



Developing Kansas' Plans for Transboundary Animal Disease Response

MPH Field Experience Report

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MPH Candidate

Outline

- Field Experience and Agency
- Learning Objectives
- Disease overview
- Certified Swine Sample Collector Program
- Foot and Mouth Disease emergency vaccination plan
- Foundational Competencies
- Emphasis Area Competencies

Field Experience

- Kansas Department of Agriculture (KDA),
Division of Animal Health (DAH)
- Manhattan, Kansas
- 25 JAN 2021 to 16 APR 2021
- Preceptor
 - Dr. Sara McReynolds
 - Assistant Animal Health Commissioner



Kansas Department of Agriculture

KDA

Use of pesticides
and nutrients

Native &
cultivated plants
protection

Use of state
waters

Safe food supply

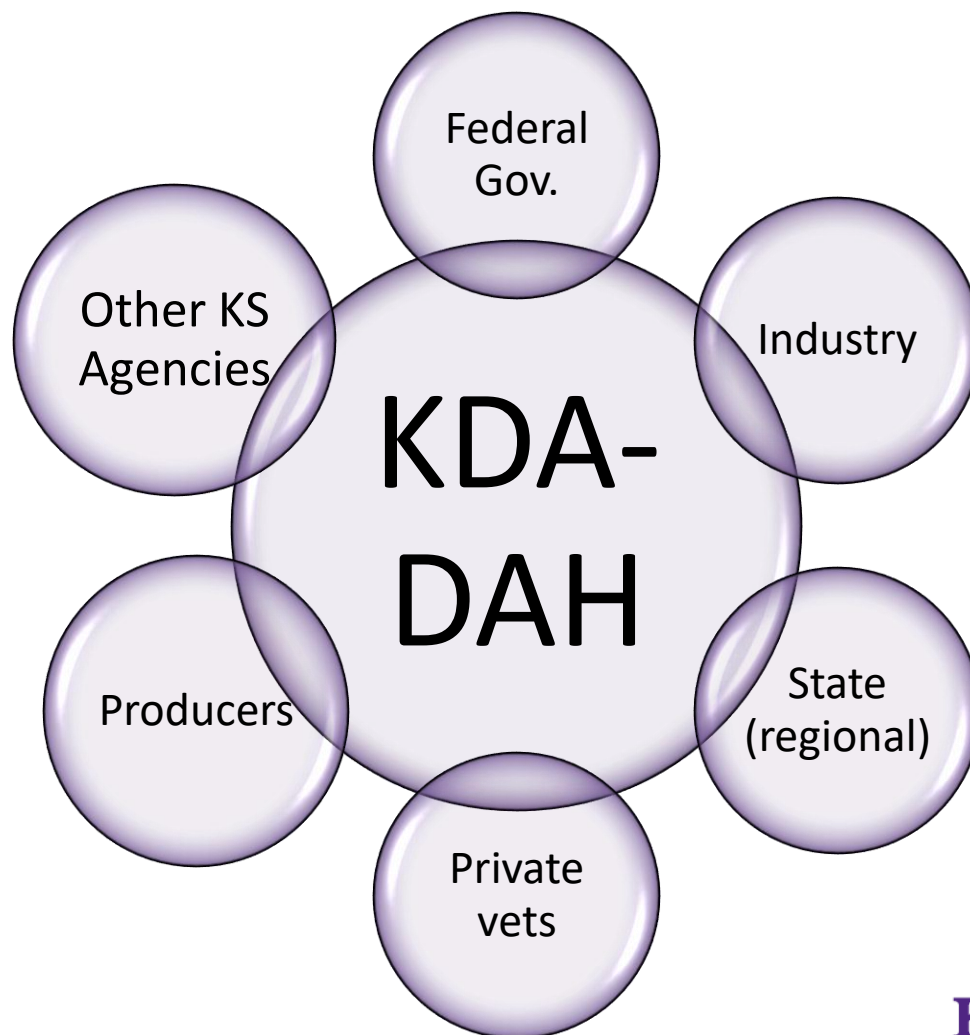
DAH

Animal
disease
control

Animal
facilities
inspections

Brand
management

Teamwork makes the dream work...



Projects

- KDA Standard Operating Procedure (SOP) for the Certified Swine Sample Collector program
- Expand KDA Foot and Mouth Disease Emergency Vaccination plan

Learning Objectives



Understand scope of work for a State Veterinarian

Understand the details required to develop SOPs for implementation in an emergency setting

Identify knowledge gaps in public understanding of response plans

Understand the challenges of operating in a multi-agency and inter-professional environment

Evaluate gaps in emergency response plans and develop guidance to close gaps prior to an emergent event

Understand the challenges of nesting local and state objectives within a national framework

Construct state plans that nest within a national initiative

Activities Performed

- Weekly office updates
- KDA and USDA joint meetings
- Meetings with other state departments of agriculture
- Meetings with Kansas State Veterinary Diagnostic Laboratory
- Planning meetings for projects
- Veterinary Service National Training and Exercise Program (VS NTEP) working group
- Pre-webinars for the National Vaccine Tabletop Exercise



SCIENCE DRIVES PROGRAMS AND POLICIES...

Transboundary Animal Diseases (TADs)?

- Defined by the Food and Agriculture Organization (FAO) of the United Nations as:

“...epidemic diseases which are highly contagious....and have the potential for rapid spread, irrespective of national borders, causing socio-economic and possibly public health consequences”

- Sometimes referred to as “Foreign Animal Diseases” or FADs

Classical Swine Fever (CSF)

- Pestivirus

Fever	Weakness
Anorexia	Hemorrhages of skin and organs
Cyanosis of snout, ears, tail	Death with acute disease
Reddened eyes	Constipation turning to diarrhea

- Endemic in Asia, South America, Central America

- Prevalence in Africa likely under-reported

- Spread through oral or nasal route (mucous membranes)

- Found in blood, urine, feces, oronasal and ocular secretions, semen

- Risk of introduction to U.S. through contaminated raw garbage, infected animals



African Swine Fever (ASF)

- Arbovirus

Reddened skin	Fever
Anorexia	Cyanosis of extremities
Bloody diarrhea	Death with acute disease
Nasal discharge and dyspnea	Abortions

- Endemic in Asia and Europe
- Spread through oral or nasal route
 - Found in all secretions, excretions, blood, and tissue
 - *Ornithodoros* tick in Africa
- Risk of introduction to U.S. through contaminated raw garbage, infected animals



Photos courtesy of Plum Island Animal Disease Center

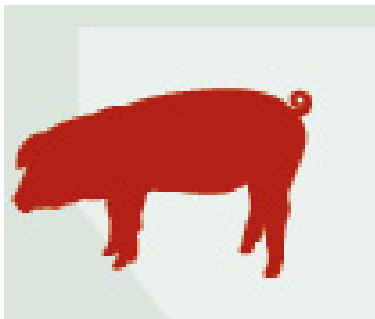
Foot and Mouth Disease (FMD)

- Aphthovirus

Vesicles on mouth and feet	Erosions/ulcers
Salivation	Fever
Lameness	Death in young animals
Reduced milk yield	Abortions

- Infects ungulates
- Endemic in Asia, Africa, Middle East, and South America
- Spread through direct contact
 - Found in saliva, milk, feces, and urine
- Risk of introduction to U.S. through fomites, infected animal





SOP Development

CERTIFIED SWINE SAMPLE COLLECTORS PROGRAM

Purpose

- Multi-state agreement and leadership from National Pork Board
 - Curriculum and training materials
- Train swine facility workers on proper sampling, sample preparation, and sample shipment techniques
- Augment veterinary workforce with increased surveillance in face of an infectious disease outbreak and increased biosecurity
 - Threat from CSF, ASF, and FMD
- Design processes and procedures for Kansas that implement the framework created by the multi-state working group

Considerations to Develop SOP

- Utilization of sample collectors in an outbreak
 - Notification – communication with facility and KSVDL
 - Materials and supplies
 - Communication of necessary samples to collect
 - Who is authorized to submit samples
- Minimum standards for certification
 - Sample collection methods
 - Feedback from KSVDL on shipments
- Process for recertification

Certified Swine Sample Collector Program SOP

- Part I
 - Utilization of certified collectors in an outbreak
- Part II
 - Implementation of the program
 - Standards for certification
 - Recertification process

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Supplemental Documents

- Development of program framework and SOP showed need for additional forms to supplement the program and meet challenges of the program
 - How are trained personnel reported to KDA?
 - How do collectors receive feedback on the quality of their sample submission during training?
 - How to quickly collect necessary information on samples and prioritize shipments in the event of an outbreak?

Certified Swine Sample Collector Program Documentation of Training



Certified Swine Sample Collector Program Documentation of Training

Name of Veterinarian:	Name of Facility:
_____	_____
Veterinary Practice (if applicable):	Facility Address:
_____	_____
Phone number:	Facility Phone number:
_____	_____
Email:	Premise ID
_____	_____

Date of Training: _____

Name	Type of Training	
	Initial ☐	Refresher ☐
	Initial ☐	Refresher ☐
	Initial ☐	Refresher ☐
	Initial ☐	Refresher ☐
	Initial ☐	Refresher ☐
	Initial ☐	Refresher ☐
	Initial ☐	Refresher ☐
	Initial ☐	Refresher ☐
	Initial ☐	Refresher ☐

By signing, I am confirming that all personnel listed on this document have been trained to standard as specified in the Kansas Department of Agriculture, Division of Animal Health Standard Operating Procedure **000000**

X

Veterinarian Signature

- Record maintained by training veterinarians and submitted to KDA
- Recertification required annually
- Names and facilities tracked by KDA and provided to KSVDL during an outbreak

Certified Swine Sample Collector Program Laboratory Submission Assessment



Certified Swine Sample Collectors Program Laboratory Submission Assessment

Name of Facility:		
Premise ID number:		Facility phone:
Attending veterinarian:		
Veterinarian email:		
Veterinarian phone:		
Packaged by:		

****To be completed by the Laboratory****

Reviewed by:

The shipping container was appropriately addressed.	Yes	No
- Sender's name, address, and phone number present.	Yes	No
- Recipient's name address, and phone number present.	Yes	No
The shipping container was appropriately labeled with the biological substance.	Yes	No
- The statement "biological substance, Category B" was present, or labeled "diagnostic specimen"	Yes	No
- A UN3373 diamond label affixed to the box	Yes	No
All labels on the shipping container were covered in clear tape	Yes	No
Shipping container:		
- Leak-proof	Yes	No
- Rigid	Yes	No
- Insulated	Yes	No
Notes:		
Sample submission paperwork was placed in a plastic bag	Yes	No
Sample submission paperwork was placed between the secondary and tertiary containers	Yes	No
Empty space between the secondary and shipping containers was filled with newspaper or bubble wrap	Yes	No
Ice packs included in the shipment if fresh tissues were sent	Yes	No
- Appropriate number of packs to keep fresh tissues cool	Yes	No
Notes:		



Secondary containers were:	Yes	No
- Leak-proof	Yes	No
- Contained absorbent material	Yes	No
- Contained enough absorbent material to capture all liquid contents	Yes	No
Notes:		
Primary containers labeled properly and legibly	Yes	No
- Tissue source	Yes	No
- Date	Yes	No
- Farm information	Yes	No
- Leak-proof	Yes	No
- Screw-top lids	Yes	No
- Padded to prevent breakage	Yes	No
Notes:		
Was the primary container broken, chipped, or cracked?	Yes	No
Was the primary container leaking?	Yes	No
Was there enough formalin to fix all tissues?	Yes	No
Samples appropriate for requested tests?	Yes	No

Additional comments:

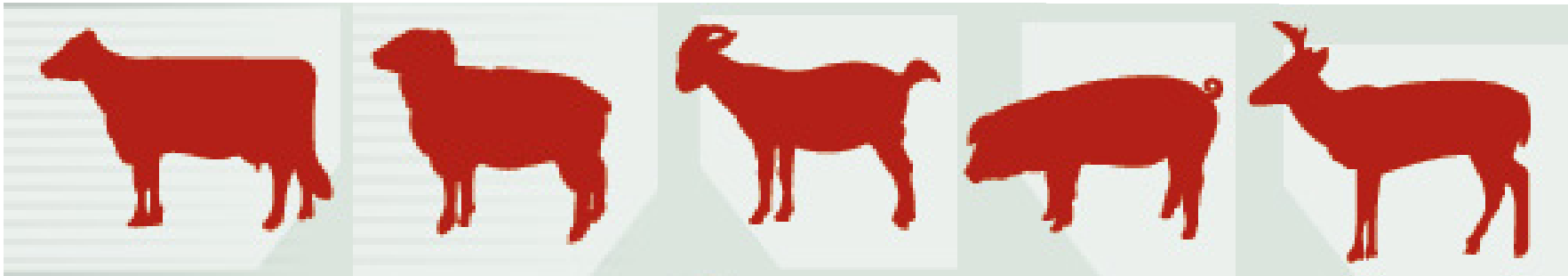
Commercial Swine Disease Outbreak Submission Form

- Managed and maintained by KDA
- Provided to specific facilities authorized to use their certified samplers during an outbreak
 - Restricts the use of certified collectors
- Answer pertinent questions regarding facility's need for testing
- Rapid identification and prioritization of samples during an outbreak

 Commercial Swine Disease Outbreak Submission Form		KSVDL USE ONLY																																																																																							
KSVDL at Kansas State University 1800 Denison Avenue, Mosier D117 Manhattan, KS 66506 Phone: (866) 512-5650 Fax: (785) 532-4835		Opened by: _____ <table border="1"> <tr> <td> Courier: ☐ Courier ☐ FedEx ☐ Drop off ☐ Mail ☐ UPS </td> <td> Coolant: ☐ Coolant pack ☐ Dry ice ☐ Frozen ☐ Warmer ☐ None </td> <td> Condition: ☐ Good ☐ Broken ☐ Leaked ☐ Other: _____ </td> </tr> <tr> <td colspan="3"> ☐ Sow/Breeding ☐ Nursery ☐ Finisher ☐ Farrow to Finish ☐ Wean to Finish ☐ Other: _____ </td> </tr> </table>		Courier: ☐ Courier ☐ FedEx ☐ Drop off ☐ Mail ☐ UPS	Coolant: ☐ Coolant pack ☐ Dry ice ☐ Frozen ☐ Warmer ☐ None	Condition: ☐ Good ☐ Broken ☐ Leaked ☐ Other: _____	☐ Sow/Breeding ☐ Nursery ☐ Finisher ☐ Farrow to Finish ☐ Wean to Finish ☐ Other: _____																																																																																		
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Company: _____ Company Vet/POC: _____ Vet Phone: _____		Premises ID Barcode – REQUIRED Site Name (if not on label): _____																																																																																							
Clinical signs? ☐ Yes ☐ No																																																																																									
TEST(S) REQUESTED ☐ African Swine Fever PCR ☐ Classical Swine Fever PCR ☐ Foot and Mouth Disease PCR																																																																																									
INCIDENT AREA/ZONE ☐ Control Area ☐ Surveillance Zone ☐ Free Zone		REASON FOR SUBMISSION ☐ Mortality/Morbidity Event ☐ Surveillance ☐ Post C&D ☐ Post-Restocking																																																																																							
SPECIMEN(S) TYPE ☐ Whole Blood ☐ Blood swabs ☐ Laryngeal Swabs		☐ Nasal Swab ☐ Oral Fluids ☐ Vesicular fluid ☐ Other: _____																																																																																							
☐ Fixed Tissue: ☐ Fresh Tissues:		☐ Permitted Movement ☐ Into Control Area ☐ Out of Control Area ☐ Within Control Area ☐ To/From Surveillance/Free Zone																																																																																							
Certified Swine Sample Collector? ☐ Yes ☐ No Name: _____																																																																																									
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Current Status

- In draft, pending updates from working group
- Review and feedback from Kansas swine veterinarians
- KSVDL electronic laboratory submission form



Expand the plan

FOOT AND MOUTH DISEASE EMERGENCY VACCINATION PLAN

Background and Purpose

- 7 major serotypes with no conferred immunity
 - O, A, C, SAT1, SAT2, SAT3, Asia 1
- Stamping-out is the preferred method but can have significant costs
 - Trade implications
- 1982 North American Vaccine Bank (NAVB)
- Vaccination as a control strategy has only recently become a goal in the United States

Comparing the Impacts of 2001 FMD Outbreaks

	United Kingdom	Uruguay
Method of response	Stamping-out	Vaccination & targeted stamping-out
Number of confirmed loci	2,030	2,057
Duration of outbreak	7 months	4 months
Cost of outbreak	\$12.3-\$13.8 billion	\$244 million
Animals destroyed	6 million	6,900

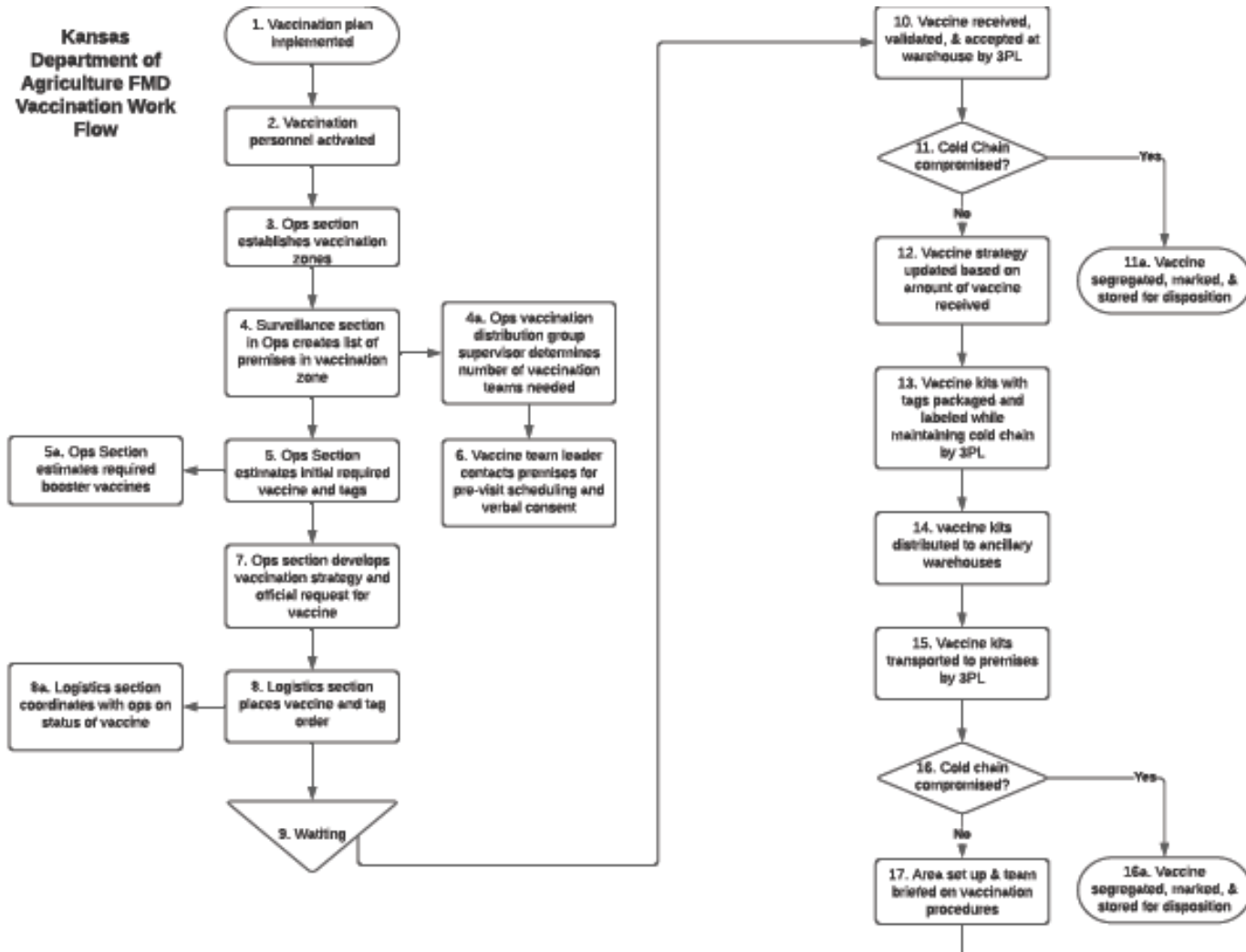
Background and Purpose

- Agriculture Improvement Act of 2018
 - Established the National Animal Vaccine and Veterinary Countermeasures Bank (NAVVCB)
 - Established the National Animal Disease Preparedness and Response Program (NADPRP)
 - “...boost the nation’s efforts to keep high-consequence animal diseases from entering and spreading in the U.S.” (USDA APHIS, 2021)
- Update and restructure original KDA plan
 - Original plan completed in 2019
 - More detailed guidance available
 - Preparation for National Tabletop Exercise

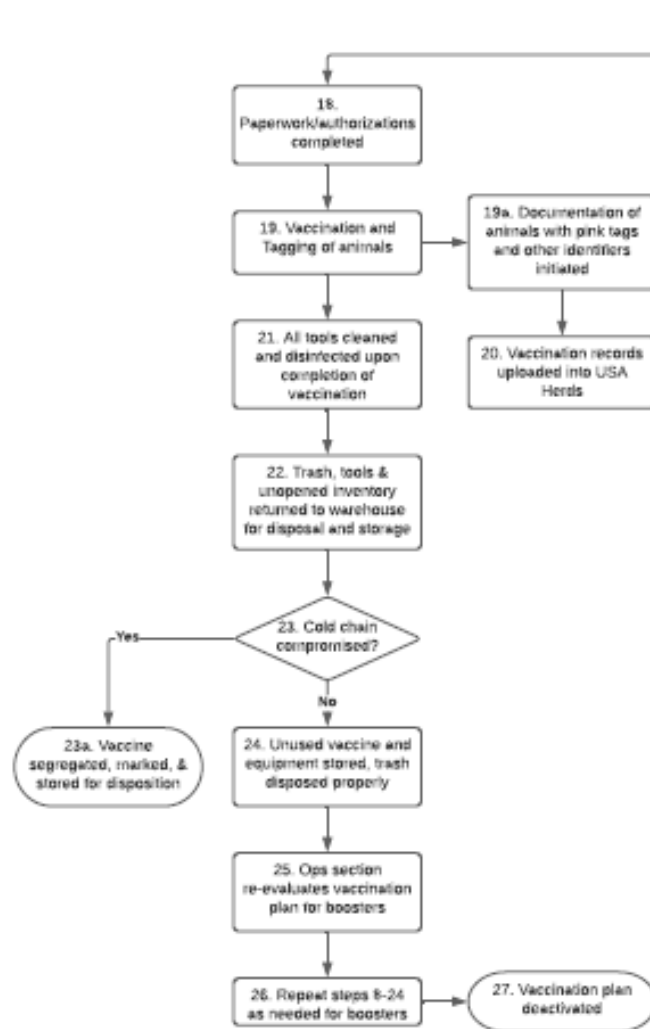
Considerations to Develop SOP

- What was the current plan?
- What gaps exist?
- What are other states doing to address similar gaps?
 - Collaborated with California and Iowa who were further along in the planning process
- Feedback from stakeholders?

Workflow Diagram



Workflow Diagram



Restructuring the Plan

- Created a framework using the workflow diagram
- Section considerations:
 1. What initiates this step of the plan?
 2. What factors must be considered for decision making in this step?
 3. What actions take place in this step?
 4. How are these activities accomplished?
 5. When does this step end?
- Filled gaps by providing suggestions from Iowa's Plan

Gaps

Vaccination prioritization

- USDA recommendations
- Expectation management pre-outbreak

Organization Charts

- Identify necessary manning

Vaccine advisory committee

- Ensure vaccine strategy is based on scientific evidence

Vaccine logistics

- Logistics from manufacturer to Animal
- 3rd Party logistics vendor

Participation from stakeholders

- Education opportunities
- Cooperation

Feedback from Stakeholders

- Current COVID-19 offered lessons to be learned regarding public acceptance of response plans
- Using a survey we sought to answer:
 - What do producers and veterinarians know about FMD, the response plan, vaccination, and their role?
 - What feedback do they have on the current plan?
- Results could be used to develop training and information campaigns

Survey

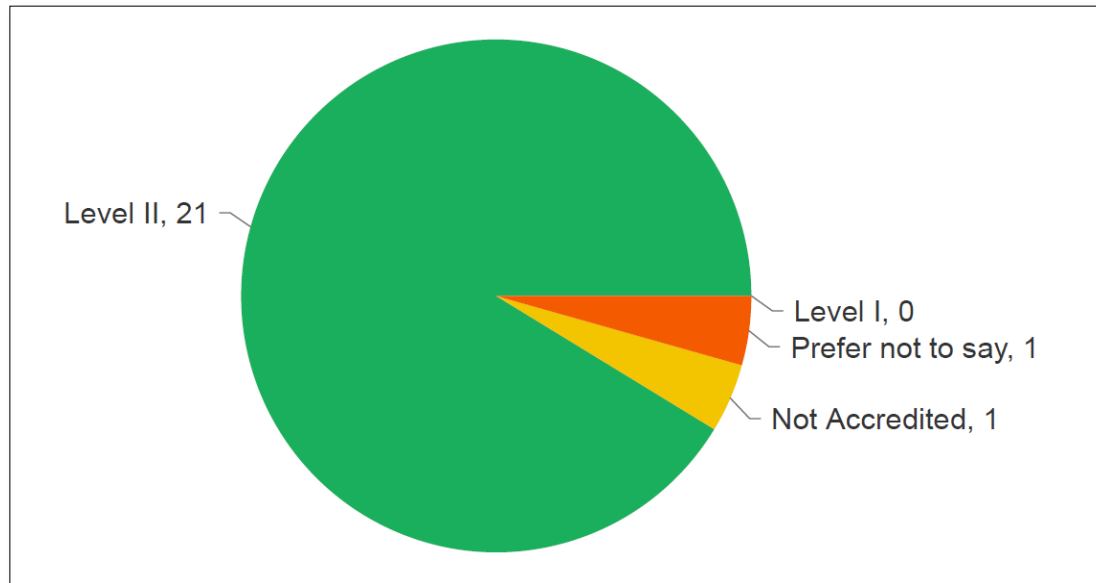
- 2 separate surveys developed and distributed using Formsite©
 - Veterinary survey distributed using email listserv of USDA category II accredited veterinarians
 - Producer survey link posted in KDA-DAH's routine newsletter and social media platforms
- Did not require KSU Institutional Review Board approval
 - Survey data not intended for publication
 - Only used internally by KDA for planning purposes

Results

- Producer survey received 1 response
 - Unable to analyze
 - Future plans to provide survey link in upcoming stakeholder meetings
- Veterinarian survey received 23 responses out of 833 category II vets in KS
 - 2% response rate
 - Potential response bias
 - List of category II vets may not be accurate

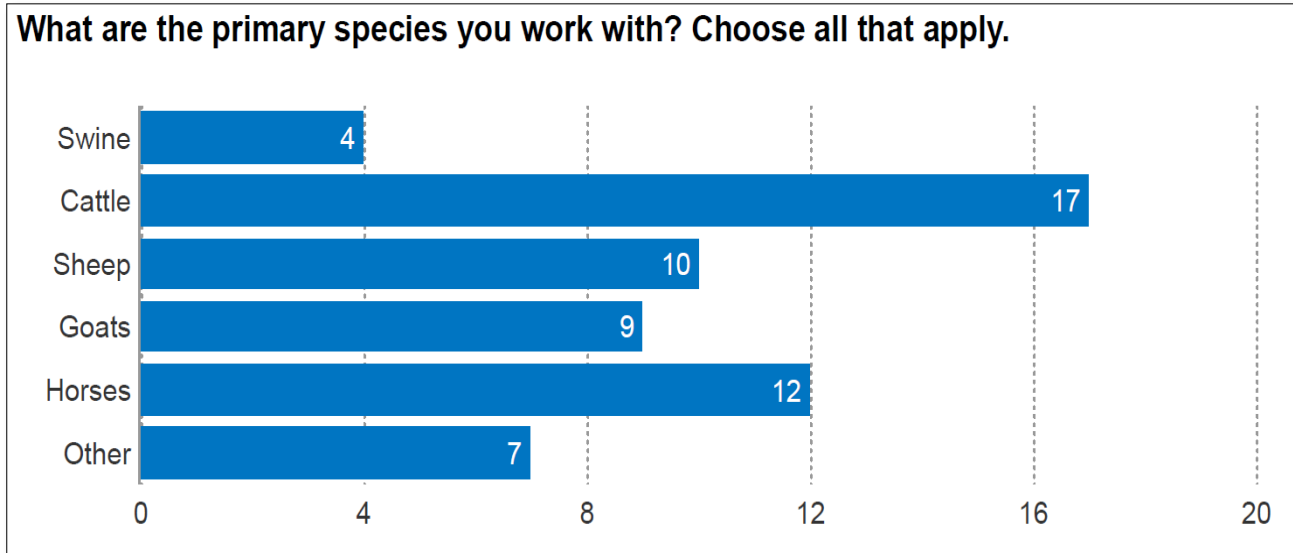
Veterinarian Survey Results

Breakdown of USDA-APHIS accreditation categories



Veterinarian Survey Results

Species seen in clinical practice by respondents



Veterinarian Survey Results

Familiarity with Kansas FMD Response Plan

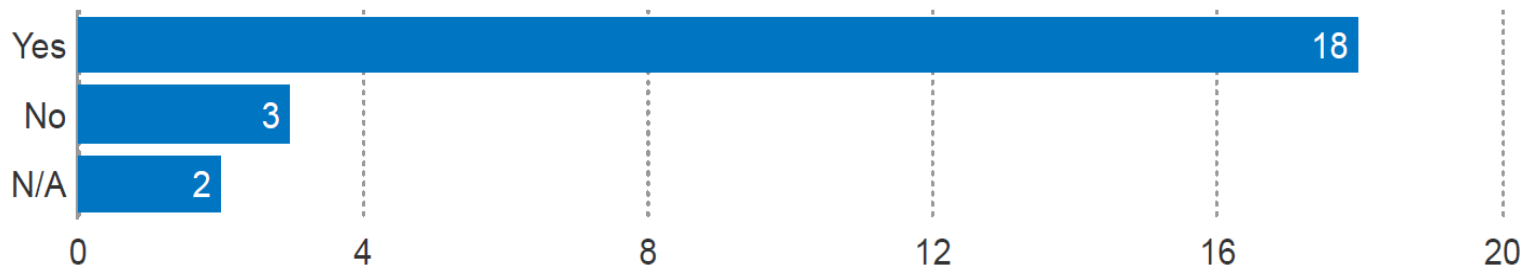
Are you familiar with the Kansas FMD Response Plan?



Veterinarian Survey Results

Respondents' comfortable assisting with vaccination, tagging, documentation, and tracking of animals

Are you comfortable playing a critical role as a USDA-APHIS level II accredited veterinarian supervising vaccination, tagging, documentation, and tracking of animals vaccinated for FMD?



Limitations

- Low response rate
- Non-response from producers
- Questions may not have been clear
- List of category II vets may not be accurate

Current Status

- Still very much in draft
- Requires validation using state and national exercises
- Potential future MPH projects?
 - Package for accredited veterinarians
 - Expectations
 - Vaccination process
 - Assisting producers with herd management plan
 - Draft forms
 - Reporting procedures

Conclusions

- Policies and operating procedures are essential to unify emergency response efforts
- Requires extensive cooperation between states, federal government, other agencies, etc.
- Policies are informed by science and epidemiology
- Plans will always be a “work in progress” as the operating environment changes

Foundational Competencies

Number and Competency	Description
2 Select quantitative and qualitative data collection methods appropriate for a given health context.	Qualitative data collection methods were utilized to develop the veterinarian and producer FMD response plan surveys.
4 Interpret results of data analysis for public health research, policy, or practice.	The results of the veterinarian FMD response plan survey reflect a need and opportunity to do more outreach with private veterinary community regarding the FMD response plan to improve understanding and garner support.

Foundational Competencies

Number and Competency	Description
13 Propose strategies to identify stakeholders and build coalitions and partnerships for influencing public health outcomes.	Involvement of key stakeholders was a critical gap identified in the development of the FMD vaccination plan. The survey also contributed talking points to future stakeholder meetings.
19 Communicate audience-appropriate public health content, both in writing and through oral presentation.	Development of technical standard operating procedures for the Certified Swine Sample Collectors Program and the FMD Vaccination Plan.
21 Perform effectively on interprofessional teams.	Meetings with Dr. Almes of KSVDL in the development of the Certified Swine Samplers Program.

Emphasis Area Competencies

MPH Emphasis Area: Infectious Diseases/Zoonoses

Number and Competency	Description
1 Pathogens/pathogenic mechanisms	Evaluate modes of disease causation of infectious agents.
2 Host response to pathogens/immunology	Investigate the host response to infection.
3 Environmental/ecological influences	Examine the influence of environmental and ecological forces on infectious diseases.
4 Disease surveillance	Analyze disease risk factors and select appropriate surveillance.
5 Disease vectors	Investigate the role of vectors, toxic plants, and other toxins in infectious diseases.

Thank you!

- Faculty Committee
 - Major Professor: Dr. Sanderson
 - Dr. Mulcahy
 - Dr. Dodd
- Dr. McReynolds, Dr. Smith, and the KDA-DAH team
- HH-6 and family



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Questions

