

M E E T I N G N O T E S

Municipal Response to Rodent-Borne Disease – 12.15.2021

Presentation:

Orange County Mosquito and Vector Control District's Response to Flea-Borne Typhus

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Recording available at the following link: <https://youtu.be/PceZFBGQgTg>

Flea-Borne Typhus Notes:

- Pest control operators that go under homes to collect animal carcasses are at-risk for exposure to flea-borne typhus.
- During rainy years, there is a higher incidence of flea-borne typhus in winter in Orange County, CA.
- Cases of flea-borne typhus are clustered in urban areas and related to outdoor cat feeding.
- There are often delays of three to six weeks between the time a person gets sick and is diagnosed, to the time OC Vector receives information, even with a Memorandum of Understanding (MOU) between organizations to transfer this information. This is due, in part, to the low incidence rate of typhus and the amount of time it takes to get an accurate diagnosis. OC Vector often learns about cases when the person is hospitalized, suggesting that many more cases might go undiagnosed. The time delay and underreporting have implications for the ability of vector control programs or municipalities to provide a rapid response.
- During animal surveillance, no ticks were found on opossums in Orange County, CA, but the animals have lots of fleas.
- Most fleas contributing to flea-borne typhus come from domestic pets: cat fleas and sticktight fleas (both with diverse range of hosts).
- Not all municipalities have vector control districts or robust programs, possibly limiting the response to rodent-borne disease issues.
- Response planning and capacity have been affected by COVID-related shifts in municipal programs and organismal factors (shifts in vector behavior/demography).

Resources:

- [Guidance for Flea-Borne Typhus Surveillance and Reporting](#)
- [Vector Reduction Manual](#)
- [Integrated Vector Management and Response Plan](#)

Discussion:

How should municipalities respond operationally when a case of rodent-borne disease is reported.

- Case responses should be standardized. Possible that municipality will “overrespond” at first, but then scale back as caseloads increase and feasibility of initial response decreases.
- Overview of a case response:
 - Case is reported.
 - Interview the patient and identify where exposure occurred: workplace or home.
 - Conduct rat inspections in suspected areas.
 - Enforcement to minimize rat populations if exposure site is known.
- Management response to case reports?
 - In Salvador, Brazil, human cases of leptospirosis trigger mandatory baiting/trapping around the patient residence for a certain amount of time. Unclear what impact this has on reducing the incidence of disease.
- What to do about non-compliant property owners (public or private) that continue to have rat activity after enforcement actions?
- What to do if significant delay between disease diagnosis and receiving information? Some municipalities drive-by site to look for pest activity.
- If there is a role for the public in mitigating rodent populations and reducing the risk of pathogen exposures, then it’s important to communicate that with signs, flyers, and media.
- Most of the K9 cases of leptospirosis are suspected exposures to rat urine in puddles.
- Disconnect between public health and rodent-borne disease. In some cases, rodent-borne diseases are not reportable to the state, so tracking cases and exposures becomes difficult.
 - Ways to increase collaboration include health alerts for physicians and veterinarians when first case is detected.

Opportunities:

- Municipal and academic collaboration to compare pathogen exposures. Researchers might maintain frozen tissue archives for cross-city comparison.
- Develop surveillance recommendations for trapping and testing of rats at expected exposure sites and beyond. What is the number of rats that should be tested over what geographic range to understand exposure risks?
- Interest in studying puddles to determine risks and understand if climate change contributes to higher leptospirosis cases due to prolonged warm, wet seasons in some places.
 - Investigate puddles as reservoirs and determine testing parameters to estimate environmental leptospirosis loads.
 - What treatments can eliminate risks for puddles?
- How to partner with climate change/resiliency work in a way that doesn’t have negative consequences for rats and pathogens:
 - Bioswales, channels that concentrate stormwater runoff, have benefits for the environment, but are bad for rat populations, mosquitoes, and possibly leptospirosis.

Recommendations:

- Formal, active, long-term human surveillance is needed for rodent-borne zoonoses, especially targeting vulnerable populations.
 - Possible example from Salvador, Brazil. Researchers have tracked cohorts longitudinally.
 - Develop a panel to test individuals with febrile illnesses for rodent zoonoses.
- Develop better methods to facilitate transfer of case report information from medical professionals to groups responsible for monitoring and management of rodents, vectors, and rodent-borne disease.
- Physician and veterinarian education regarding rodent-borne diseases.
 - For example, this [NYC alert issued in 2021](#).