MOVING FORWARD: INTEGRATION WITH DISEASE CONTROL SERVICES AND OTHER PROGRAM IMPROVEMENTS

NACCHO VECTOR CONTROL SUMMIT
MARCH 13, 2018

JAMES SAYERS – VECTOR CONTROL SUPERVISOR
PRESENTATION OBJECTIVES

- Provide an overview of the Saint Louis County Department of Public Health (DPH) Vector Control Program (VCP)

- Discuss the integrated framework within Communicable Disease Control Services (CDCS)

- Introduce recent VCP improvements
  - ELISA testing
  - GIS mapping and web applications
VCP OVERVIEW

- VCP provides services for the majority of Saint Louis County (532 sq. miles)
  - Unincorporated Saint Louis County
  - Contract with 71 of the 91 municipalities making up Saint Louis County

- VCP staff
  - Supervisor
    - Reports to CDCS Division Director
  - 4 full-time Vector Control Specialists
    - Licensed and certified in Public Health Pest Control through MO Dept of Agriculture
  - 10 on-call Vector Control Assistants
    - Augment program’s capacity during the mosquito season
SERVICES PROVIDED BY THE VCP

- **Mosquito Surveillance**
  - 230+ trap sites
  - Test to determine the presence and distribution of arboviral disease-carrying mosquitoes

- **Mosquito Abatement**
  - Larviciding: 6000+ known mosquito breeding sites on public property
  - Adulticiding: ULV spraying (County roads, public streets, County parks); barrier applications (County parks, sports fields, playgrounds, etc.)

- **Additional services**
  - Rodent abatement
  - Service requests
The Communicable Disease Control Services division within DPH houses:

- VCP (Used to be housed under Animal Care and Control)
- Epidemiology Program
- Communicable Disease Investigation
BENEFITS OF INTEGRATION

- Promotes effective **communication**
- Increases **efficiency**
- Streamlines public health efforts
- Expands **education and outreach** efforts
- Prevents illness
- Saves taxpayer dollars
- Enhances **coordination with the community** and surrounding public health agencies
HUMAN CASE NOTIFICATION PROCESS

CDCS receives human case of mosquito-borne illness

Within 1 day

CD Nurse Investigator assigned case

Within 1 day

CD Nurse Investigator investigates/enters case data

VCP receives name and address of case

Within 3 days

VCP inspects property/surrounding area, treats as appropriate

Epidemiologist analyzes data, writes report

Saint Louis County Department of Public Health
CDCS/Vector Control

Notification and Response of Human Arboviral Disease Cases Subtype(s)

California Serogroup Viruses
including La Crosse Virus
St. Louis Encephalitis Virus
Eastern Equine Encephalitis Virus

Zika Virus

Venezuelan Equine Encephalitis Virus
West Nile Virus
Western Equine Encephalitis Virus
Dengue Virus
Chikungunya Virus

CDCS

Notification to Vector Control
1. Upon receipt of a neuroinvasive or non-neuroinvasive arboviral disease subtype report, appropriate Communicable Disease Control Services (CDCS) staff will verify the diagnosis, and obtain pertinent epidemiological information (i.e. demographic, clinical, laboratory), and data enter the report into WebSurv.

2. Follow the Missouri Department of Health and Senior Service (DHSS) Communicable Disease Investigation Reference Manual (CDIRM) for case definition and human investigation process.

3. If it is the first arboviral disease subtype of the year, notify CDCS Manager. The CDCS Division Director will decide if a press release is necessary. Director St. Louis County Department of Public Health needs to be notified with first arboviral disease subtype of the year.
CDCS receives notification of a human case of possible mosquito-borne illness
- Probable arboviral case or Positive lab result
- Alerted by the state
CD INVESTIGATION

Within 1 business day
- CD Nurse is assigned the human case for investigation

Within 1 more business day
- CD Nurse completes the investigation and enters data into database
VCP ENVIRONMENTAL ASSESSMENT

Within 1 business day
- VCP receives address of the case

Within 3 more business days (usually within 24 hours)
- VCP inspects property and surrounding area
- VCP treats, as appropriate
- Completes Environmental Assessment and Mitigation Form
DATA ANALYSIS AND DISTRIBUTION

**Ongoing**
- VCP enters surveillance and treatment data into database
- CD Investigators complete case investigations and store data in Missouri’s communicable disease surveillance database

**Annually**
- Epidemiologists gather, summarize, and analyze human and vector data
- Data distributed via Annual Vector Control Report
ANNUAL REPORT - CONT

- Program Summary
- Climate Data
- Epi Data
  - Human Cases
- Surveillance Data
  - Trapping
  - Testing
- Integrated Pest Management
- Summary of Service Requests
- Treatment Data
  - Larviciding
  - Adulticiding
  - Rodent Abatement
LABORATORY IMPROVEMENTS

- Process of developing a working ELISA protocol
  - Enzyme-Linked Immunosorbent Assay

- Purchased equipment needed to test mosquito samples using ELISA
  - Switching from RAMP Testing to ELISA
LABORATORY EQUIPMENT

- Pipettes (Single and Multi-Channel)
- Semi-automated dispensing units
- Washing Systems
- Plate Readers
- Incubator / Humidity Chamber
- Multi-Tube Vortexer
- Refrigerated Centrifuge
- ULT Freezer
- DI Water Purification System
- Precision Balance
SAINT LOUIS COUNTY VECTOR LAB
BENEFITS OF ELISA TESTING

- **Cost savings**
  - Upfront cost: ~$50,000
  - Annual savings ~$30,000/year
    - RAMP = $19.23/Pool
    - ELISA = $3.00/Pool

- Test more mosquito pools in less time

- Plan to offer testing services to other agencies
GIS MAPPING

- Internally developed GIS applications tailored to VCP needs
  - Developed in conjunction with the Saint Louis County GIS Service Center
    - Minimal / No costs
    - Apps maintained internally by Saint Louis County GIS Service Center
      - No annual maintenance fee

- Purchased tablets and truck mounts for use by field staff
  - Unlimited data plans for each device
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Currently in use
- Service Request App
- Rodent Abatement App
- Adulticide App

Beta-testing phase
- Larvicide App

Under development
- Surveillance App
- Reporting App
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GIS WEB APPS: SERVICE REQUEST APP
GIS WEB APPS: RODENT ABATEMENT APP
GIS WEB APPS: SITES EDITOR
GIS WEB APPS: ADULTICIDE TRACKING
GIS WEB APPS: ULV SPEED TRACKING
GIS WEB APPS: LARVICIDE APP
BENEFITS OF GIS MAPPING

- Increased efficiency and accuracy
  - GIS mapping allows field staff to identify sites faster
  - GIS Apps/maps allow field staff to verify which areas have been treated or not

- Better accountability
  - Real-time monitoring of field staff
  - GPS tracking verifies field workers were present at work locations

- Faster, more accurate reporting
  - GIS maps allow field staff to find sites faster.
  - ULV app allows drivers to verify areas that have been treated and areas that still require treatment
THANK YOU!

QUESTIONS?

Contact: JSayers@stlouisco.com