife.
West Nile Virus	Incidence rate is approximately 0.4/100,000 population. Case fatality rate is approximately 6%.	Most vulnerable animals are unvaccinated equids and wild corvids.	<ul style="list-style-type: none"> • ArboNET, a partnership between CDC and state health departments, collects and surveils data on arboviral (mosquito-transmitted) infections.
Emerging Coronaviruses (i.e., Middle East Respiratory Virus (MERS) and Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2))	MERS and SARS-CoV-2 are highly transmissible. SARS-CoV-2 reached pandemic level of spread in 2020. SARS-CoV-2 has a higher fatality rate for the elderly and persons with comorbidities.	Animals infected with SARS-CoV-2 have been documented around the world. Most of these animals became infected after contact with people with COVID-19. Susceptible animals include but are not limited to companion animals (dogs, cats, hamsters, ferrets), animals in zoos and sanctuaries, farmed mink, and wildlife (white-tailed deer, mule deer, giant anteaters, and others).	<ul style="list-style-type: none"> • The Coronavirus Disease 2019 (COVID-19) Hospitalization Surveillance Network (COVID-NET), part of the Respiratory Virus Hospitalization Surveillance Network (RESP-NET), is designed to conduct population-based surveillance for laboratory-confirmed COVID-19, RSV, and influenza-associated hospitalizations. • One Health SARS-CoV-2 surveillance activities and associated data can be shared between sectors within states through CDC's HHS Protect, an online repository.
Rabies Virus	Nationally, potential rabies exposure rate is 140 per 100,000 population annually. Death from rabies in the United States is rare due to the availability of treatment, but infection with rabies virus is fatal in over 99% of cases if treatment is not administered after exposure.	Rabies can infect all mammals, including livestock and pets. Certain wildlife species such as bats, raccoons, skunks, foxes, and mongooses serve as reservoirs of rabies virus. Rabies infection in pets is rare due to widespread vaccination.	<ul style="list-style-type: none"> • CDC's NNDSS monitors rabies cases. • USDA's National Rabies Management Program focuses on oral rabies vaccination for wildlife.

Disease	Human Disease Burden	Animal Disease Burden	Reporting and Surveillance
Brucellosis	Approximately 100 reported cases per year, with the highest incidence in California, Texas, Arizona, and Florida. Rarely fatal. Most infections are linked to consumption of unpasteurized dairy products.	Mainly infects ruminants and, although rare, the prevalence is increasing. Main reservoirs include bison, elk, and feral swine. Dogs can carry canine <i>Brucella</i> , but it rarely causes disease in humans.	<ul style="list-style-type: none"> • CDC's NNDSS tracks cases in the United States. • USDA's National Bovine Brucellosis Surveillance Plan tests and vaccinates cattle herds. • USDA surveils <i>Brucella</i> species exposure in feral swine.
Lyme Disease	40,000 cases reported between 2004 and 2016. The range of the principal tick vector is expanding. Lyme disease is rarely fatal, but some people experience extended symptoms for up to 6 months.	Livestock prevalence is concentrated in horses. White-footed mice and other wild rodents are major reservoirs. Although deer are not reservoirs, they are hosts for the vector tick. Expanding white-tailed deer populations are contributing to the increase in cases and range.	<ul style="list-style-type: none"> • CDC's TickNET collaborates with state health departments for surveillance. • CDC's NNDSS monitors cases. • USDA monitors tick-borne disease in wildlife.

Source: US Department of Health and Human Services, Centers for Disease Control and Prevention, US Department of the Interior, and US Department of Agriculture. *Prioritizing Zoonotic Diseases for Multisectoral, One Health Collaboration in the United States: Workshop Summary*. 2017. <https://www.cdc.gov/one-health/media/pdfs/us-ohzdp-report-508.pdf>

In addition, multiple agencies sometimes conduct surveillance for the same zoonotic pathogen, such as for SARS-CoV-2 (the virus that causes COVID-19), because of its risk to people.

With respect to wildlife-related reporting and surveillance, the federal agencies responsible for conducting surveillance of US wildlife include the US Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS), the Department of the Interior's US Fish and Wildlife Service (FWS), and US Geological Survey (USGS). Federal agencies responsible for issuing and enforcing regulations for imported wildlife and other animals, including quarantine or permit requirements, include APHIS, CDC, FWS, and the Department of Homeland Security's US Customs and Border Protection. Further, APHIS-Veterinary Services (VS) is responsible for "protect[ing] and improv[ing] [animal health] ... by preventing, controlling, or eliminating animal diseases" through animal health surveillance.¹³⁰

As an example of the challenges that arise with interagency coordination and collaboration, APHIS & USGS maintain their own databases; APHIS has the National Animal Health Surveillance System (NAHSS), while USGS uses the Wildlife Health Information Sharing Partnership - event reporting system (WHISPer).⁵⁰ However, according to the Government Accountability Office (GAO), a number of obstacles prevent better collaboration between the agencies.⁵⁰ In order to produce a robust national surveillance system, "improved knowledge and data sharing [are] needed to address gaps in disease surveillance, prevention, and control."⁵⁰ As positive examples, the HHS Protect ecosystem and CDC's DCIPHER data platform have been used to improve data sharing to address outbreaks and emergencies.¹⁴⁶

State Coordination & Collaboration

As noted above, state public health departments coordinate and collaborate with state wildlife and agriculture departments to address EZIDs. The manner, sophistication, and streamlining of communications vary from state to state. Generally, however, the state health department oversees and supervises disease reporting by local public health departments, health care providers, laboratories, and other community partners. The state agricultural department, wildlife department, and parks/recreation department also work with the state health department and with local health departments.

For example, in Kansas, the Department of Health and Environment (KDHE) and the Division of Public Health within the KDHE preside over public health affairs within the state, including reporting protocol for zoonotic diseases. The KDHE has broad statutory and regulatory power to maintain the state list of reportable diseases,^{147,148} transmit reports to the CDC,¹⁴⁹ prepare state reports on reportable disease statistics,¹⁵⁰ and assist local health departments with outbreak investigations.^{151,152} The KDHE collaborates with the Kansas Department of Wildlife, Parks, and Tourism (KDWP) for reporting and advisories that overlap between the two entities. For example, the KDHE and KDWP may issue joint fish consumption advisories to alert consumers and fishers alike about mercury contamination in locally sourced fish.¹⁵³ The KDHE also communicates frequently with the Kansas Department of Agriculture (KDA), which houses the state's Division of Animal Health.¹⁵⁴ The KDA maintains its own reportable disease list.¹⁵⁵

The research on legal authorities to address EZIDs found that 8 out of the 10 states shared authority to respond to EZIDs among the state department of health, department of agriculture, and department of wildlife.¹³¹ In California, this coordination and collaboration between agencies is required by law. California law includes a "One Health Program for responding to zoonotic diseases," and requires that "[t]he State Department of Public Health, the Department of Food and Agriculture, and the Department of Fish & Wildlife shall jointly establish and administer the One Health Program for the purpose of developing a framework for interagency coordination [including at the local level] in responding to zoonotic diseases and reducing hazards to human and nonhuman animal health," based on principles set by CDC.¹⁵⁶

As mentioned above, it's also very common for states to delegate authority and/or to work in partnership with localities, including local health departments (LHDs), local boards of health (LBHs), local health officers (LHOs), and law enforcement officers (LEOs). Out of the 10 states researched, 7 (California, Delaware, Montana, New York, Tennessee, Texas, and Wisconsin) named LHDs or LBHs within their EZID surveillance and control laws.¹³¹ Local agencies are sometimes given complete authority. For example, the LEOs in certain municipalities of Texas are empowered as the animal control authority.¹³¹ In other cases, local agencies may work in collaboration with the state, as in California.¹³¹

Local Coordination & Collaboration

What coordination and collaboration looks like at the local level is determined by how state law allocates power and authority, and the resulting government public health structure. Across states and their localities, there are tiered reporting structures for EZIDs, and it varies which level of government maintains those reporting requirements, oversight processes, and other communication duties.

Returning to the example of Kansas, county and city health departments sit below the Kansas Department of Health and Environment (KDHE). These departments often serve as the first line of communication when a qualified professional discovers a potential case of a reportable disease.¹⁵⁷ In Kansas, qualified professionals include health care professionals (e.g., doctors, nurses, and dentists), hospital administrators, certain educators (e.g., school administrators and teachers), and laboratory personnel.¹⁴⁸ A qualified professional must report an instance of a reportable disease, either to the local health department or directly to the KDHE. On the other hand, urgent diseases,¹⁵⁸ such as rabies, brucellosis, and tuberculosis, must be reported directly to the KDHE's epidemiology hotline.^{159,160}

In comparison, in Tennessee, mandated reporters such as health care providers and laboratories must contact their local or regional office first in the event of a suspected outbreak.^{161,162} More urgent diseases, such as anthrax and rabies in humans, require an immediate phone call to a local or regional health office as well as a form, PH-1600, to be submitted to the local or regional health office within one week of reporting.^{163,164} Less urgent diseases, on the other hand, require only submission of the form.¹⁶³ In addition to health care professionals, Tennessee also requires "the head of the household, or any other person in the household possessing knowledge" to report a suspected disease outbreak to the local health department.¹⁶⁵ These variations in reporting responsibilities require varying degrees of coordination and collaboration across local entities, among local and state (and federal) entities, and between government agencies and the public.

Gaps in Coordination & Collaboration

The main gap when it comes to agency coordination and collaboration is that key interagency collaborative practices – both within and across levels of government – are often either not properly implemented or do not exist. At times, it is not clear which agency has authority to act and/or must act. If multiple agencies have authority but lack the requisite enforcement mechanisms, it may be that no agency action takes place. This issue is also of concern in regard to EZID control and response roles delegated to localities by states, when state law lacks actual collaboration or coordination requirements.

The Government Accountability Office (GAO) has written multiple reports on interagency coordination and collaboration, one of which outlined eight best practices for collaboration and included the themes of accountability, leadership, and clarity of roles.¹⁶⁶ Effective implementation of key collaboration practices is vital to ensure that future actions are not duplicative, overlapping, and fragmented.

Other challenges across jurisdictions include variability and inconsistencies in definitions or lists of animals, diseases, and locations, as discussed in [Animal Definitions, Diseases & Locations](#). Such variability can lead to fragmented disease control efforts and lack of coordination or collaboration. Further, unresolved issues related to data sharing of key information have left certain agency coordination efforts at a standstill. For example, the USGS's national wildlife disease database is currently ineffective because the WHISPer and APHIS databases are incapable of interoperability, and provisions of the 2008 Farm Bill create privacy and data sharing barriers.⁵⁰

Transportation & Importation of Animals

Essential to EZID prevention and control is understanding how animals move into the country and across state lines. There are several requirements related to importing various species of regulated live animals into the United States and into each state or US territory, including guidelines and regulations, permits and certification, and associated user fees.

Generally, federal law provides guidance on lawful animal importation into the United States and across state lines (interstate transportation). Additionally, each state maintains its own laws on animal importation into and out of the state. For areas where federal and state law overlap, federal law may act as a floor, meaning that states are free to have more stringent requirements. This is true for importation across international borders as well as across state lines.¹⁶⁷

Federal Law

Below are some of the key federal laws pertaining to animal importation and transportation. Note that there is some overlap in the laws below, and in certain circumstances, multiple laws may apply. In instances when multiple agencies may be compelled to act, coordinated efforts between agencies may be required.

Animal Welfare Act (AWA): This Act empowers the USDA – specifically APHIS – to set minimum standards for the handling, care, treatment, and transportation of animals.¹⁶⁸ This mostly pertains to commercially bred animals and those kept in zoos and labs. The AWA gives the USDA authority to make regulations to implement and to enforce the law. The USDA has also promulgated Animal Welfare Regulations (detailed guidance and standards drafted and adopted by the USDA to implement and enforce the AWA) and Rules of Practice Governing Proceedings Under the Animal Welfare Act (guidance for administrative proceedings for violations of the Animal Welfare Act). The USDA enforces and routinely updates regulations for interstate travel, such as Certificates of Veterinary Inspection and testing for specific diseases for livestock and poultry traveling across state lines.^{169,170}

Endangered Species Act (ESA): This Act¹⁷¹ designates US Fish & Wildlife Services (FWS) to protect threatened or endangered fish, mammals, and birds. It also gives FWS oversight on the importation, trade, sale, and taking of wildlife. The Act makes it unlawful for any person subject to the jurisdiction of the United States to import into and export from the United States any animal on the endangered species list,¹⁷² except by regulation of permit issuance.¹⁷³ The activities authorized by permits differ, depending on whether the species is listed as endangered or threatened under the ESA. “For endangered species, permits may be issued for scientific research, enhancement of propagation or survival, and taking that is incidental to an otherwise lawful activity. For threatened species, permits also may be issued for zoological, horticultural, or botanical exhibition; educational use; and special purposes consistent with the ESA.”¹⁷⁴

Lacey Act: This Act prohibits trade in wildlife, fish, and plants that have been illegally taken, possessed, transported, and sold. It grants FWS the authority to prohibit the importation

and some transport of certain types of “injurious species,” as defined in the Act,¹⁷⁵ through the federal regulatory process. Once a species is added to the list of injurious wildlife, it may not be imported into the United States or transported interstate without a permit.

Title 42 of the Code of Federal Regulations: These regulations address CDC’s role related to animal importation.¹⁷⁶ For example, CDC has regulatory authority addressing the importation of dogs, cats, civets, African rodents, turtles, bats, and monkeys.¹⁷⁷ The CDC does not regulate fish,¹⁷⁸ horses,¹⁷⁹ or some other animals,¹⁸⁰ although these animals may be regulated by other agencies.

State Law

Each state and US territory has its own rules for animal importation, and as noted above, these rules may be stricter than federal regulations. For example, Hawaii and Guam have more stringent quarantine regulations (e.g., requiring longer quarantine and isolation periods for imported pets) compared to other states, and to federal law.^{181,182,183} Generally, states have reserved powers under the 10th Amendment to protect the “health, safety, and morals” of their citizens, and animal welfare is recognized as falling within that power, given the relevance of animal welfare to human illness, safety, food production, and other areas.¹⁸⁴ Regardless of whether an animal is entering the United States internationally or is traveling within the United States, it is advised to refer to the USDA-APHIS list of state regulations for importing animals, to check the requirements for any specific destination state.¹⁸⁵ Alternatively, the USDA also advises contacting the destination state’s State Veterinarian.^{185,186} In addition, interstatelivestock.com is a consolidated repository of each state’s livestock import requirements. This reference tool is compiled and maintained by the US Animal Health Association and the National Institute for Animal Agriculture.

Gaps in Animal Transportation & Importation

A dissonance exists between the written law and the applied law in matters of animal transportation and importation. Although federal and state agencies implement guidance on entry requirements and protocol, several factors affect practical implementation of the written law, including the following:

- Shortage of agency staff to enforce regulations for the high volume of animals traveling into and within the United States.
- Funding shortages that forestall process innovation needed to keep better track of animals during the importation process.
- Inconsistencies in enforcement at local, state, and federal levels.
- Falsified documents for animals entering the United States.
- Weaker enforcement for companion animals, rescue animals, and animals arriving via land borders (i.e., from Canada and Mexico).

This list represents gaps both in EZID laws themselves and in their application and enforcement. Additionally, these gaps are unified by a common thread: lack of supports to build and maintain coordinated investigative and enforcement efforts.

Data Sharing

Internationally, data sharing (alternately referred to as *information sharing*) is recognized as an important part of disease prevention, particularly in terms of EZIDs and One Health, with many resources and recommendations related to implementation of data sharing.^{187,188,189} Similarly, multisectoral data sharing is well recognized as an important part of zoonotic disease surveillance, response, and prevention in the United States.⁵¹ The 2017 report on the US One Health Zoonotic Disease Prioritization workshop noted that data sharing was a key component of “formaliz[ing] interagency networks to address One Health issues” and identified a number of key themes and next steps to “Improve Knowledge and Data Sharing for Laboratory, Surveillance, and Response Activities,” including “identify[ing] gaps in data sharing between agencies and potential mechanisms for improvement,” “writ[ing] additional protocols and SOPS as needed,” and “writ[ing] additional MOUs or establish[ing] other means for sharing data.”¹⁹⁰ Continued efforts to use law and policy as tools to improve EZID data sharing may occur across federal, state, and local levels.

Federal Law

Federal agencies work with a variety of partners to maintain several animal disease surveillance systems. While animal disease–related requirements for data collection and reporting generally stem from state law, federal laws and regulations establish some standards and accreditation programs that help encourage disease reporting. Federal law, particularly appropriations, may also allocate funding for improved data collection and reporting systems.

Standards & Accreditation

With respect to diagnostic laboratories and veterinarians, federal laws and regulations establish standards and accreditation programs that include requirements related to data sharing and disease reporting. For example, the Secretary of the USDA, “in consultation with State animal health officials, State veterinary diagnostic laboratories, and veterinary diagnostic laboratories at institutions of higher education,” is directed by law to develop criteria to certify and contract with, grant, or enter into cooperative agreements or other legal instruments with diagnostic laboratories to improve animal health surveillance, including “the capacity and capability for standardized ... interconnected electronic reporting and transmission of data.”¹⁹¹ The Secretary is separately directed to develop technology to “enhance electronic sharing of animal health data.”¹⁹²

DATA SHARING IN BOTH DIRECTIONS

Reporting and data sharing laws on EZID monitoring and surveillance primarily address data sharing “up the chain” – that is, from a reporter to a local and/or state agency, which may then report the data to national surveillance systems. However, it is also important to consider how information flows in the other direction. In other words, how do federal agencies reshare or communicate their analyses or findings with state and local agencies in meaningful ways?

As another example, veterinarians may be accredited by law to perform certain duties on behalf of APHIS,¹⁹³ including a specific regulatory requirement to “report clinical signs and lesions of exotic animal diseases.”¹⁹⁴ The accreditation standards also include broad regulatory requirements for veterinarians around properly inspecting, testing, vaccinating, and treating animals, and accurately completing any accompanying certificates, forms, or reports.¹⁹⁵

Funding for Data Collection & Reporting Systems

Another important role that federal law and policy play in terms of EZID surveillance, response, and prevention is the allocation of funding and resources. For example, APHIS received \$300 million under the American Rescue Plan Act “to conduct surveillance for SARS-CoV-2 and other emerging and zoonotic diseases in susceptible animals and build an early warning system to alert public health partners to potential threats.”¹⁹⁶

State Law

While federal law tends to serve as a background and set policy priorities, state law generally contains the enforceable requirements related to disease reporting and data sharing as they relate to public health surveillance. As described in the examples below, states may require reporting of zoonotic disease by veterinarians, laboratories, or any person with knowledge of a reportable disease. Reporters may be required to make these reports to a specific agency or agencies, or they may have discretion to choose where to submit a report. To fill gaps in which agencies may have access to these reports, state law may also expressly require collaboration or data sharing between enumerated agencies, or may set broad policies of collaboration. Relevant privacy laws seemingly universally contain public health exceptions to facilitate these types of data sharing.

Zoonotic Disease Reporting & Data Sharing

As an example of state-level reporting requirements, Texas requires “[a] veterinarian, a veterinary diagnostic laboratory, or a person having care, custody, or control of an animal” to report diseases specified by the Animal Health Commission.¹⁹⁷ As another example, regulations in Wisconsin require “a person who diagnoses or obtains credible diagnostic evidence of any [specified reportable] disease” to make a report, unless the Department of Agriculture, Trade and Consumer Protection, the Department of Health Services, or the State diagnostic lab are making the diagnosis.¹⁹⁸

POTENTIAL GAP: EZIDS AS PART OF FEDERAL PUBLIC HEALTH INFRASTRUCTURE

Several federal laws and policies seek to improve public health infrastructure and data sharing. For example, the 21st Century Cures Act seeks “to promote health care [and public health] interoperability” by prioritizing “implementation and enforcement of regulations” against information blocking; by standardizing application programming interfaces; and by developing a trusted exchange framework and common agreement to establish a nationwide infrastructure to improve information sharing across health information technology systems.^{199,200,201,202} Similarly, the Centers for Disease Control and Prevention’s Data Modernization Initiative seeks “to ensure timelier, more complete and accessible public health data while unifying infrastructure for better decision-making.”^{199,203}

However, these laws and policies often do not make express reference to zoonotic disease. If changes in the public health infrastructure do not take zoonoses into account, this could leave gaps in EZID surveillance, response, and prevention.

The Wisconsin example also highlights the use of state-designated veterinary diagnostic labs to help ensure that public health officials receive data needed for zoonotic disease surveillance.²⁰⁴ These regulations may encourage animal health practitioners to utilize the state diagnostic lab, as they are exempt from reporting requirements when they send samples to an approved lab for testing.²⁰³ Another option, used in Texas, is to *require* that certain diseases be tested by state labs.²⁰⁵ Other states have comparatively little detail in their reporting laws, simply establishing a broad reporting requirement and creating a state diagnostic lab.^{206,207} Another method to help ensure reporting is to limit the collection of samples for diagnosis of certain diseases to specific individuals who have certification or accreditation that provides further guarantee that they will make reports as required.²⁰⁸

Some data sharing between agencies may be expressly recognized or required by statute or regulation, or otherwise enacted as a matter of sub-regulatory policy or agency practice. For example, Texas requires the Animal Health Commission and the Texas A&M University Veterinary Medical Diagnostic Laboratory to “adopt by rule a memorandum of understanding, adopted also by rule by the [commissioner of state health services], governing the exchange of information on communicable diseases in animals between the [Department of State Health Services (DSHS)] and those entities.”²⁰⁹ The law additionally requires Texas DSHS to “collaborate with local health authorities, hospitals, laboratories, and other persons who submit information to the department during a public health disaster or in response to other outbreaks of communicable disease to plan, design, and implement a standardized and streamlined method for sharing information.”²¹⁰ Furthermore, regulations in Texas recognize that reporters may have the choice to report some diseases to either the Animal Health Commission or DSHS, and confirm that the agencies will then share that information between themselves.²¹¹ Even where data sharing is not expressly recognized by law, state agencies may set policies and practices that facilitate such sharing. For example, the Kansas Department of Agriculture has promulgated materials that advise reporters to make reports of certain diseases, like rabies, to the Kansas Department of Health and Environment.²¹² As another example, “the Michigan Mosquito Control Association, the Midwest Centers of Excellence, and Michigan State University also conduct mosquito surveillance and share data with” the Michigan Department of Health and Human Services.²¹³

As identified in the 10-state legal assessment, all 10 states required reporting of diseases, and almost all states’ laws made at least some mention of government collaboration with respect to zoonotic disease, which may include data sharing policies and practices.¹³¹

For further discussion of governmental collaboration, see the [Agency Coordination & Collaboration](#) section above.

POTENTIAL GAPS IN STATE LAW

EZIDs as part of state public health infrastructure

Like federal law, many state laws and policies seek to improve public health infrastructure and data sharing. The National Conference of State Legislatures (NCSL) identified several states using American Rescue Plan Act funds “to jump-start public health data infrastructure investments,” as well as other “legislation and appropriations” to improve “health information exchanges or networks” and “state immunization registries.”¹⁹⁷ The funds have also been used to increase access to, and use of, hospital discharge data by public health departments and “to assure efficient and effective sharing of laboratory data.”¹⁹⁷ In total, NCSL has catalogued a total of 182 bills across 36 states since 2021 that relate to public health information and reporting, and an additional 321 bills across 42 states that relate to similar topics, such as infectious disease treatment and prevention and vaccine registries and reporting.²¹⁴

However, these laws and policies often do not expressly refer to zoonotic disease. This could leave gaps in EZID surveillance, response, and prevention, if changes in the public health infrastructure do not take zoonoses into account.

Data sharing among agencies

State law may or may not require – and other state policies may or may not encourage – information sharing related to EZIDs among various agencies. The importance of data sharing is well recognized with respect to disease surveillance, response, and prevention, whether it is achieved through the use of law as a tool or through policies enacted under existing law.

Every jurisdiction, and even individual agencies within the same jurisdiction, may have unique needs and concerns. However, regularly scheduled data sharing, at least at the state level, could be beneficial in the long run, because it could cut down on response time in the event of a disease outbreak. Setting up a One Health office in every state could also streamline data sharing practices in the long term.



Local Law

Local law and policy may further supplement federal and state laws and policies, requiring the reporting of EZIDs and either requiring or encouraging collaboration between local agencies, including collaboration through data sharing. For example, New York City requires animal health practitioners and others responsible for the care of animals to report specific diseases to the local health department.²¹⁵ Similar reporting was required in the local jurisdictions surveyed in California,²¹⁶ Colorado,²¹⁷ and Florida,²¹⁸ particularly on animal bites and rabies. Local laws may also specify that certain agencies should collaborate, which could encompass data sharing policies and practices. For example, in Los Angeles County, an ordinance requires the county director of public health to cooperate with the California Department of Agriculture and the USDA.^{219,220}

Overall Potential Legal & Policy Gaps in Data Sharing

Despite the separate, and sometimes overlapping, requirements to report that exist throughout federal, state, and local laws, a variety of issues may arise around under-reporting of EZIDs. For instance, the following concerns were identified by the subject matter expert (SME) group:

- Lists of reportable diseases in statutes and regulations could be out of date and difficult to amend.
- Even within a list of reportable diseases, case definitions (i.e., when a disease may be reportable based on a suspected, presumptive, or confirmed diagnosis and certain symptomatic expression or laboratory diagnostic criteria) may remain unclear or may conflict between agencies or jurisdictions. Regulations in Wisconsin also raise a unique issue: whether jurisdictions wish to receive reports of negative test results.²²¹
- Academic researchers may possess data – which they may or may not be legally required to report – that public health could utilize for EZID surveillance, response, and prevention. Stronger collaboration between academic researchers and public health would be particularly beneficial for this reason.
- Veterinarians, particularly those engaging in telehealth practices across state lines, may be unprepared to meet all reporting requirements across jurisdictions.
- Similarly, when disease-related samples are tested at private labs instead of state labs, private labs may fail to submit reports.

Many enforcement mechanisms are not within the authority of agencies that typically handle EZID surveillance, response, and prevention.

Enforcement of Reporting Requirements

Requirements to report are often supported by statutory or regulatory consequences for failure to report. For example, states may make it a crime and/or impose civil penalties against reporters that fail to make required reports.²²² Reporters who are licensed, certified, or accredited may also face consequences related to their ability to practice their profession or run their business should they fail to report.^{223,224}

The SME group expressed frustration over a lack of consequences for individuals or entities who fail to make EZID reports. Notably, many enforcement mechanisms are not within the authority of agencies that typically handle EZID surveillance, response, and prevention. Rather, EZID agencies would have to coordinate with other entities, such as state or local prosecuting attorneys or state licensing boards who have authority to pursue such penalties. At the same time, some penalties – such as jail time or complete revocation of licensure – may be extreme or disproportionate, given the nature of the violation.

Funding & Resources for Reporters

Reports and studies have recognized that animal health practitioners, laboratories, and other reporters may be willing to report additional data to zoonotic disease surveillance systems, were they given more time and resources. For example, when a committee organized by the Institute of Medicine and the National Research Council conducted a workshop that convened participants who work in zoonotic disease surveillance, response, and prevention, those participants stressed that “the mandate or requirement [to report] is in many cases less important than making sure that the capacity and resources to comply are in place where they are needed.”²²⁵ One participant illustrated the point for the United States, saying that “state and federal wildlife people who are out in the field on a daily basis have a huge amount of information that they could provide [but] don’t have the resources [or] time to do it, though they would have no objection to providing those data.”²²⁵ Researchers examining interstate exchange of information have also documented through interviews with key informants, and through examination of press, academic, and gray literature, that the costs of updating, implementing, and participating serve as barriers to such exchanges.²²⁶

Privacy Laws as a Perceived Barrier

Lastly, researchers have recognized that, although privacy laws pose little to no barrier to public health information exchange, stakeholders in the field of public health infrastructure may mistakenly perceive that they interfere with disease reporting and data sharing.²²⁷ For example, although data privacy laws generally protect the confidentiality of veterinary patient or client information, such laws usually contain public health exceptions that allow veterinarians to comply with requirements to make EZID reports.²²⁸ Establishing memoranda of understanding, standard operating policies and procedures, and/or data use agreements both before and after disease outbreaks could preemptively address data security concerns and help anticipate future needs.

Conclusion

It is critical to ensure legal authority for appropriate agencies to engage in preparedness, response, prevention, and control activities for emerging and zoonotic infectious diseases (EZIDs). Doing so is essential to supporting not only the health of humans through a traditional public health approach, but, through the lens of One Health, supporting human, animal, and environmental health, to improve health outcomes for all. This report seeks to fill gaps in knowledge about how legal authority facilitates – or fails to support – government agencies in addressing EZIDs. The report includes the following key takeaways:

- States and localities examined as part of the 10-state assessment have widely varying legal approaches to addressing EZIDs.
- Coordination and collaboration among agencies are essential, especially given the potentially large number of agencies involved and the permissive nature of legal schemes.
- Improved data sharing between agencies could facilitate better coordination and collaboration and efforts to address EZIDs.
- Practitioners in the EZID space expressed difficulty in performing their roles and carrying out enforcement, given current levels of funding.

Potential Next Steps

Given the highly complex nature of EZID systems and the sheer number of different laws involved, more research in this area is warranted. Future considerations might include:

- Scanning additional states and jurisdictions not covered in this report to determine the full landscape of EZID laws around the United States. Such scans should expressly include consideration of and input from tribal jurisdictions and research into tribal law.
- Conducting a more comprehensive scan of local EZID ordinances and approaches.
- Examining executive actions (e.g., executive orders) and other sub-regulatory policies and how they affect EZID response.
- Further analyzing other systems that may intersect with EZID prevention and response, such as food safety, national security, and general emergency preparedness and response.
- Continuing to examine and analyze best practices for legal classification of animals, diseases, and locations, noting that unifying approaches across states and jurisdictions could improve coordination and collaboration, but such unification must be balanced against individualized approaches that may better address needs with respect to the animals, zoonoses, and risks most relevant to specific jurisdictions.
- Comparing laws and policies that could provide agriculture and wildlife agencies with more flexibility to address diseases that have One Health implications – similar to the discretion of public health agencies to determine lists of reportable human diseases.
- Incorporating EZIDs and One Health into data modernization and other public health infrastructure initiatives, especially looking beyond traditional data collected by public health departments to consider other sources, like animal data, and communication between different systems.

Additional Resources

These resources offer additional background on the topics covered by this report and/or provide additional guidance and support for developing policies and protocols related to zoonotic diseases.

Centers for Disease Control & Prevention, Federal One Health Coordination

CDC, USDA, and DOI came together in 2017 for a One Health Zoonotic Disease Prioritization workshop, which led to the development of the One Health Federal Interagency Network. This Network provides a structure for partners across various federal agencies to collaborate on One Health issues and priorities. During the COVID-19 pandemic, Congress directed CDC to collaborate across agencies to create a national One Health framework to address EZIDs and promote preparedness.

More information can be found here:

<https://www.cdc.gov/one-health/php/about/federal-one-health-coordination-1.html>

CDC One Health Zoonotic Disease Prioritization Process

In addition to emphasizing the importance of multisectoral partnerships, CDC recommends a prioritization system for EZIDs by using the One Health Zoonotic Disease Prioritization process. This tool employs an interdisciplinary, multisectoral approach to help countries, regions, or other areas prioritize zoonoses of greatest concern, and develop next steps and action plans to address these zoonoses through One Health collaboration. This tool can help countries, regions, and other areas decide how to allocate resources – particularly when they are limited – to address the prioritized zoonotic diseases more effectively. It also emphasizes the need for investment in workforce training, including “training the trainer” models, to ensure sustainability of use of the prioritization tool.

More information can be found here:

<https://www.cdc.gov/one-health/php/prioritization/index.html>

World Health Organization Guide to Implementing the One Health Joint Plan of Action

“The guide to implementing the One Health Joint Plan of Action (OH JPA) at national level provides practical guidance on how countries can adopt and adapt the OH JPA to strengthen and support national One Health action.

“Building on the OH JPA theory of change, this guide describes three pathways and five key steps to implement the OH JPA at national level:

- **Pathway 1:** Governance, policy, legislation, financing and advocacy
- **Pathway 2:** Organizational and institutional development, implementation and sectoral integration
- **Pathway 3:** Data, evidence, information systems and knowledge exchange.

“The stepwise approach comprises:

1. Situation analysis including stakeholder mapping and review of existing assessment results
2. Set-up/strengthening of a multisectoral, One Health coordination mechanism
3. Planning for implementation, including activity prioritization and leveraging of resources
4. Implementation of national One Health action plans
5. Review, sharing and incorporation of lessons learned.

“From the situation analysis through to establishing or strengthening national multisectoral, One Health coordination mechanisms and national One Health action plans, the process described in this guide builds on and links to existing national work and defines clear roles and responsibilities for primary stakeholder groups.”

More information can be found here:

<https://www.who.int/publications/i/item/9789240082069>

Tripartite Zoonoses Guide

The World Organisation for Animal Health (WOAH), in partnership with the World Health Organization (WHO) and the Food and Agriculture Organization of the United Nations, developed a suite of tools to support countries and regions in implementing a One Health approach to zoonotic diseases. The tools and resources address capacity building and cover a wide range of topics including:

- Multisectoral coordination
- Mapping country or regional context
- Planning and preparedness
- Surveillance and information sharing
- Investigation and response
- Joint risk assessment
- Risk communication
- Workforce development

In addition to an overview guide that addresses these topics while providing background and context for zoonotic diseases, there are also three operational tools, trainings on using the guide, and fact sheets. The three operational tools cover joint risk assessment, multisectoral coordination mechanisms, and surveillance and information sharing.

All of these materials can be found here:

<https://www.who.int/initiatives/tripartite-zoonosis-guide>

World Organisation for Animal Health Resources

WOAH offers additional resources that address One Health and zoonotic diseases. There are more trainings on One Health, fact sheets addressing different zoonotic diseases and their impact, strategic plans that incorporate the One Health approach and provide additional information on implementation, and examples of how these principles have been put into action in other countries.

These materials can be found here:

<https://www.woah.org/en/what-we-do/global-initiatives/one-health/#ui-id-1>

United Nations Environment Programme: Preventing the Next Pandemic

In 2020, the United Nations Environment Programme released this scientific assessment for policymakers on EZIDs and how to break the chain of transmission. The report provides information on the impact of EZIDs, as well as lessons learned from implementing a One Health approach. Based on past experiences and lessons learned, the report details 10 policy recommendations for EZID surveillance preparedness and response. These recommendations – which could have broader implications for other aspects of EZID prevention and response – include:

- Increasing awareness and education.
- Increasing investment in interdisciplinary approaches to surveilling and preventing zoonoses.
- Expanding scientific resources and research dedicated to understanding zoonoses.
- Improving cost-benefit analysis of emerging and innovative approaches to emerging diseases, including societal impact.
- Developing more effective surveillance tools and approaches that consider the structural drivers of emerging diseases with an emphasis on food and sanitation systems.
- Providing incentives for sustainable food systems, including incentives that promote management practices that reduce and control unsustainable agricultural practice, wildlife consumption, and trade.
- Identifying key drivers of emerging diseases in animal husbandry (both large industrialized production and smallholder production).
- Supporting the implementation of and investment in integrated management of seascapes and landscapes.
- Supporting capacity building in all countries to address zoonoses and the potential spread across different regions.
- Mainstreaming and implementing the One Health approach.

More information can be found here:

<https://www.unep.org/resources/report/preventing-future-zoonotic-disease-outbreaks-protecting-environment-animals-and>

The Center for Food Security & Public Health, Iowa State University

The mission of the Center for Food Security & Public Health (CFSPH) at Iowa State University is to “increase national and international preparedness for accidental or intentional introduction of diseases that threaten food production or public health.” CFSPH has compiled resources on zoonotic diseases and also offers online continuing education courses.

Their resources can be found here: <https://www.cfsph.iastate.edu>

University of Illinois Materials on Preventing Zoonotic Diseases

With a focus on animal care and the use of animals in scientific research, the University of Illinois has developed a suite of materials and resources that can be used when developing policies and protocols related to zoonotic diseases. The resources cover topics such as prevention of zoonotic diseases, animal care standards and procedures, facility maintenance, animal procurement, and transportation. In addition to the University’s current policies and procedures, the resources include templates, checklists, example policies, fact sheets, and FAQs that may be helpful when developing policies related to zoonotic diseases.

These resources can be found here: <https://animalcare.illinois.edu>

Select Academic Studies

Frameworks for Preventing, Detecting & Controlling Zoonotic Diseases

This study examined how three countries used different approaches to foster multisectoral collaboration for EZID outbreaks. An umbrella approach was used by Ethiopia during a rabies outbreak; a stepped, incremental approach was used by the Democratic Republic of the Congo during an mpox outbreak; and a pathogen discovery approach was used by the country of Georgia. These countries are part of the Global Health Security Agenda (GHSA), and the three approaches focus on joint program implementation strategies, while factoring in a system’s available resources and the unique characteristics of the zoonotic disease.

Umbrella approach

Ethiopia used an umbrella approach to address a rabies outbreak. This approach involved collaboration between three Ethiopian government agencies and the CDC. A multi-pronged approach was used, including preventive measures such as vaccinations for dogs and people, laboratory-based surveillance, and introducing supportive legislation and community education. This approach depends on agency buy-in as well as resources for implementation across sectors.

Stepwise approach

The Democratic Republic of the Congo, in partnership with the CDC, used a stepwise approach and created a laboratory surveillance system for mpox. The program started in one province and provided training for local animal health and public health workers, as well as specimen collection kits that could be submitted to the national agency for evaluation. The program hired local staff to reinforce surveillance principles and identify additional points of research to improve the program. The stepwise approach also improved the national response to disease outbreaks and emergencies through developing and strengthening local relationships and multisectoral partnerships.

New disease detection

The country of Georgia focused on a new zoonotic pathogen and used a One Health approach to establish surveillance programs, build laboratory capacity, and implement research to understand the epidemiology and characteristics of the virus and detect infections in both people and animals.

Overall, the study notes that the best approach will depend on the specific context of a country or state/locality and the selected disease(s):

Optimal approaches will share a foundation of mutual interest across sectors and support a platform for coordinated actions. In the most streamlined form, basic program requirements should comprise surveillance and response activities (human and animal); laboratory diagnostic capacity; data analysis; reporting structures; and the determination of thresholds, triggers, or both that can signal the need for additional action.

Further, these systems should be established at the national level in a way that can be replicated at regional and subregional levels, with flexibility to adapt to local contexts. Some shared takeaways from these approaches include identifying country-specific needs and resources for early detection, as well as the importance of workforce development to ensure effective and sustainable programs.

Shiferaw ML, Doty JB, Maghlakelidze G, et al. Frameworks for preventing, detecting, and controlling zoonotic diseases. *Emerg Infect Dis.* 2017;23(Suppl 1):S71-S76.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5711328>

Zoonotic Disease Risk Perceptions & Infection Control Practices of Australian Veterinarians

A 2013 study among Australian veterinarians looked at perceptions of zoonotic disease risk and protective practices, as well as factors influencing the use of those practices. The study found four factors that affected veterinarians' perception of disease risk and their use of protective practices: education, awareness, potential liability for outbreaks, and work environment, including employer policies. The study found that "veterinarians' use of PPE is associated with their perception of the risks, and their determination of risk must necessarily be grounded in their knowledge base and their attitudes, such as their ability to control the threat." Workplace policies and environments may also influence veterinarians' perspectives on disease risk and their use of protective practices. Lack of infection control committees and written policy documents for organizations, companies, and veterinary practices is significantly associated with low precaution awareness. The study also recommended increased information sharing and training for veterinarians to

improve perception and decision making on the use of protective practices. Such training and information could include providing a risk assessment and risk management framework to improve awareness and management solutions among veterinarians.

Dowd K, Taylor M, Toribio JALML, Hooker C, Dhand NK. Zoonotic disease risk perceptions and infection control practices of Australian veterinarians: call for change in work culture. *Prev Vet Med.* 2013;111(1-2):17-24.

<https://www.sciencedirect.com/science/article/pii/S0167587713001268>

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66. See, e.g., Alaska Admin. Code tit. 7, §§ 27.020.
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72. See, e.g., Alaska Admin. Code tit. 18, § 36.115.
73. See, e.g., Tex. Agric. Code Ann. § 161.116.
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77. See, e.g., Fla. Stat. § 388.45 (requiring the department of health to notify the department of agriculture, the department of environment, and the fish and wildlife commission upon declaration of a public health emergency).
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92. E.g., 18 Alaska Admin. Code § 36.920.
93. E.g., Cal. Code Regs. tit. 3, § 903.2.
94. Fort Collins, Col. Municipal Code Chp 4, Art. 2.
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96. E.g., 7 U.S.C. § 2136.
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100. E.g., Atwood Kansas Mun. Code Chp. 6, Art. 2 § 6-34.
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