



RABIES EXPOSURE PROTOCOL UPDATE, EMERGENCY SUPPORT FUNCTION 11 RESOURCE DETERMINATION, AND MASS TUBERCULOSIS SCREENING FOR JOHNSON COUNTY, KANSAS

Kansas State University – Olathe
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Presentation Overview



Scope of Work

Individual Projects

Background

Learning Objectives

Activities Performed

MPH Program Competencies

Observations and Conclusions



Scope of Work

Johnson County Department of Health and Environment (JCDHE)

Rabies Exposure Protocol Update

Mass Tuberculosis Screening

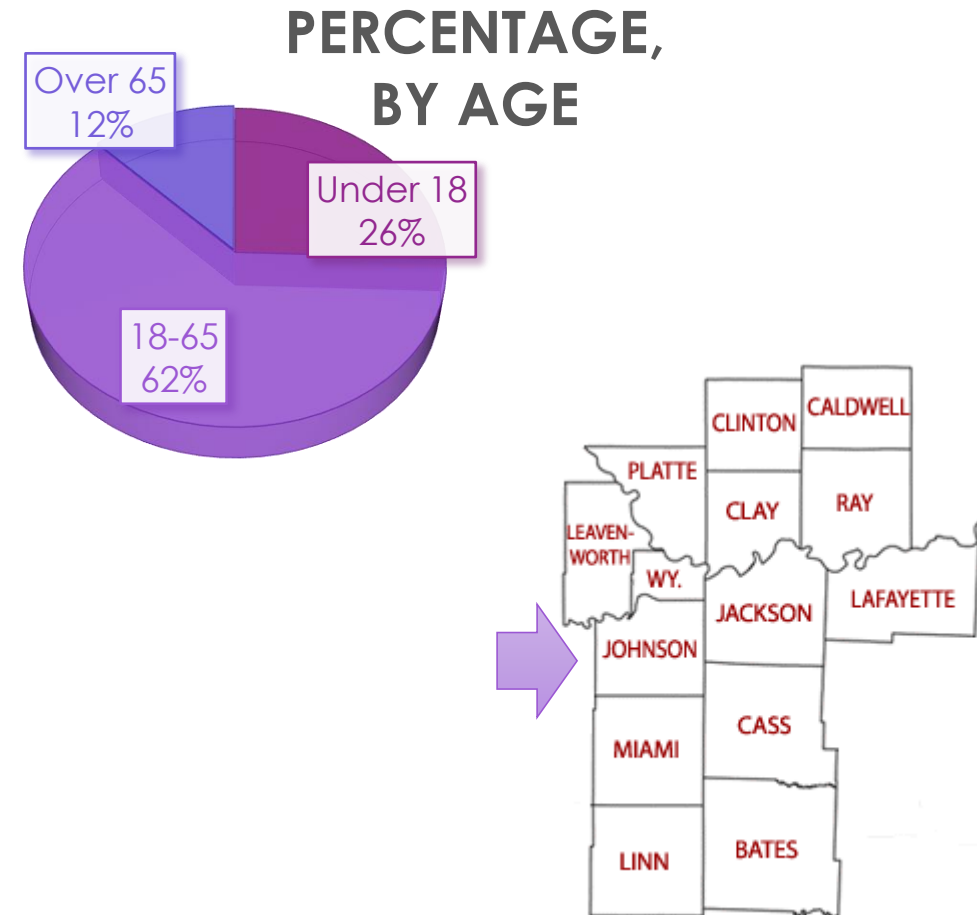
Johnson County K-State Research and Extension Office

Emergency Support Function 11 Resource Determination



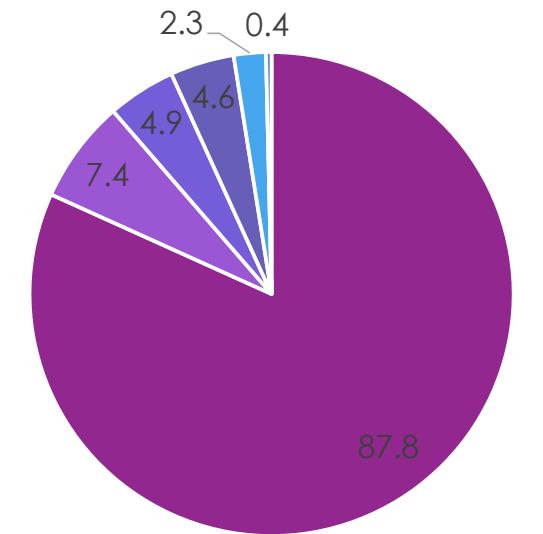
Johnson County Demographics

- Johnson County, Kansas
 - Population: 566,933 (2013)
 - Under 18 years old: 25.6%
 - 18-65 years old: 62.2%
 - Over 65 years old: 12.2%
 - Area: 477 square miles
 - 20 cities / towns
- Kansas City Metro Area (MSA)
 - Population: 2,035,000 (2010)
 - Area: 7857 square miles
 - 14 counties across Kansas and Missouri



Johnson County Demographics

- Johnson County, Kansas
 - Race
 - White alone: 87.8%
 - Hispanic or Latino: 7.4%
 - Black/African American alone: 4.9%
 - Asian alone: 4.6%
 - Two or more races: 2.3%
 - American Indian/
Alaskan Native alone: 0.4%
 - Median Household Income: \$74,717
 - Only 6.5% of residents below poverty level
 - National Poverty Rate was 14.5% in 2013



- White
- Hispanic/Latino
- Black/African American
- Asian
- 2 or more races
- American Indian/Alaskan Native

Johnson County Demographics

- In 2010 – Population Without Insurance Coverage (Age 18-64)
 - 12.1% in Johnson County
 - 18.2% in United States

Johnson County Resources

- 6 Major Hospitals
- 66 Nursing Homes
- 340 Parks
- >1500 Restaurants Operating

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Preceptors

- Liz Ticer
 - Public Health and Emergency Preparedness Coordinator and Program Manager
 - Johnson County, 2005-2015
 - Public Health Emergency Planner
 - Wyandotte County, 2003-2005
 - Accepted position as Emergency Management Coordinator in Grapevine, Texas
 - February 2015
- Nancy Tausz, RN, BSN, MPA
 - Disease Containment Division Director
 - Johnson County, 1999-present
 - Immunization Program Manager
 - Immunization Program Staff Nurse

Johnson County Offices

- Health Division – Olathe Clinic
 - 11875 South Sunset Drive, Suite 300
Olathe, Kansas 66061
- Health Division – Mission Clinic
 - 6000 Lamar Avenue, Suite 140
Mission, Kansas 66202
- K-State Research and Extension
 - 11811 South Sunset Drive, Suite 1500
Olathe, Kansas 66061



Johnson County Department of Health and
Environment

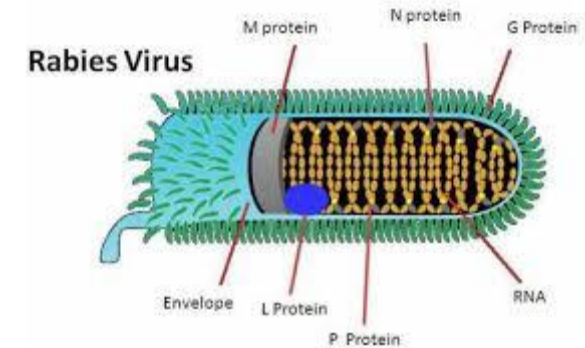


Rabies Exposure Protocol Update

Rabies Exposure Protocol Update

Background on Rabies

- Single-stranded RNA virus
 - Bullet-shaped
- Family *Rhabdoviridae*, genus *Lyssavirus*
- Only infects Mammals
- Multiple species-associated variants
 - Canine, raccoon, bat, fox, skunk

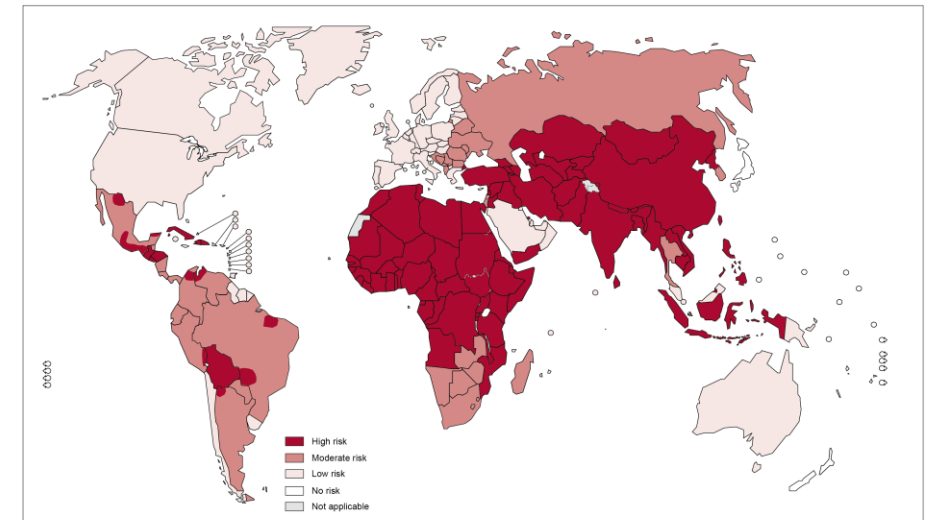


Rabies Exposure Protocol Update

Background on Rabies

- Worldwide Problem
 - As many as 55,000 people die each year
 - 95% of deaths in Africa and Asia
 - 40% of deaths are children under 15 years old
 - Estimated 15,000,000 people receive Post-Exposure Prophylaxis (PEP) each year
 - Case Fatality Rate almost 100%
 - Most deadly of all known viruses
 - Disproportionately high risk levels in low-income, rural communities and countries

Distribution of risk levels for humans contacting rabies, worldwide, 2011



The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement. © WHO 2012. All rights reserved.

Data Source: World Health Organization
Map Production: Control of Neglected
Tropical Diseases (CNTD)
World Health Organization

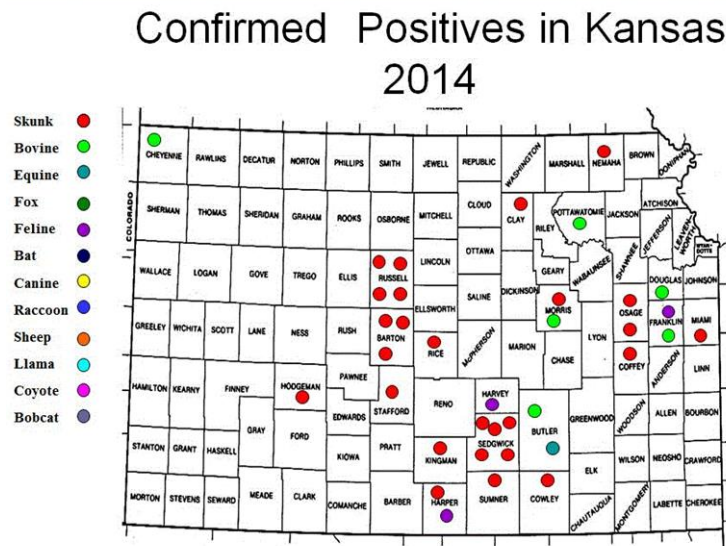


Rabies Exposure Protocol Update

Background on Rabies

- US and Johnson County
 - Only 1-2 deaths per year across the US
 - Last death in Kansas was in 1968

Laboratory Confirmed Rabid Animals in Johnson County, 2000-2014

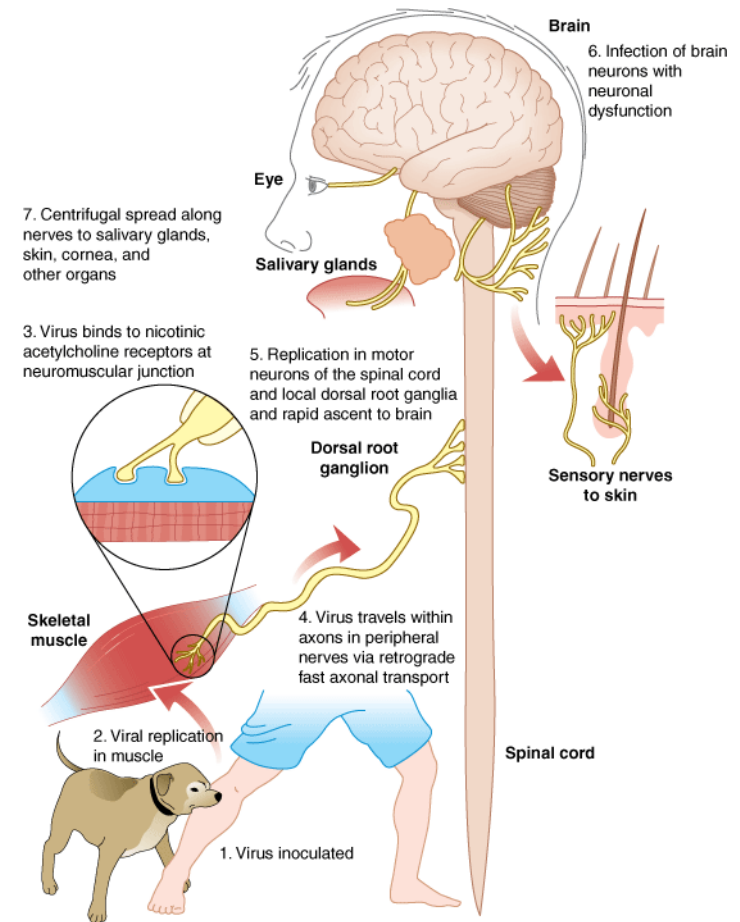


Year	Specimens Submitted	Positive Results	Animal Species	Gardner	Leawood	Lenexa	Olathe	Overland Park	Prairie Village	Spring Hill
2000	69	3	Bat		2		1			
2001	66	1	Bat					1		
2002	89	3	Bat				1	2		
2003	63	1	Skunk	1						
2004	74	2	Bat		1			1		
2005	101	1 4	Bat Skunk			1				1
2006	111	1	Bat			1				
2007	121	4	Bat		3	1				
2008	124	1	Bat					1		
2009	111	2	Bat		1			1		
2010	95	1	Bat					1		
2011	63	0								
2012	68	3	Bat					2	1	
2013	63	0								
2014	94	0								

Rabies Exposure Protocol Update

Background on Rabies

1. Virus Inoculation – Bite or open wound
2. Replication – Within muscle tissue
3. Binding – Virus binds to nerve receptors
4. Axonal Spread – Peripheral nerves to spinal cord
5. Replication/Ascent – Spinal cord to brain
6. Infection – Encephalitis causing neuro symptoms
7. Centrifugal Spread – Along nerves to salivary glands and other tissues



Source: Fauci AS, Kasper DL, Braunwald E, Hauser SL, Longo DL, Jameson JL, Loscalzo J: *Harrison's Principles of Internal Medicine*, 17th Edition: <http://www.accessmedicine.com>
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Rabies Exposure Protocol Update

Learning Objectives

- “To learn about and describe the relationship between Kansas statutes related to public health and zoonotic disease issues (most notably, rabies) and local (i.e., municipal and county-level) ordinances related to public health and zoonotic disease issues (i.e., rabies).”
- Accomplished by comparing Kansas statutes pertaining to the management of rabid animals and rabies exposures to city animal codes of same nature

Rabies Exposure Protocol Update Anticipated Activities

- 1) To review current statutes and procedures regarding rabies exposure and prevention
- 2) To consult with relevant stakeholders to determine if revisions were needed
- 3) To determine if any other statutes or procedures pertaining to rabies and public health needed to be reevaluated

Rabies Exposure Protocol Update

Activities Performed

- Participated in meetings with JCDHE Disease Containment staff to determine needs and expectations of project
 - Tiffany Geiger – JCDHE Disease Investigator for Rabies
 - Cathy Shemwell – JCDHE Disease Containment Program Manager
 - Nancy Tausz – JCDHE Disease Containment Division Director
- Problem: Animal Control Agency/Officer contact information was outdated
- Problem: Inconsistent reporting of rabies exposure cases
 - Only **Rabies Exposures** need reported to JCDHE
 - Reports received often incomplete, on outdated forms, or not received at all
- Problem: Animal Control Officers and Veterinarians wanted some guidance on what constitutes a rabies exposure

Rabies Exposure Protocol Update

Activities Performed

- Updated Animal Control Agency/Officer Contact List
 - Confirmed information via e-mails and phone calls
 - PDF created after completion, then distributed to stakeholders
- Compiled/Compared Animal Codes from Johnson County Cities
 - Most were easily accessed from each city's website
 - PDF of compiled codes created
- Created Johnson County Rabies Exposure Protocol
 - Modeled from AVMA, NASPHV, KDHE, and Johnson County Animal Bite Procedure
 - Reviewed by JCDHE staff including the JCDHE Health Officer
 - PDF created and distributed to stakeholders

Rabies Exposure Protocol Update Activities Performed

- Created RABIES EXPOSURE Forms
 - Human Investigation Form (Animal Bite)
 - Detailed Information Form
 - Animal Disposition Form
 - Human Disposition Form
 - All based on info requested from CDC, KDHE, JCDHE
 - Converted into fillable PDF forms to ease completion, storage, and submittal by investigators
 - Distributed to Animal Control Officers, DVMs, hospitals, then posted on updated JCDHE Rabies website

JOHNSON COUNTY
Health & Environment

RABIES EXPOSURE - DETAILED INFORMATION FORM

VICTIM INFORMATION

Name of Victim: _____ Birth Date: _____ Age: _____ Sex: _____
Address: _____ City: _____ State: _____ ZIP: _____
Telephone: Home: _____ Work: _____ Cell: _____ Email: _____

HEALTHCARE INFORMATION

Healthcare Provider Consulted: _____
Telephone: _____ Fax: _____ Email: _____
Description/Anatomical Site of Exposure(s): _____

EXPOSURE INCIDENT INFORMATION

Date of Exposure: _____ Address of Exposure: _____
Exposure Type: Bite ☐ Non-Bite (Saliva or Nervous Tissue Exposure) ☐ Non-Bite (Scratch or Abrasion) ☐ Nose ☐
Persons Exposed to Animal: Victim ☐ Owner ☐ Reporting Officer ☐ DVM/Staff ☐ Other Animals ☐ Nose ☐

DESCRIPTION OF INCIDENT/COMMENTS

ANIMAL OWNER INFORMATION

Animal Owner: _____ Relationship to Victim: _____
Address: _____ City: _____ State: _____ ZIP: _____
Telephone: Home: _____ Work: _____ Cell: _____ Email: _____

ANIMAL INFORMATION

Species: _____ Breed: _____ Color/Description: _____
Age: _____ Sex: _____ Intact? Yes ☐ No ☐ Owned Pet? Yes ☐ No ☐ Unknown ☐ Origin: _____
Date of Last Rabies Vaccination: Known ☐ Unknown ☐ No Vaccine Available for Species ☐
Veterinarian/Veterinary Facility: _____ Phone: _____ Fax: _____
Was animal injured at time of exposure? Yes ☐ No ☐ Did animal appear sick at time of exposure? Yes ☐ No ☐
Was bite provoked? Yes ☐ No ☐ If yes to previous, explain: _____
Status of Animal: Alive - 10 Day Isolation ☐ Alive - 45 Day Observation ☐ Alive - 6 Month Quarantine ☐
Location of Isolation/Observation/Quarantine: _____ Begin Date: _____ End Date: _____
Deceased ☐ Date Deceased: _____ Euthanized? ☐ Date Euthanized: _____ Unknown (reason): _____
Cause of Death/Euthanasia: _____ Submitted for Rabies Testing? Yes ☐ No ☐ Submittal Date: _____

REPORTING OFFICER INFORMATION

Reported By: _____ Department: _____ Date of Report: _____
Address: _____
City: _____ State: _____ ZIP: _____
Telephone: _____ Fax: _____ E-mail: _____

Johnson County Department of Health and Environment Information Only:

Date Received: _____ Case Number: _____ Report Number: _____ Status: _____
Date Investigation Began: _____ Date Investigation Completed: _____ Investigator Name: _____

JCDHE Rev 101, 102, 803, 1017

Rabies Exposure Protocol Update

Activities Performed

- Provided Rabies Exposure Decision-Making and Support Documents
 - Rabies Exposure Assessment Algorithm
 - From KDHE Rabies Disease Investigation Guidelines document
 - Provoked Animal Bites and Rabies Exposure
 - Created to help define provoked bites for investigating officers, veterinarians, and hospital staff
 - Rabies Risk Level Assessment
 - Adapted from North Carolina Rabies Control Manual
- Updated Rabies Brochure
 - Updated existing JCDHE Rabies Brochure

Rabies Exposure Protocol Update Activities Performed

- Updated Johnson County Department of Health and Environment Rabies Website
 - Downloadable RABIES EXPOSURE forms, Rabies Facts & Prevention Brochure, and Compendium of Animal Rabies Prevention & Control (2011)
 - Podcast explaining changes made to RABIES EXPOSURE forms
 - Summary of Rabies Exposures and Testing protocols for JCDHE
 - List of Johnson County Animal Control Offices
- Sent Mass E-mail to Johnson County Animal Control Officers and DVMs
 - Explanation of changes to protocol and forms
 - PDFs of new Protocol, RABIES EXPOSURE forms, rabies exposure decision-making documents, Animal Control Contact List, and links to website and forms

Johnson County K-State Research and
Extension Office



Emergency Support Function 11 Resource Determination

JOHNSON COUNTY
KANSAS
Health & Environment

ESF 11 Resource Determination

Background on ESF 11

- National Preparedness Goal – first in 2003, latest in 2011
 - Presidential Policy Directive 8: National Preparedness (PPD-8)
 - First issued by President George W. Bush on December 17, 2003
 - Prepare for response to natural or man-made disasters or emergencies
- Pet Evacuation Transportation Standards Act (PETS Act) – 2006
- Post-Katrina Emergency Management Reform Act (PKEMRA Act) – 2006
- National Response Framework (NRF) – 2008

All above amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act – 1988

ESF 11 Resource Determination

Background on ESF 11

- “Emergency Support Functions (ESFs) is the grouping of governmental and certain private sector capabilities into an organizational structure to provide support, resources, program implementation, and services that are most likely needed to save lives, protect property and the environment, restore essential services and critical infrastructure, and help victims and communities return to normal following domestic incidents.”
 - The Public Health Emergency Department of the US Department of Health and Human Services (HHS)
- 15 Different Emergency Support Functions
 - Transportation; Communications; Public Works and Engineering; Firefighting; Information and Planning; Mass Care, Emergency Assistance, Temporary Housing, and Human Services; Logistics; Public Health and Medical Services; Search and Rescue; Oil and Hazardous Materials; **Agriculture and Natural Resources**; Energy; Public Safety and Security; Long-Term Community Recovery (later superseded); and, External Affairs

ESF 11 Resource Determination

Background on ESF 11

- National ESF 11 – Agriculture and Natural Resources Annex
 - Five Primary Functions
 - Provide nutrition assistance
 - Respond to animal and plant disease and pests*
 - Ensure the safety and security of the commercial food supply
 - Protect natural and cultural resources and historic properties
 - Provide for the safety and well-being of household pets*
- Johnson County ESF 11 – Agricultural, Animal Welfare, and Natural Resources
 - Animal Welfare Appendix
 - Foreign Animal Disease Appendix

ESF 11 Resource Determination

Background on ESF 11

Coordinating Agency- Johnson County K-State Research and Extension

- Animal Welfare Support Agencies

- Community Animal Shelter
- Volunteer Groups
- JC Dept. Parks and Recreation
- JC Dept. Public Works
- Jurisdictional Animal Control
- Jurisdictional Fire Departments
- Jurisdictional Law Enforcement
- KCVMA
- Johnson County Animal Response Team (JoCART)

- Foreign Animal Disease Support Agencies

- Animal Welfare Support Agencies, plus
- Johnson County Appraiser
- Johnson County Legal Department
- JC Dept. Planning and Development
- JC Dept. Health and Environment
- Johnson County Sherriff's Office
- Jurisdictional HAZMAT Teams
- KS Dept. Agriculture
- KS Dept. Health and Environment
- KS Dept. Transportation
- KS Highway Patrol

ESF 11 Resource Determination Learning Objectives

- “Develop an understanding of emergency response procedures and how organization of available resources will improve the efficiency of those procedures.”
- Achieved by studying the ESF 11 functions for Johnson County and discussing the benefits of resource determination and organization with stakeholders

ESF 11 Resource Determination Anticipated Activities

- 1) To contact relevant stakeholders in Johnson County to determine and list resources available in an emergency situation
- 2) Expected to begin the project but, due to ongoing nature of such an activity, would not finish the project

ESF 11 Resource Determination Activities Performed

- Created ESF 11 Contact List
 - Merged Emergency Managers/Emergency Response Organizations list with Animal Control Agency/Officer List from Rabies Project
 - Converted to PDF and distributed to stakeholders
- Consulted with ESF 11 Leaders
 - Rick Miller – Johnson County K-State Research and Extension Office
 - Cary Gerst – Johnson County Department of Emergency Management
 - Eric Thompson – Code 3 Associates
 - Brad Miller – Johnson County Animal Response Team (JoCART)

ESF 11 Resource Determination Activities Performed

- Compiled lists of current and needed resources
 - Lists created by previously mentioned ESF 11 leaders
- Created Emergency Support Function 11 Resource Survey
 - Fillable PDF form e-mailed to agencies/officers on ESF 11 Contact List as well as Johnson County veterinarians
- Created ESF 11 Survey Resource List with PDFs
 - Based on responses to ESF 11 Resource Survey
 - Embedded respondents' PDFs within document

Johnson County Department of Health and
Environment

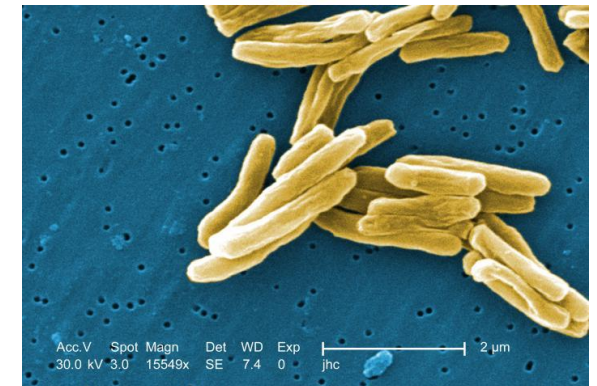


Mass Tuberculosis Screening

Mass Tuberculosis Screening

Background on Tuberculosis

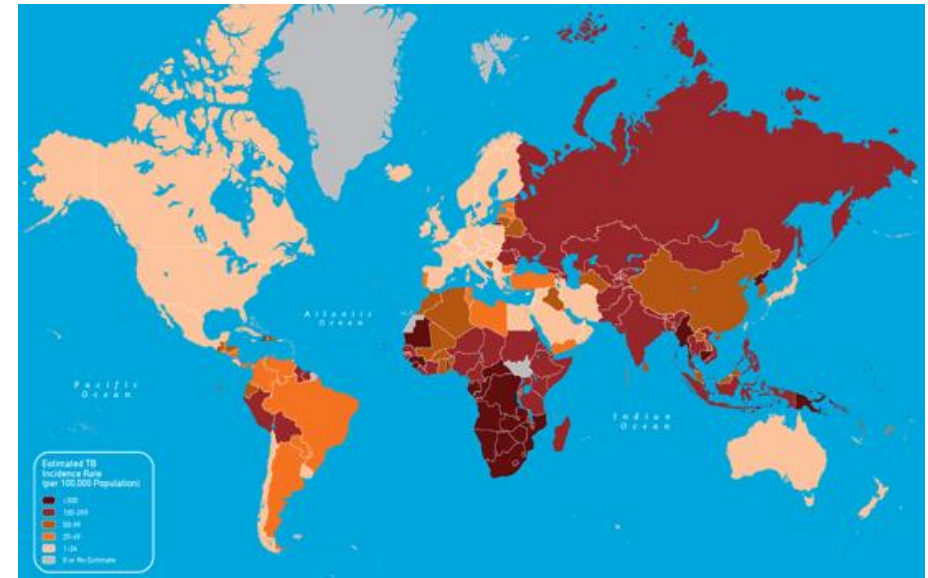
- *Mycobacterium tuberculosis* (TB)
 - Rod-shaped, non-motile, acid-fast, slow-growing bacterium
- TB Infection (Latent)
 - Bacteria present in body but not active
 - Not contagious to others
- TB Disease (Active)
 - Bacteria actively multiplying within body
 - Contagious with pulmonary or laryngeal forms of disease
 - May develop months to decades after infection
 - Only 5-10% of infections become active disease



Mass Tuberculosis Screening

Background on Tuberculosis

- Worldwide Problem
 - In 2013, 9,000,000 people developed TB disease
 - 1,500,000 people died from disease
 - 95% of Deaths in poor or middle income countries
 - Africa, Southwest Asia, Western Pacific



Estimated TB Incidence Rates - 2010

Mass Tuberculosis Screening

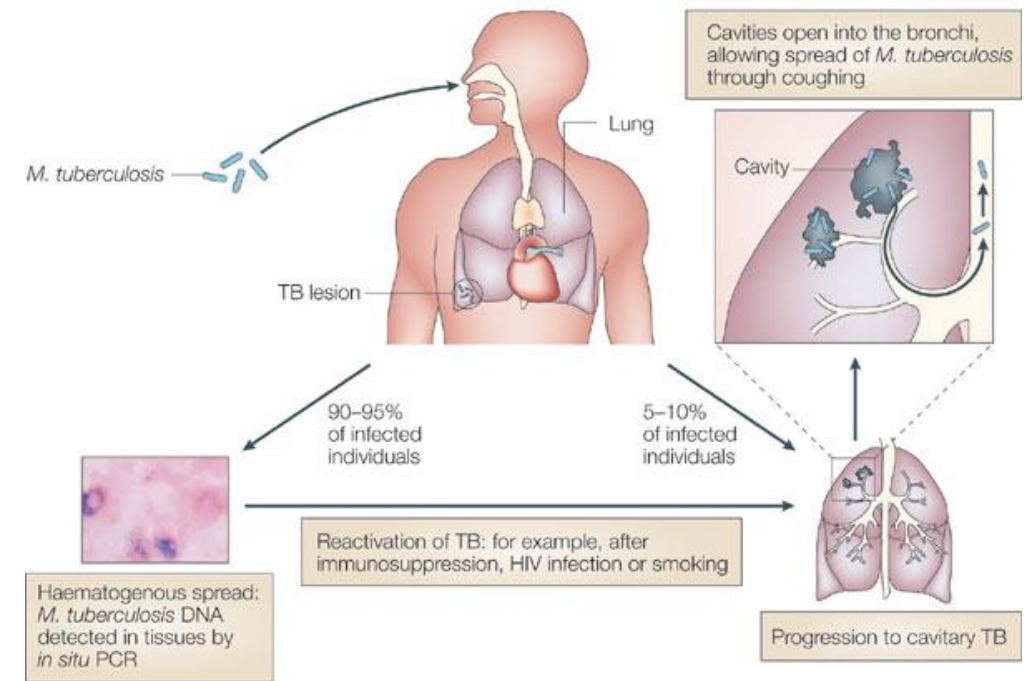
Background on Tuberculosis

- US Statistics (CDC 2013)
 - 9582 TB Disease cases reported
 - 3.0 cases / 100,000 persons
 - In 2011, 536 deaths from TB disease
- Kansas Statistics (KDHE 2012)
 - 42 TB Disease cases reported
 - 1.46 cases / 100,000 persons
- Johnson County Statistics (JCDHE 2012-2014)
 - 7.6 TB Disease cases reported (3 yr avg)
 - 1.4 cases / 100,000 persons
 - 109 confirmed and probable TB infections reported (3 yr total)
 - 19.2 infections / 100,000 persons

Mass Tuberculosis Screening

Background on Tuberculosis

- Bacteria spread through air
 - When person with active disease talks, coughs, sneezes, or sings
- Lung Disease (70-80% of cases)
 - Prolonged cough, hemoptysis, fever, severe night sweats, appetite loss
- Disease can also develop in:
 - Lymph nodes, bones and joints, kidneys, bladder, brain and meninges, and chest wall



Mass Tuberculosis Screening Background on Tuberculosis

Screening Tests

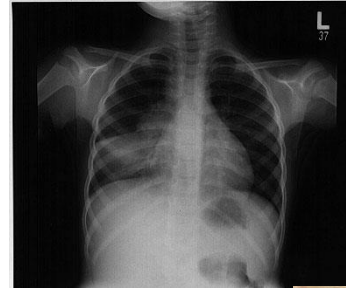
- Tuberculin Skin Test
 - Tuberculin injected intradermally in forearm
 - Check for presence and size of reaction 48-72 hours later
 - Indicates infection, does not determine if active disease
- TB Blood Test
 - Utilizes interferon-gamma release assays (IGRAs) to measure individual's immune response to TB bacteria
 - QuantiFERON-TB Gold In-Tube Test (QFT-GIT)
 - T-SPOT.TB Test (T-Spot)
 - Indicates infection, does not determine if active disease



Mass Tuberculosis Screening Background on Tuberculosis

Diagnostic Tests

- Thorough Medical History
- Complete Physical Examination
- Chest Radiographs
- Microscopic Evaluation of Sputum Smear
- Culture of Sputum*
 - Positive culture indicates individual is infectious
 - Antibiotic Sensitivity testing of positive sputum culture
 - Determine if drug resistance is present
 - Guide medications used for treatment



Mass Tuberculosis Screening Learning Objectives

- Mass screening was an unexpected event, so no learning objectives were established at beginning of Field Experience
- Never want an event like this to occur, but it is an excellent learning opportunity when does occur

Mass Tuberculosis Screening Activities Performed

- Participated in some JCDHE planning meetings prior to screening
- Attended information forum for parents of students before screening
- Performed duties of Field Observer during screening
 - Helped with set-up and take-down of equipment and supplies
 - Recorded observations before, during, and after the event
 - Relayed information between various groups of workers

MPH Program Competencies

MPH Program Competencies

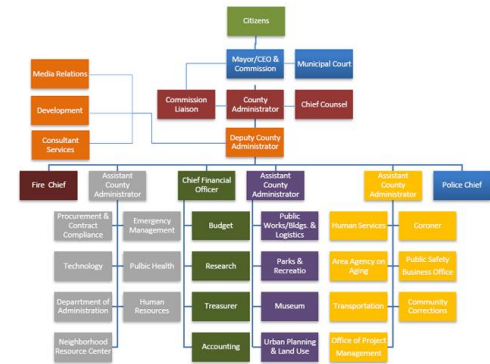
Most Beneficial Courses

- MPH 754 Introduction to Epidemiology
- DMP 753 Zoonosis and Preventive Medicine
- DMP 705 Veterinary Immunology
- DMP 712 Veterinary Bacteriology and Mycology
- HMD 720 Administration of Health Care Organizations
- KIN 818 Social and Behavioral Bases of Public Health

Observations and Conclusions

Observations and Conclusions Challenges Encountered in Government-based Work

- Large Size
- Tiered Command Structure
- Lack of Interagency Cooperation (at times)
- Disconnect Between Different Levels of Government
- Adverse Effects of Budget Cuts
- Waiting for Responses



Observations and Conclusions

Advantages of Being a Veterinarian

- Skill and Knowledge Sets
 - Veterinary School
 - Practice Experience
- Improved Cooperation
 - Animal Control Officers
 - Veterinarians
 - Government Officials
- Membership in Veterinary Organizations
- Appreciation for Daily Activities of JCDHE



Observations and Conclusions Public Health Practices

- Importance of Communication
 - Within and Between Departments
- Providing Quality Information to General Public
 - Improve Understanding without Causing Fear
- Vaccination Programs
 - Herd Immunity
 - Rabies and Measles – Possible Similarities?
- Disease Eradication Programs
 - Rabies vs. TB – different strategies



References and Images



- United States Census Bureau - <http://quickfacts.census.gov/qfd/states/20/20091.html>
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- TB Facts.org - <http://tbfacts.org/drug-susceptibility.html>
- Zoetis United States - <https://www.zoetisus.com/products/pages/cad/CADVaccinesRabies.aspx>
- Merial Limited - <http://imrab.us.merial.com/imrab/index.shtml>
- Cayuhoga County Board of Health - <http://www.ccbh.net/oral-rabies-vaccine>

Any Questions?

Thank You!



- MPH Committee
 - Dr. Justin Kastner
 - Dr. Paige Adams
 - Dr. Abbey Nutsch
 - Dr. Patricia Payne
- MPH Preceptors
 - Liz Ticer
 - Nancy Tausz

- Johnson County Staff
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