

ARIZONA ONE HEALTH TOOLKIT

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PURPOSE

Public health agencies in Arizona regularly collaborate with state, federal, and academic agencies working in animal health disciplines to address One Health concerns. The *Arizona One Health Toolkit* was created in part using methods developed and used by the University of Minnesota and United States Department of Agriculture's One Health Systems Mapping and Analysis Resource Toolkit (OH-SMART)¹⁻³. The *Arizona One Health Toolkit* provides communication and collaboration strategies to strengthen and enhance these partnerships. This document is intended to serve as a resource for personnel within county and tribal health departments that routinely conduct zoonotic disease investigations or address issues affecting the human-animal interface.

BACKGROUND

ONE HEALTH

The concept of One Health recognizes that the health of people is connected to the health of animals and the environment⁴. The goal of One Health is to encourage the collaborative efforts of multiple disciplines working locally, nationally, and globally in order to achieve optimal health for people, animals, and our environment.

ZOOBOTIC DISEASES AND ISSUES AFFECTING THE HUMAN –ANIMAL INTERFACE

The interface between human, animal, and environmental health has become more challenging as the world becomes more connected through globalization. Animals have the capability to provide people many benefits including companionship, entertainment, and food; however, they can also expose people to illness. Scientists approximate that 60% of known diseases that people contract are spread from animals, and 75% of new or emerging infectious diseases in people have an animal origin⁴. These infectious diseases include viruses, bacteria, parasites, and fungi. Additionally, the majority of disease classified by the Centers for Disease Control and Prevention (CDC) as bioterrorism diseases/agents are zoonotic; among the Category A diseases (the highest priority), more than 80% are Zoonotic Diseases⁵. Animals can also be sentinels for human disease risk, so monitoring of illnesses in animals and/or changes in the environment could signal a potential risk for human illnesses. Increasing knowledge of the diseases animals can

carry, how they affect humans, and environmental health is imperative to improving One Health.

Animals also present additional challenges in the public health arena. As more animals are added to family units, public health should become more aware of the increasing need to include animals in the public health planning of a variety of public health situations and response guidelines. One example of the incorporation of animals in public health planning includes disaster response protocols by Federal Emergency Management Agency (FEMA) and other policies after Hurricane Katrina in 2005. Animals should be included in multi-sectorial public health approaches to interventions, emergency preparedness and response strategies, and policies; multi-agency communication and collaboration is essential to achieve effective public health strategies when addressing issues affecting the human-animal interface.



CHALLENGES TO ARIZONA & PARTNERS IN ONE HEALTH

Arizona faces unique animal-human-environment interface concerns compared to other states across the United States. Zoonotic diseases unique to Arizona and the western U.S. include hantavirus, plague, tularemia, and Rocky Mountain spotted fever. The presence of these specific diseases and other zoonotic diseases are exacerbated by many factors including diversity in wildlife species, disparities across communities, extreme climates, and varying topography found across Arizona. Additional threats increasing the risk of zoonotic disease transmission are various natural disasters; local flash flooding, wildfires, extreme drought, and dust storms are commonplace. These weather events encourage animals to flee their natural environment and seek refuge in environments closely inhabited by people, potentially increase the presence of or create more ideal habitats for disease-carrying vectors, and other short or long-term effects. The close proximity to an international border and increased travel with pets also makes zoonotic disease transmission risk greater, because animals and people move freely and frequently across the border. Several of these zoonotic diseases are considered bioterrorism diseases as well, such as plague and tularemia⁶. While other potential events such as a nuclear disaster have not occurred in Arizona, this type of event would lead to detrimental consequences to the animal-human-environment interface and would promote disease transmission; therefore it is of utmost importance to appropriately prepare for these types of intentional or unintentional events or introductions of disease.




When addressing issues affecting the human-animal interface and zoonotic diseases with a One Health perspective, various local, state, and federal agencies have unique roles. One of the largest downfalls to effective collaboration between organizations or partners



is the lack of awareness or understanding in one's role within the collaborative process. Table A contains key state and federal One Health players in Arizona, including their scope of work and a brief overview of their roles in addressing zoonotic disease situations. All of these organizations have resources available to county and tribal health departments when dealing with animal situations or zoonotic disease investigations, such as case-finding or enhanced surveillance. Each locale within Arizona faces unique cultural, geographical, and operational challenges; therefore, additional resources or organizations should be included in zoonotic disease collaboration and communications.

TABLE A. ARIZONA STATE & FEDERAL ONE HEALTH PARTNERS

Organization	Scope of Work	Role in Zoonotic Disease Investigations	Agency Collaboration
Arizona Department of Agriculture 	Protect livestock, poultry, and aquaculture industries and the public through prevention, early detection, containment and eradication of important diseases that are often transmissible to people.	The office of the State Veterinarian is within the Arizona Department of Agriculture. The agency can provide assistance in sampling of livestock, tracking animal movements, identifying farms, and testing food products. Also have contacts to many animal producers and farmers throughout Arizona and is able to distribute information quickly.	Work closely with United States Department of Agriculture Animal and Plant Health Inspection Service in animal health testing, foreign animal disease investigations, and other disease investigations that have interstate travel components or importance to the World Organisation for Animal Health (OIE).
Arizona Game & Fish Department 	Possess the sole authority to manage all wildlife in Arizona and work to conserve the >800 species for future generations. Also promote responsible outdoor recreational activities throughout the state.	The department participates in zoonotic disease surveillance activities by investigating wildlife mortality events, wildlife attacks on people, outreach and education events, and provides data to Arizona Department of Health	Frequently work with wildlife partners such as United States Department of Agriculture Wildlife Services, United States Fish & Wildlife Service, and National Park

		Service on the occurrence of zoonotic diseases within wildlife populations.	Service in a variety of conservation, educational, and animal disease related activities.
Arizona Veterinary Medical Association 	Help facilitate a forum for the veterinary community to address issues related to animal and human health and welfare, education, legislation, public information, and practice management through its members in Arizona.	Provide a platform of continuing education which includes providing pertinent animal situation updates, zoonotic disease education materials, animal disease alerts, and resources for community outreach for veterinary professional throughout Arizona.	Act as a liaison with the American Veterinary Medical Association who plays a role in alerting individuals about zoonotic disease outbreaks, pet product recalls, and human-animal policy issues.
Arizona Veterinary Diagnostic Laboratory 	Provide diagnostic support to veterinarians and private individuals for all species of animals. The laboratory is also a Level 2 facility with the National Animal Health Laboratory Network which focuses on surveillance of foreign animal diseases.	Provides diagnostic testing in microbiology, molecular microbiology, histopathology, and clinical pathology to help investigate animal diseases. The laboratory also has an extensive contact network of laboratories across the United States that can assist in testing animals and vectors for a variety of diseases.	Pertinent information and reportable disease information is then relayed to the State Veterinarian, Arizona Department of Health Services, and United States Department of Agriculture Veterinary Services when applicable. Lab is a part of the College of Agriculture & Life Sciences at The University of Arizona.
United States Department of Agriculture, Animal and Plant Health Inspection Service (USDA APHIS) Wildlife Services	Work to resolve wildlife conflicts to allow people and wildlife to coexist. Wildlife Services is a federal cooperative program that responds	Work involves tracking wildlife and feral animal disease that can affect human health. Some examples include the following diseases: Avian Influenza, plague,	Work in cooperation with other wildlife partners such as tribes, Arizona Department of Agriculture,

	<p>to requests by persons, agencies, and tribes, needing help in managing and wildlife damage including zoonotic diseases.</p>	<p>tularemia, feral swine diseases, tick borne diseases, and rabies.</p>	<p>Arizona Game & Fish Department, counties, Department of Defense, National Park Service, and US Fish & Wildlife Service to trap, sample, and provide disease summaries</p>
<p>United States Department of Agriculture, Animal and Plant Health Inspection Service (USDA APHIS) Veterinary Services</p> 	<p>Improves the health, productivity, and quality of life for animals and people and maintains and promotes the safety and availability of animals, animal products, and veterinary biologics. VS integrates One health principles with the USDA business objectives by contributing leadership, expertise, infrastructure, networks, and systems to collaborate effectively with local, State, Tribal, national, and international partners</p>	<p>They assist in response of a variety of animal and zoonotic diseases that can negatively impact human and environmental health. USDA VS often provides personnel, resources, and bio containment expertise to animal disease situations.</p>	<p>Work closely with both the Arizona State Veterinarian and Arizona Department of Agriculture in animal and food product testing when indicated.</p>
<p>National Park Service</p> 	<p>Work to conserve natural and historic monuments, landscapes, and areas. This includes the wildlife and scenery within NPS jurisdiction.</p>	<p>NPS is able to distribute information regarding potential wildlife disease concerns, provide assistance in trapping, sampling animals, and mapping on sites under their jurisdiction.</p>	<p>Work closely with wildlife partners such as Arizona Game & Fish, USDA WS, US Fish & Wildlife Service, and many environmental health partners to address animal situations and zoonotic disease concerns. NPS has 24 sites within Arizona under its</p>

			jurisdiction.
<p>Arizona Department of Health Services</p>  <p>ARIZONA DEPARTMENT OF HEALTH SERVICES</p>	<p>ADHS Office of Infectious Disease Services (OIDS) monitors more than 70 infectious disease of public health importance, and works with local health departments to control & prevent these diseases.</p>	<p>The Office maintains a registry of reportable diseases including zoonotic diseases; provides data and statistics on selected diseases; provides information for healthcare providers and the public; promulgates rules for communicable diseases, as needed; drafts and disseminates algorithms, guidance documents, and other recommendations for local use; consults with other ADHS groups such as Office of Environmental Health or Bureau of Public Health Preparedness.</p>	<p>OIDS works extensively with a variety of local, state, tribal, and federal partners on surveillance and investigation activities of diseases across Arizona and within the south-western United States. They also provide technical assistance to local health departments and conduct trainings and tabletop exercises when needed.</p>
<p>Arizona State Public Health Laboratory</p>  <p>ARIZONA DEPARTMENT OF HEALTH SERVICES</p>	<p>Work to identify and investigate infectious and communicable disease including emergent pathogens affecting public health.</p>	<p>Key laboratory services provided for zoonotic disease investigations include the following diseases: plague, hantavirus, rabies, and West Nile virus.</p>	<p>Collaborate and work with an extensive laboratory network across the United States as well as universities, local, tribal, and state health departments for testing of specimens related to zoonotic diseases.</p>

**Centers for Disease Control
and Prevention**



As the nation's health protection agency, CDC saves lives and protects people from health threats. To accomplish their mission, CDC conducts critical science and provides health information that protects our nation against expensive and dangerous health threats, and responds when these arise.

CDC has three main roles during investigations of illnesses involving multiple states that might be related to food or animal contact:

Quickly detect outbreaks by monitoring nationwide surveillance systems that track diseases.

Gather the evidence linking the outbreak to a likely food or animal source.

Communicate to consumers and retailers about the source of the outbreak to prevent additional illnesses.

CDC coordinates the public health investigation during multistate outbreaks, working closely with public health partners, who may include:

County, city, and state health departments, U.S. Food and Drug Administration (FDA), and U.S. Department of Agriculture (USDA)

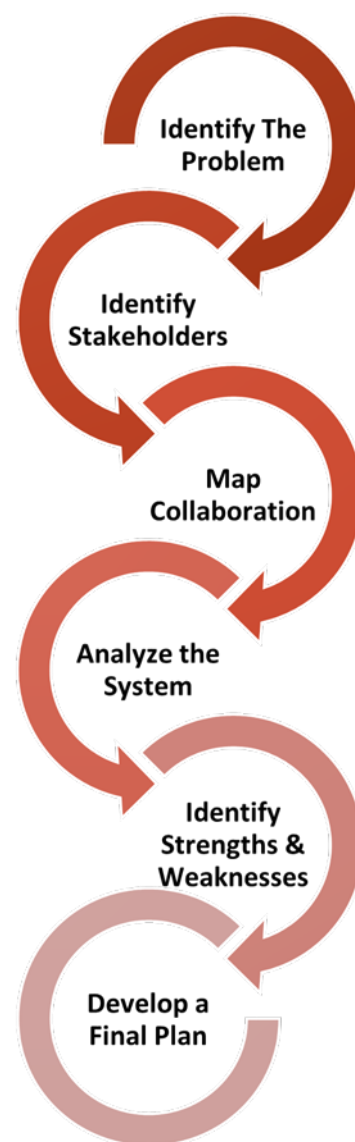
STRATEGIES FOR ENHANCING COMMUNICATION & COLLABORATION

Working with partners and across organizations presents many challenges in order to ensure streamlined communication and effective workflow. Inter-organizational collaboration, particularly public health collaborations, are continually critiqued and analyzed to identify potential areas for increased effectiveness⁷⁻¹³. Several key determinants have been identified in establishing effective communication and collaboration. These include the concepts of trust, respect, mutual acquaintanceship, and power balance in professional interactions in a collaborative process⁹. The overall crucial key to successful collaboration is strong communication.

Individuals investigating better methods of collaboration and communication⁷⁻¹³ indicate that formalization of a collaborative process using tools such as protocols or policies eases the communication process because professional roles are clarified. This is imperative in public health because many organizations work together for a variety of situations. Three disease situations have been included below as an example work flow/ collaborative process across organizations.

The Six-step OH-SMARTTM Process¹⁻³ to the right was used in part to make process diagrams outlining organizational flow and roles of organizations in a disease situation. The below disease diagrams demonstrate how state and federal One Health partners are incorporated in animal situations and zoonotic disease investigations.

The benefit of the OH-SMART methodologies and process diagrams¹⁻³ is they can be modified to include any agency that a county or tribal health department may identify as a potential stakeholder or organization in which communication or collaboration needs to occur. The steps of analyzing the system, identifying strengths and weaknesses, and developing an implementation plan were not performed in the below disease situation examples.



Six-step OH-SMARTTM Process

Used with permission from OH-SMART administrators

COMMUNICATION & COLLABORATION AT WORK

Communication and collaboration between interdisciplinary agencies is essential to build capacity for One Health efforts in Arizona, and also to identify, respond to and prevent zoonotic diseases and other health threats, such as harmful algal blooms. Below are examples of diseases (plague, rabies, and Q fever) that Arizona One Health partners respond to, along with a brief description of agency collaboration efforts. Each disease diagram, Figures 1-3, was built in part using OH-SMART methods and mapping templates¹⁻³.

PLAGUE

The first human case of plague was reported in Arizona in 1950. Since then, the presence of the flea vector and numerous wildlife reservoirs in Arizona has led to continued risk for human and animal illnesses. Reservoir wildlife mortalities often provide evidence of plague activity, and poses a concern for spillover to humans or domestic animals. Public health and wildlife health agencies become involved in plague related investigations in two main ways. The first is when a suspected human case is reported to public health by a healthcare provider or second, after a wildlife mortality event is identified, particularly in prairie dog populations, which are highly susceptible to plague. Communication with multiple agencies regarding either scenario mentioned above usually occurs, with each agency playing a specific role in the response.

Figure 1.¹⁻³ depicts the flow of communication and collaborations between organizations for a person with a clinically compatible illness who has known animal/vector contact. The local public health agency gathers information on the patient, notifies the Vector-borne and Zoonotic Disease (VBZD) team at ADHS, and coordinates sample collection and submission to the Arizona State Public Health Laboratory (ASPHL) for plague testing. If available and warranted by the situation, tissues can be collected from animals suspected to be infected with plague, such as sick cats, dead prairie dogs or other wildlife and samples submitted to the ASPHL. Field surveillance and environmental mitigation efforts can be conducted on an as-needed basis and involve a multitude of agencies. ASPHL does not have the capability to perform flea testing at this time, however other partners, including the Translational Genomics Research Institute, the Pathogen and Microbiome Institute at Northern Arizona University, or the Centers for Disease Control and Prevention can assist with flea surveillance and testing. The Translational Genomics Research Institute and the Pathogen and Microbiome Institute at Northern Arizona University can also assist public health in genomic analysis of human and animal samples. These enhanced surveillance and testing efforts are coordinated through ADHS. ADHS will also notify federal partners and involve the FBI if a potential bioterrorism threat is suspected. Of note, the arrows of communication are not always one-directional, depending on who receives the initial report of an ill animal or person.

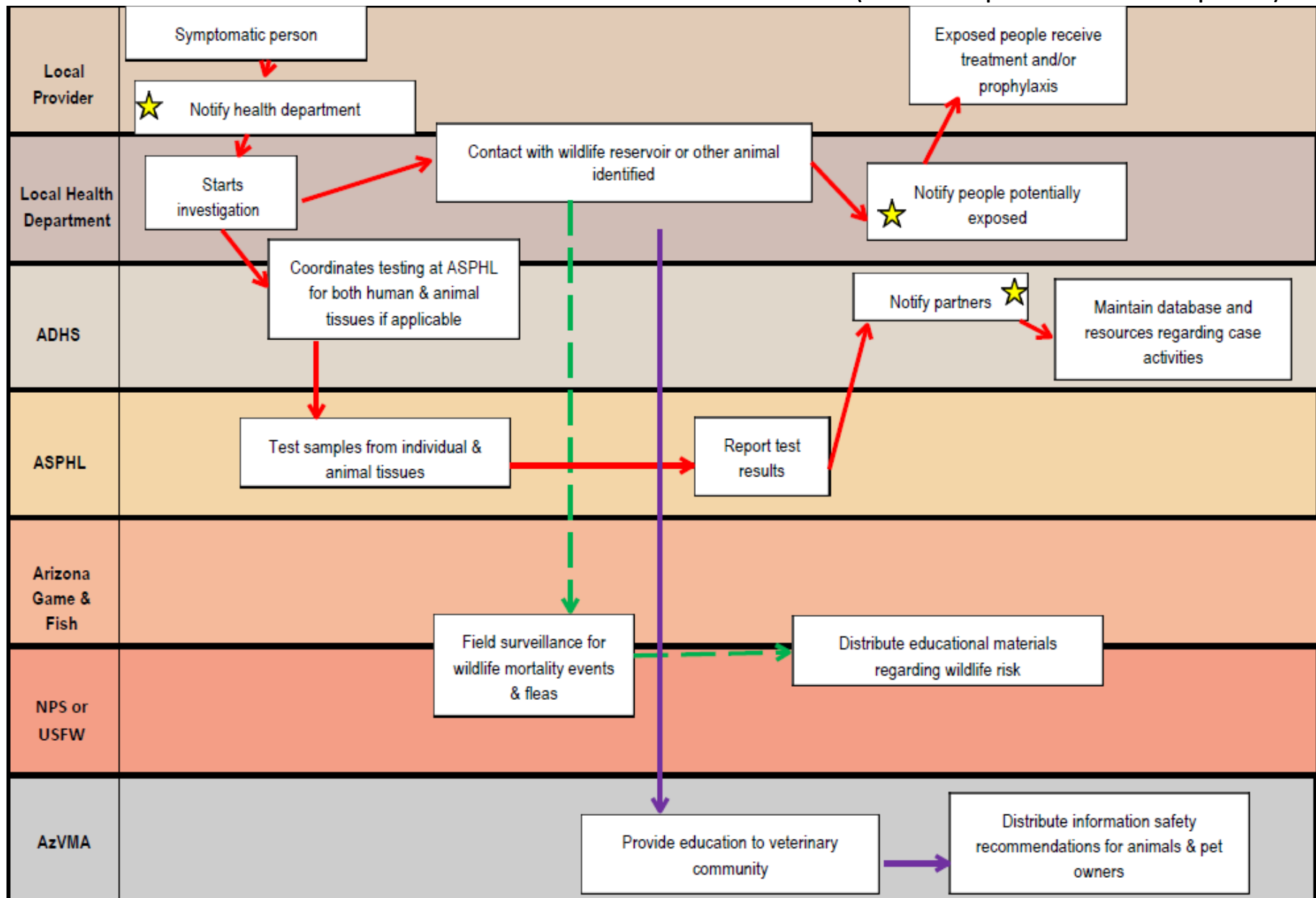
Additionally, once plague has been diagnosed in a person, the state health department reports to the Centers for Disease Control and Prevention (CDC), and notifies other health partners.

Methods of communication to raise awareness and educate the broader public health and health care audiences include messaging via the Health Alert Network, Infectious Disease Arizona App (mobile app for healthcare providers), and EpiAz (biweekly newsletter). As appropriate, Public Information Officers (PIOs) and other decision-makers within each agency coordinate consistent and appropriate messages that might be released by one or multiple agencies. Messages are usually shared with the involved partners before releasing into the public or to media, to ensure all pertinent information is included and allows each agency to prepare for potential media attention around the event.

If a wildlife mortality event is reported (with or without associated human illness) wildlife partners such as the Arizona Game & Fish Department, National Park Service, and USDA APHIS Wildlife Services, take a lead in the investigation and response activities. Animal samples may be collected and submitted by these agencies for a variety of testing, including toxicology and pathology, and molecular biology to outside laboratories to determine cause of death. Recommendations are sometimes made by the local health department and wildlife partners to close areas to visitors once testing is complete. Signs might be posted in areas frequented by visitors such as park bulletin boards or trailheads. Future plague surveillance activities such as flea trapping may be conducted by these partners, public/private universities, laboratories and others, to assess prevalence of plague within the vector population.

While domestic animals such dogs and cats can both be infected with plague, the disease most commonly presents as a severe, often fatal, systemic disease in cats. When a domestic animal is confirmed with plague infection, the local health department must follow up with any veterinary facilities that may have been in contact with or cared for the animal, risk assessments should be performed, and post exposure prophylaxis (PEP) prescribed as needed. It is important to educate veterinarians by providing information about the distribution of disease and details about the plague activity to the AZVMA in order to increase knowledge and awareness regarding this at-risk animal population

FIGURE 1. COMMUNICATION & COLLABORATION AT WORK: PLAGUE¹⁻³ (Stars indicate points of notification to partners)



Q FEVER

People become infected with *Coxiella burnetii* (the causative agent of Q Fever) in a variety of ways, including breathing in particles contaminated with animal feces, urine, milk, or birth products that contain the bacteria or by eating contaminated unpasteurized dairy products.⁴ In Arizona, human cases of Q fever are most commonly associated with indirect or direct contact with animals such as goats and sheep. Communication and collaboration between organizations is extremely important because many of the animals infected with Q Fever do not appear ill; people that become infected with Q Fever exhibit a variety of symptoms including fever, fatigue, headache, weight loss, non-productive cough, and in severe cases pneumonia or hepatitis. This disease is also extremely important to our nation's agricultural industry and this disease is reportable to the World Organisation for Animal Health (OIE).

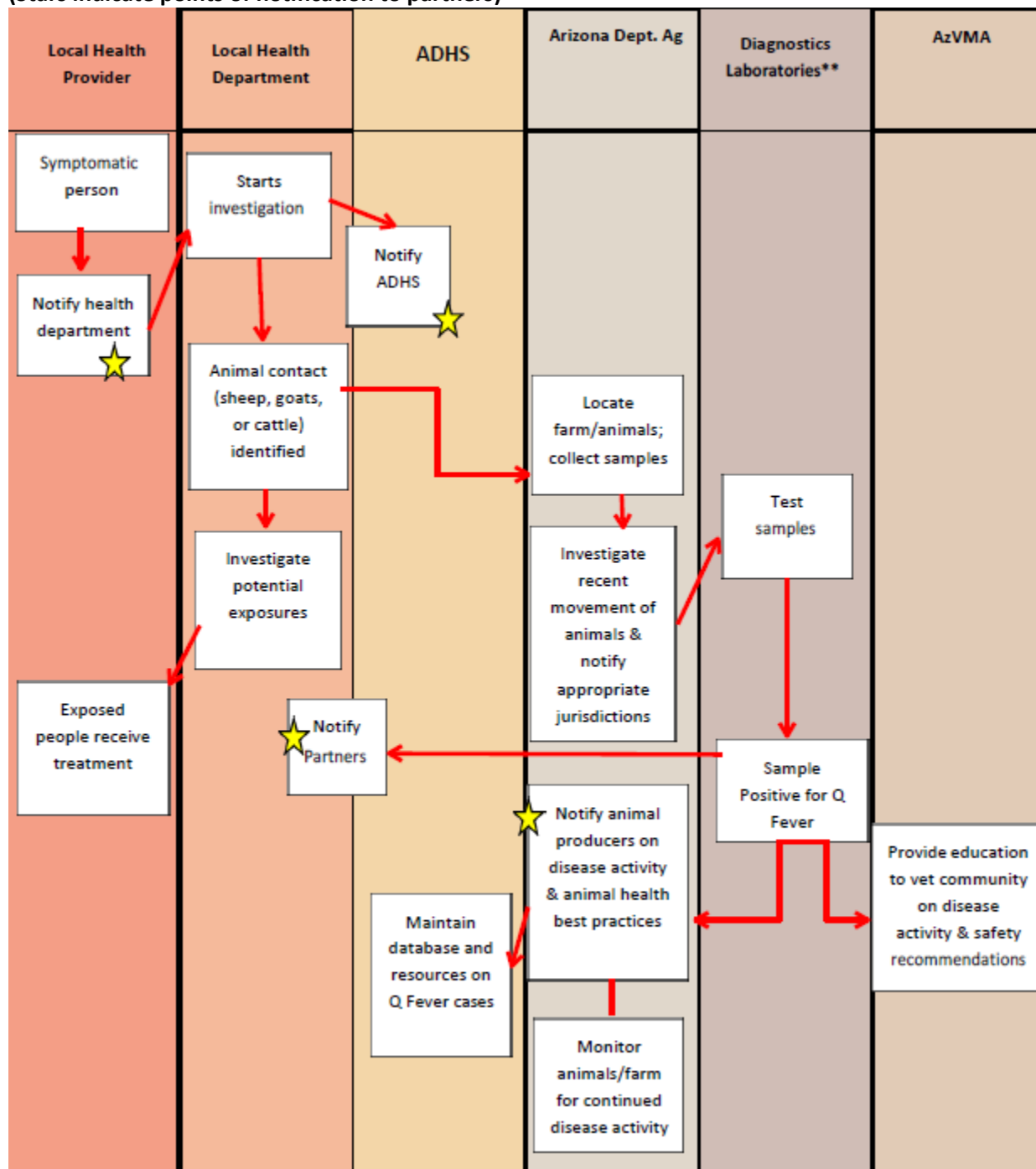
Figure 2.¹⁻³ depicts the communication and collaboration between organizations when a person with a clinically compatible illness has known animal/vector contact. Q Fever is not commonly on differential diagnosis lists of healthcare providers, therefore information about potential exposures such as unpasteurized dairy consumption, occupational risks (farmer, veterinarian, laboratory worker), or contact with animals such as sheep, goats, cattle, or fetal tissues from these animals is extremely important for case investigation. More often than not, these types of historical questions regarding exposures would not be asked until patient testing results in a positive test result for Q Fever. The Arizona Department of Health Services serves as a valuable resource to healthcare providers in a variety of zoonotic disease situations. The Arizona Department of Agriculture typically sends animal fetal samples to the National Veterinary Services Laboratory in Ames, Iowa or the Arizona Veterinary Diagnostic Laboratory. Public health agencies utilize the Centers for Disease Control and Prevention laboratories in Atlanta, Georgia for both animal and human samples. Additionally, once Q Fever has been diagnosed in an individual, the state health department reports to other health partners. Methods of communication to raise awareness and educate the broader public health and health care audiences include messaging via the Health Alert Network, Infectious Disease Arizona App (mobile app for healthcare providers) and EpiAz (biweekly newsletter). Messaging is coordinated with partners as appropriate, to ensure a consistent and clear message. ADHS will also notify federal partners and involve the FBI if a potential bioterrorism threat is suspected.

Due to the often benign presentation of the disease in sheep, cattle, and goats, it is important to communicate findings of Q Fever activity to people who work regularly with these species of animals including veterinarians, livestock farmers, dairy workers, meat processing plant workers, etc. This communication is often performed by the Arizona Department of Agriculture because the department also receives laboratory results regarding animal fetal tissues positive for Q Fever. In these cases, investigations regarding human cases are often performed retrospectively, therefore the arrows of communication are not always one-directional. Further investigation of animal movements, both intrastate and interstate, will be explored by the Arizona Department of Agriculture and then communicated back to local and state health departments in order for risk

assessments to be performed on people potentially exposed. Testing for Q fever can be performed at a variety of laboratories depending on which agency is submitting and the submission sample type.

FIGURE 2. COMMUNICATION & COLLABORATION AT WORK: Q FEVER¹⁻³

(Stars indicate points of notification to partners)



RABIES

Rabies infection results in a serious neurological disease that is fatal in animals and nearly always fatal in humans. This disease is preventable, however, by avoiding contact with wildlife and bats (especially if they are acting strange), receiving appropriate rabies post-exposure prophylaxis when high risk exposures occur, and appropriate rabies vaccination in domestic animals.

Potential exposure to rabies is reported to public health in a variety of ways in Arizona. The most common situation experienced is a potential rabid animal exposure to humans or to domestic animals. Rabies exposure situations become complicated when human exposure is not always clear and the domestic animal exposure is often complicated by unknown rabies vaccination history. Multiple rabies algorithms have been included to assess risk and provide guidance on quarantine protocols for domestic animals.

In most human exposures, the potential rabid animal is not available for rabies testing. Local health departments take lead in these cases as they provide risk assessment of potential rabies risk to individuals and health care providers. From here, recommendations on post exposure prophylaxis (PEP) can be made; if PEP is chosen to be the appropriate action, the local public health department will follow up with the person to confirm whether a full course of PEP was obtained.

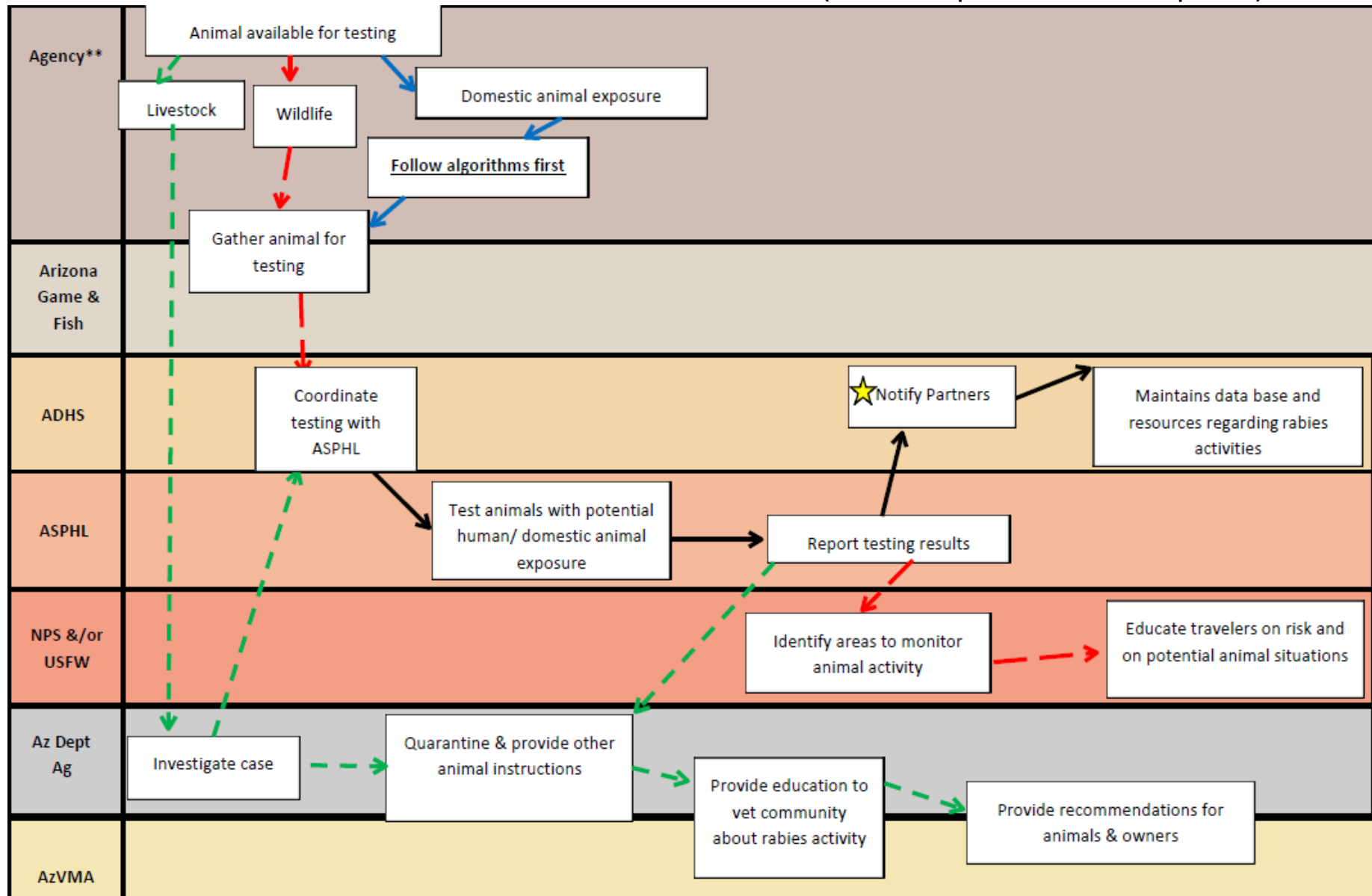
Figure 3.¹⁻³ depicts the flow of communication and collaboration for a rabies situation when the potentially rabid animal is available for testing. An animal can be submitted by a variety of agencies including, animal care or control, Arizona Game & Fish Department, veterinarians, tribes, and other public groups. The Arizona Department of Health Services (ADHS) helps coordinate animal testing with the Arizona State Public Health Laboratory (ASPHL) to ensure animals being tested are those with the highest risk of exposing people to rabies virus. If a human was suspected to have rabies, ADHS would coordinate sample submission to ASPHL who would send the sample to CDC for testing. A rabies risk assessment is performed by the local health department when humans have been exposed to the animal submitted for testing. In these cases, PEP recommendations are made on a case-by-case basis and PEP may not be recommended until rabies testing is completed.

In Arizona, rabies infection rarely occurs in dogs and cats, however wildlife exposures must be taken seriously. When possible, wildlife involved in a potential exposure incident are collected by the Arizona Game and Fish Department, USDA APHIS Wildlife or animal control agencies and submitted for testing in coordination with ADHS and ASPHL. Close collaboration and communication with veterinary clinics, animal owners, animal care and control agencies, and local and state health department officials, is required to determine a domestic animal's risk of rabies exposure after a potential rabid animal encounter. The Arizona State Public Health Veterinarian is available for concerns regarding exposure risk and the Arizona Department of

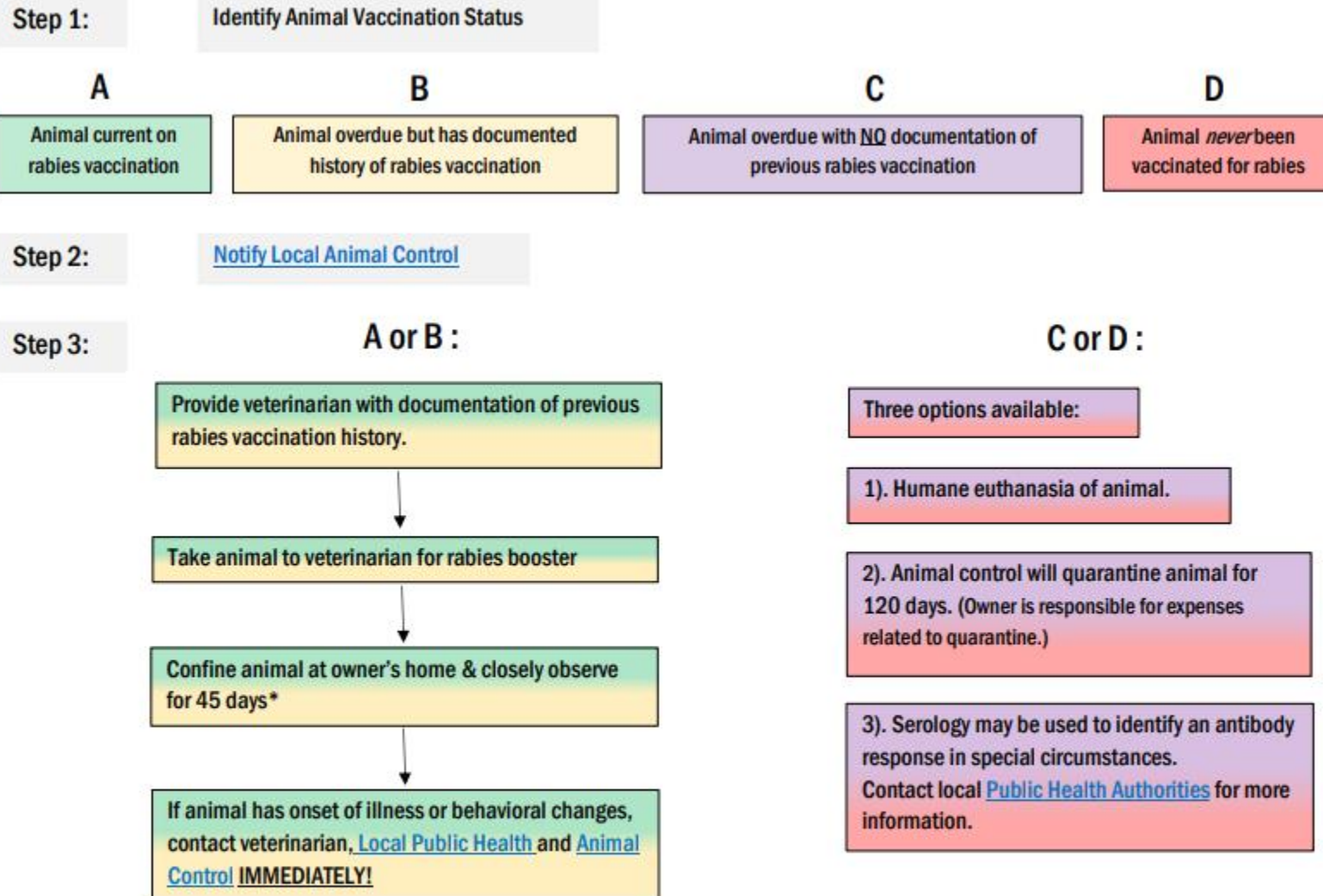
Health Services Rabies Manual, based off of the National Rabies Compendium, are resources for animal care professionals.

In addition, wildlife partners contribute to rabies surveillance data in Arizona by testing deceased wildlife throughout the state. This service is performed by the USDA APHIS Wildlife Services and is used when the deceased wild animal has had no potential exposure/human contact or contact with domestic pets or livestock. USDA APHIS Wildlife Services takes lead in this scenario and they work directly with the state agencies, counties, tribes, local government, and the public to collect deceased wildlife for testing. A variety of partners use this surveillance program to also test other diseases such as distemper in foxes, skunks, and raccoons, to further assess wildlife health throughout the state. If an animal tests positive for rabies, serotyping of the rabies virus is completed to identify the serovar of the virus; this provides valuable information regarding the distribution and ecology of varying rabies serovars in Arizona. Testing results are then reported to public health partners through emails, teleconferences, and meetings to keep all public health officials aware of rabies activity. To date, the bat rabies serovar is the most common among animals tested in Arizona.

As appropriate, Public Information Officers (PIOs) and other decision-makers within each agency coordinate consistent and appropriate messages that might be released by one or multiple agencies. Messages are usually shared with the involved partners before releasing into the public or to media, to ensure all pertinent information is included and allows each agency to prepare for potential media attention around the event.



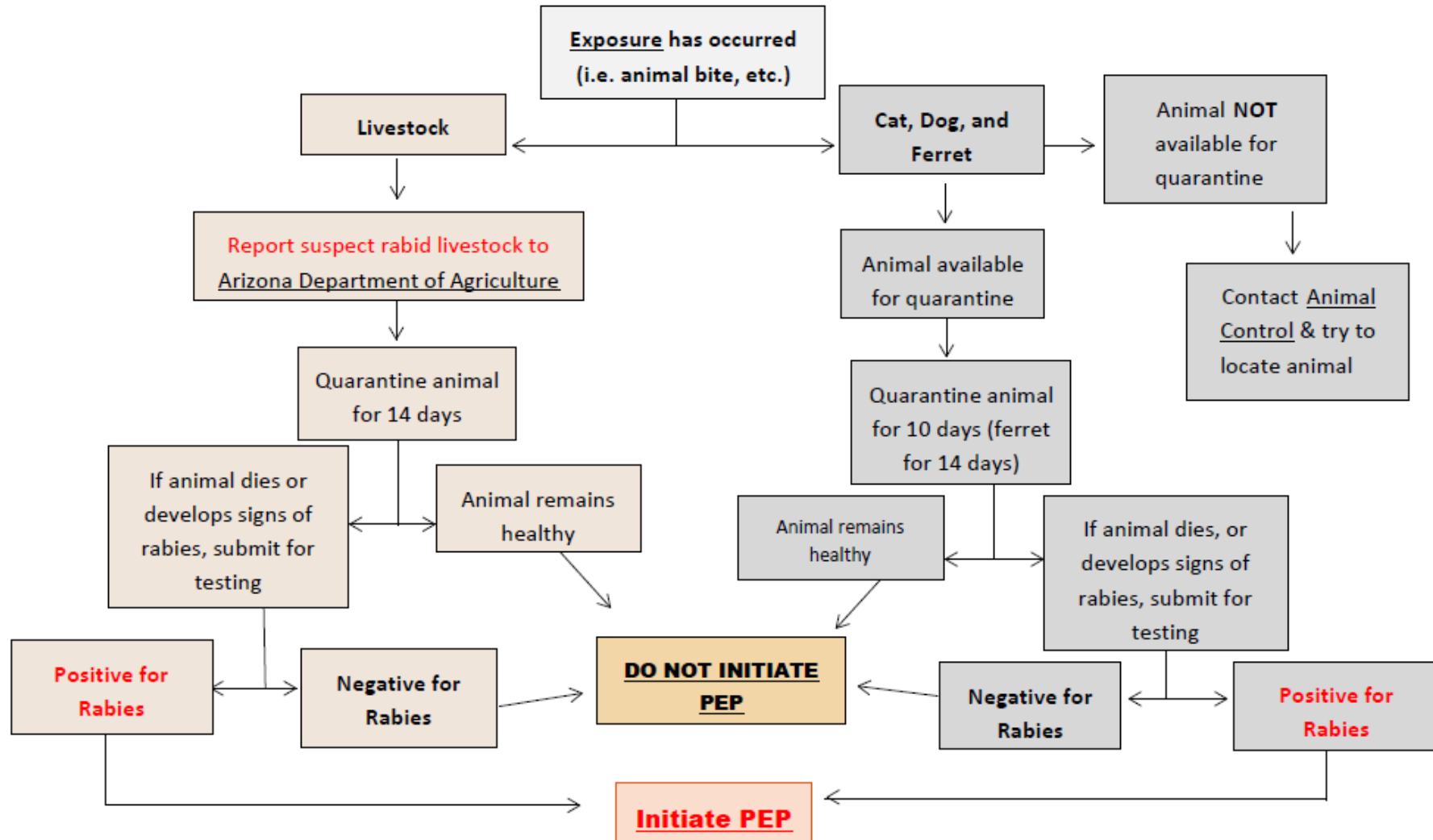
PROTOCOL FOR DOGS & CATS THAT HAVE BEEN EXPOSED TO POTENTIALLY RABID ANIMAL



*Some town or county ordinances may be more restrictive than state law and may not allow home quarantine. When quarantined, an animal should be kept in an escape proof enclosure. Leash and adult supervision is required for removing the animal from confinement.

Please refer to the [ADHS Manual for Rabies Control and Bite Management](#) for more information.

INITIATING RABIES POSTEXPOSURE PROPHYLAXIS (PEP): HUMAN EXPOSURE TO A DOMESTIC ANIMAL OR LIVESTOCK



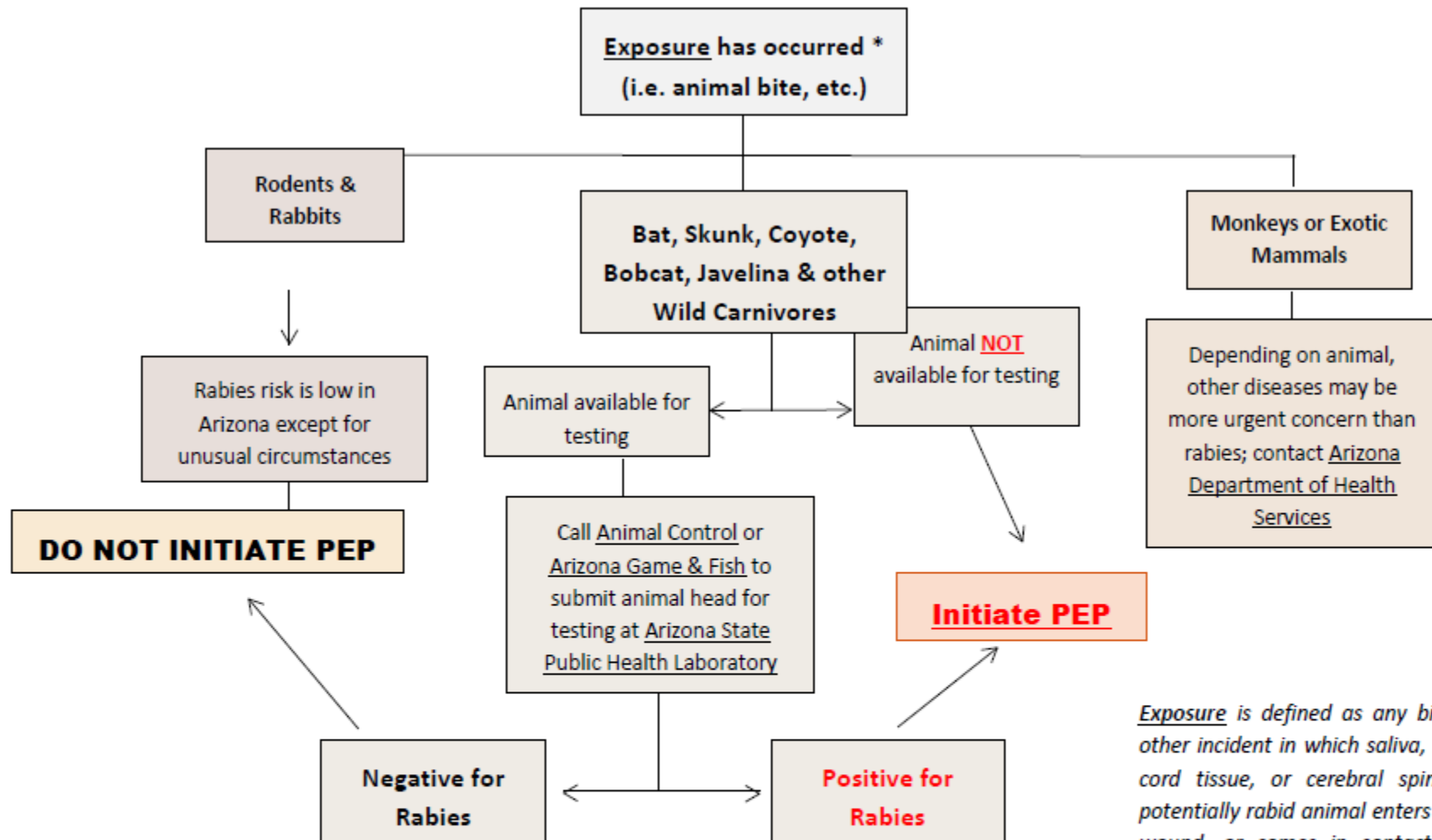
Exposure is defined as any bite, scratch, or other incident in which saliva, brain or spinal cord tissue, or cerebral spinal fluid of a potentially rabid animal enters an open, fresh wound, or comes in contact with mucous membranes by entering the eye, mouth or nose



ARIZONA DEPARTMENT
OF HEALTH SERVICES

Please refer to the [ADHS Manual For Rabies Control and Bite Management](#) for more information regarding rabies and rabies situations

INITIATING RABIES POST EXPOSURE PROPHYLAXIS: HUMAN EXPOSURE TO WILDLIFE OR EXOTIC ANIMAL



*Note: Presence of bats within closed spaces where people are is considered an exposure; most people who are bitten by bats are not aware or the bite is so small that there are no marks visible (example: the 'bat in the bedroom scenario': if someone wakes up to find a bat in their bedroom, that is considered an exposure until proven otherwise)

Reptiles, amphibians, birds, & fish are NOT susceptible to natural rabies infection

Exposure is defined as any bite, scratch, or other incident in which saliva, brain or spinal cord tissue, or cerebral spinal fluid of a potentially rabid animal enters an open, fresh wound, or comes in contact with mucous membranes by entering the eye, mouth or nose



Please refer to the ADHS Manual For Rabies Control and Bite Management for more information regarding rabies and rabies situations

OPPORTUNITIES IN COMMUNICATION & COLLABORATION

To learn about the potential opportunities and challenges in communication and collaborative efforts among One Health partners, the ADHS One Health Toolkit Survey was created and sent to county and tribal health departments in Arizona. Health department professionals primarily trained and cross trained to address zoonotic disease investigations and One Health concerns within were asked to complete the survey. Results from the ADHS One Health Toolkit Survey indicated that county and tribal health departments often perform zoonotic disease investigations with the most common zoonotic diseases investigated being rabies (39%), brucellosis (11%), and hantavirus (11%); see Figure 4. below for other diseases investigated. While respondents indicated currently collaborating with a variety of partners, (Figure 5.) responses indicated more communication and collaboration between state & federal One Health partners would be beneficial to help health departments address human-animal interface situations and investigate zoonotic diseases. There is great opportunity to enhance communication and collaboration across organizations.

FIGURE 4. ZOONOTIC DISEASES INVESTIGATED AMONG HEALTH DEPARTMENTS

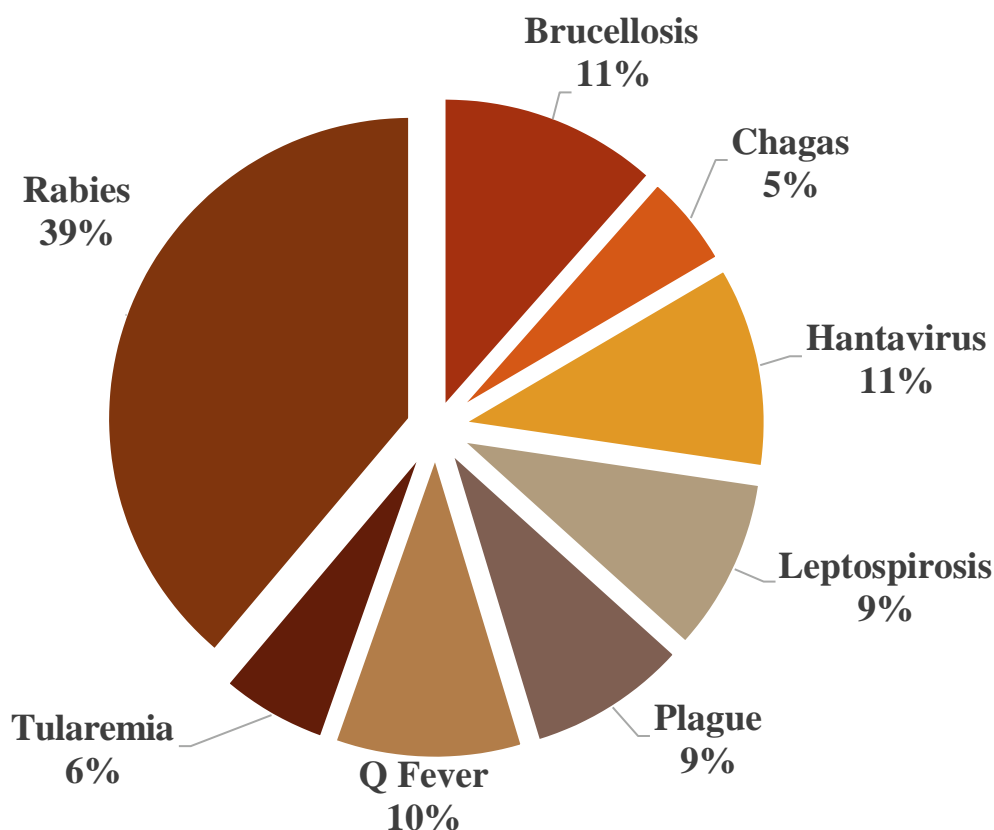


FIGURE 5. CURRENT COLLABORATION BETWEEN HEALTH DEPARTMENTS & ONE HEALTH PARTNERS



An analysis of inter-organizational collaborations within healthcare and public health has shown communication between members of a collaborative group has to be regular, reciprocal, and open; ⁹ this ensures all parties are comfortable communicating with one another and make collaboration successful.

Survey respondents indicated several existing One Health collaborations in place; these collaborations allow agencies a way to distribute animal disease information to public health sectors thus ensuring effective communication. Below are some examples of current collaborations across agencies, information on when they communicate, and if available a contact person for the collaboration. These meetings are open to any jurisdiction that wants to participate.

Collaboration	Frequency of Communication	Contact Person (if available)
Arizona Animal Disease Round Table Teleconference	Monthly	Lolita Van Pelt Lolita.I.VanPelt@aphis.usda.gov
Arizona Arboviral Workgroup	Monthly	Irene Ruberto Irene.Ruberto@azdhs.gov
Zoonotic Diseases & One Health (call/webinar)	Monthly	CDC One Health Office ZOHUCall@cdc.gov
ESC (call/in person meetings)	Monthly	Xandy Peterson Alexandra.Peterson@azdhs.gov
FBI/AG/Game & Fish/ Public Health Collaborative	Quarterly	Dr. Peter Mundschenk DVM PMundschenk@azda.gov

The largest challenges noted in the survey were changes in personnel, limited capacity, and keeping contact information current for professionals across organizations. Building strong partnerships based on effective communication across agencies helps address these concerns. To aid in consistency of communication, a contact list of state and federal One Health partners has been included at the end of the toolkit. Arizona Department of Health Services is also a great resource for contact information of professionals for other organizations that can assist in human-animal interface situations. A variety of zoonotic disease and human-animal interface resources have been included below to assist jurisdictions.

ADDITIONAL ONE HEALTH RESOURCES

ONE HEALTH PARTNER CONTACT INFORMATION

Organization	Main Point of Contact
Arizona Game and Fish Department	<p>Anne Justice-Allen DVM Department Veterinarian Arizona Game and Fish Department 5000 W. Carefree Highway Phoenix, AZ 85086-5000 Phone: (623) 236-7351 ajustice-allen@azgfd.gov</p> <p>Reporting Dead Wildlife Wildlife Disease Hotline (877) 972-8426</p> <p>Wildlife Related Emergency 24 hour dispatch center: (623) 236-7201</p>
Arizona Department of Agriculture	<p>Peter Mundschenk DVM State Veterinarian Arizona Department of Agriculture 1688 W Adams Street Phoenix, AZ 85007 602.316.3873</p>
Arizona Department of Health Services	<p>Vector-borne and Zoonotic Disease Team Arizona Department of Health Services 150 North 18th Avenue, Suite 140, Phoenix, AZ 85007 Email: vbzd@azdhs.gov Ph: (602)-364-3676</p>
Arizona State Public Health Laboratory	<p>Bureau of State Laboratory Services 250 N. 17th Avenue Phoenix, AZ 85007 Ph: (602) 542-1188 Fax: (602) 542-0760</p>
Arizona Veterinary Diagnostic Laboratory	<p>Sharon M. Dial DVM, PhD, DACVP Director, Arizona Veterinary Diagnostic laboratory Interim Associate Dean, Academic and Faculty Affairs, College of Veterinary Medicine University of Arizona 2831 N. Freeway</p>

	<p>Tucson, AZ 85705 Ph: 520-621-2356 Fx: 520-626-8696 sdial@email.arizona.edu</p>
<p>Arizona Veterinary Medical Association</p>	<p>Emily Kane Executive Director Arizona Veterinary Medical Association (AzVMA) 100 W Coolidge St Phoenix, AZ 85013 Ph: (602) 242-7936 Fax: (602) 249-3828 ekane@azvma.org</p>
<p>United States Department of Agriculture, Animal and Plant Health Inspection Service, Wildlife Services</p>	<p>Lolita Van Pelt Rabies Biologist USDA APHIS Wildlife Services 8836 N. 23rd Ave. Suite 2 Phoenix, AZ 85021 602-870-2081 (O) 480-213-5312 (Cell) Lolita.I.VanPelt@aphis.usda.gov</p> <p>David L. Bergman State Director USDA APHIS Wildlife Services 8836 N 23 Avenue, Suite 2 Phoenix, Arizona 85021 (o) 602 870-2081 (f) 602 870-2951 David.L.Bergman@aphis.usda.gov</p>
<p>United States Department of Agriculture, Animal and Plant Health Inspection Service, Veterinary Services</p>	<p>Jeff Hoffman DVM USDA/APHIS/Veterinary Services Emergency Coordinator, District 6 SPRS, AZ/NM 8836 N 23rd Ave. Ste 2 Phoenix, AZ 85021 602-870-2081 Cell 480-253-1457</p>

National Park Service	Danielle Buttke danielle_buttke@nps.gov Jenny Powers jenny_powers@nps.gov
Centers for Disease Control and Prevention	One Health Office onehealth@cdc.gov

COUNTY HEALTH DEPARTMENT CONTACT INFORMATION- MAIN OFFICE

Apache County – 928-337-4364	Cochise County – 520-432-9400	Coconino County – 928-679-7272
Gila County – 928-402-8811	Graham County – 928-428-1962	Greenlee County – 928-865-2601
La Paz County – 928-669-1100	Maricopa County – 602-506-6767	Mohave County – 928-753-0714
Navajo County – 928-524-4750	Pima County – 520-724-7770	Pinal County – 520-866-7325
Santa Cruz County – 520-375-7900	Yavapai County – 928-771-3134	Yuma County – 928-317-4550

RESOURCES FOR ZONOTIC DISEASE INVESTIGATIONS

The Arizona Department of Health Services offers a variety of zoonotic investigation manuals to aid county and tribal health departments in investigating disease cases. See [here](#) for a listing of investigation manuals and resources. Reporting rules for healthcare providers, laboratories, local health agencies, facilities, and veterinarians are listed [here](#).

Anthrax	Brucellosis	Chagas
Hantavirus & Quick Tips	Leptospirosis	Plague
Rabies & Quick Tips	Tularemia & Quick Tips	Lyme
Q Fever	Rocky Mountain Spotted Fever	Yellow Fever
Zika	Relapsing Fever	Scabies
West Nile Virus & St Louis	Malaria	Ehrlichiosis

HUMAN-ANIMAL INTERFACE SITUATION RESOURCES

Pets & Antibiotic Resistance

[Centers for Disease Control and Prevention](#)

Reporting Animal Cruelty

[Arizona Humane Society](#)

Dog Bite Prevention:

[American Veterinary Medical Association](#)

[ASPCA](#)

[Centers for Disease Control and Prevention](#)

Information regarding Raw Milk Consumption:

[Food and Drug Administration](#)

[Centers for Disease Control and Prevention](#)

Pregnant Women & Cats

[Centers for Disease Control and Prevention:](#)

Backyard Poultry & People

[Centers for Disease Control and Prevention](#)

Pet Safety during Disasters

[Centers for Disease Control and Prevention](#)

[Red Rover](#)

Temporary Sheltering of Pets during Hardship

[Arizona Humane Society](#)

[Dogs on Deployment](#) – Military members

[Red Rover](#)

Harmful Algal Blooms

[Centers for Disease Control and Prevention](#)

ADHS Vector/Zoonotic Educational Materials

[Vector/Zoonotic Educational Materials](#)

Wildlife Rehabilitators in Arizona

[Arizona Game and Fish](#)

Arizona Department of Health Services Emergency Response Plans

[Emergency Response Plans](#)

CONCLUSION

We hope the Arizona One Health Toolkit provides county and tribal health departments ample resources to both strengthen and build new collaborations. Arizona Department of Health Services Vector-Borne & Zoonotic Diseases team appreciates everyone who participated in the One Health survey and those who work to enhance the health of all Arizonans.

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Arizona One Health Toolkit Survey

Why is One Health Important?

60% of infectious diseases acquired by people are spread from animals

In Arizona, Zoonotic Diseases are **investigated frequently or sometimes** by health departments

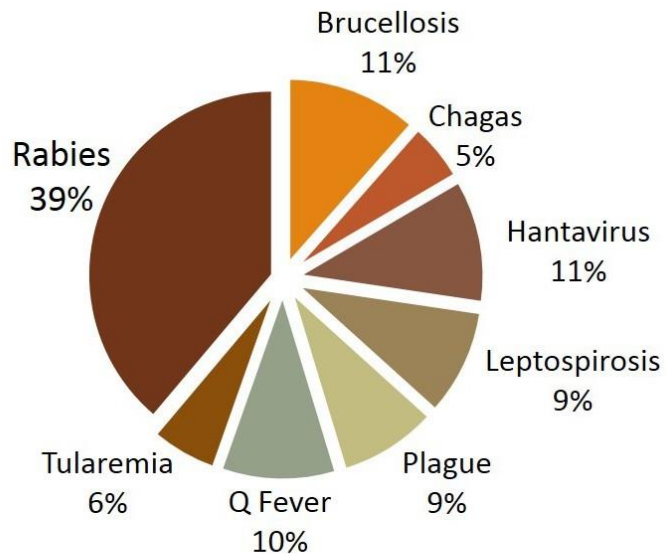


Health Departments Can't Do it Alone

- Health Departments in Arizona have varying levels of resources thus relationships & partnerships with Federal & State One Health Partners must be fostered to combat One Health Issues

One Health

recognizes the health of people is connected to health of animals & the environment



Zoonotic Diseases Investigated by Health Departments

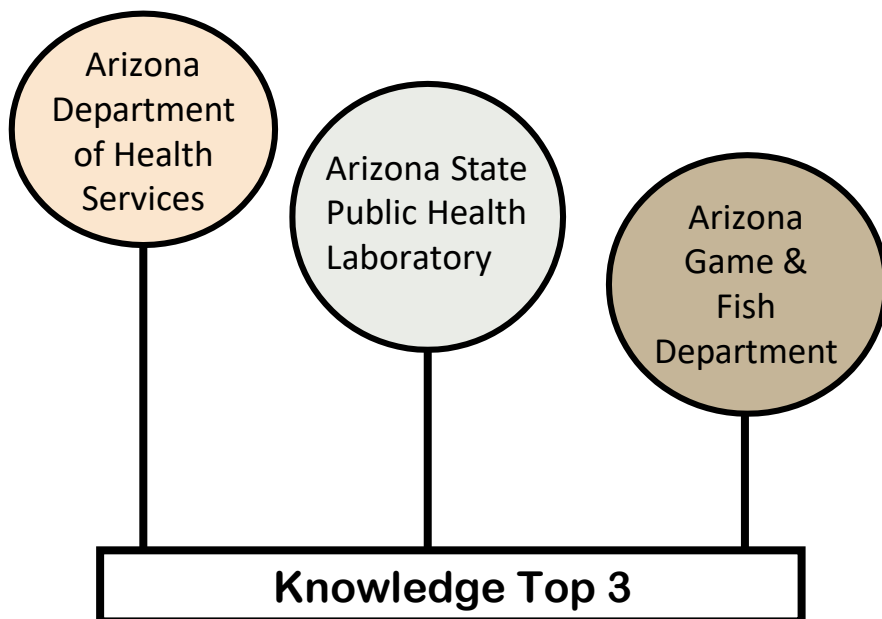
Survey objective:

Understand How Health Departments Across Arizona Collaborate & Communicate with State & Federal One Health Partners

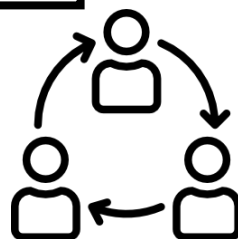
Assessing Communication & Collaboration

Knowledge is Power

Evaluated knowledge level of general mission & roles in zoonotic disease investigations for One Health Partners



Greater awareness of agency roles
**resulted in more communication
& collaboration** between health
departments & partner agencies



VARIETY of
existing One Health
collaborations in place:

ZOHU Call
Arizona Animal Disease
Round Table
RMSF Round Up
FBI/AG/Game &
Fish/Health Collaborative
Office of Border Health
One Health Community
Clean-Up Coalition
CDC
University of Arizona

All respondents felt
MORE
communication &
collaboration from
all agencies would
be beneficial

Who do health departments work with?

Health Departments work with
Arizona Game & Fish,
Arizona Department of
Agriculture, Animal
Control Agencies, **Indian**
Health Service &
veterinary clinics to
investigate zoonotic diseases



Other organizations health
departments collaborate with
include **neighboring county &**
state health departments,
housing authorities, tribal
organizations , animal
rescues, wildlife biologists,
research facilities,
universities, & vector control
agencies

Available Resources

55% indicated their jurisdiction had protocols outlining when to contact partner agencies during zoonotic disease investigations & situations

39% said partner contact information was available to employees, including new employees

At least 75% of respondents are comfortable investigating zoonotic diseases, know available resources, & know who to contact during zoonotic disease investigations or situations

Recommendations For Success

Develop Relationships

Seek Opportunities to Connect with One Health Partners at Local, State, & Federal Levels

Form & Outline Collaborations

Outlining Partner Roles in Responses Increases Better Outcomes

Foster Communication

Consistent, Reciprocal, & Open Communication is Needed for Successful Collaborations

Using ADHS Investigation Manuals?



65% knew the manuals were available & **30%** of respondents have previously used ADHS manuals



Most referenced manuals: **Rabies, RMSF, & Arbovirus**

Respondent Overview

11 Counties & 6 Tribes Represented

Variety of Public Health Positions Held

Most have **worked in position for > 4 years**

Questions?

Contact ADHS Vector-Borne & Zoonotic Diseases Team
Email: vbzd@azdhs.gov



ARIZONA DEPARTMENT
OF HEALTH SERVICES