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FEDERAL ASSISTANCE FOR MOSQUITO ABATEMENT POSTDISASTER OR DURING DISEASE OUTBREAKS

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Abstract

When a disease outbreak occurs or there is increased threat for a disease outbreak to occur following a flooding disaster, it is important for government officials and mosquito abatement practitioners to know how to access federal financial, technical, or control activity assistance. In certain circumstances, the Federal Emergency Management Agency may provide reimbursement assistance to supplement state, territorial, tribal, or local governments' extraordinary mosquito abatement activities in areas that have received an emergency or major disaster declaration under the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Public Law 93–288). The Centers for Disease Control and Prevention are the lead federal agency after a disease outbreak occurs. Government officials and practitioners should know how to access available assistance before an event occurs. Building a plan to request federal assistance, coordination with stakeholders under the National Incident Management System, and documentation of steps taken are the most effective method to ensure a smooth community response while maximizing assistance and reimbursement from federal agencies.

Keywords

Emergency management; emergency planning; federal agencies; mosquito control; outbreak

NATIONAL INCIDENT MANAGEMENT SYSTEM

The National Incident Management System (NIMS) is a systematic, proactive approach to disaster response and recovery. The NIMS guides all levels of government, nongovernmental organizations, and the private sector to work together to help people before, during, and after disasters. The NIMS provides stakeholders with the shared vocabulary, systems, and processes to successfully deliver the capabilities required while providing a consistent foundation for all incidents, ranging from daily occurrences to incidents requiring a coordinated federal response (FEMA 2017). During a response to an event, Essential Support Functions (ESFs) (Table 1), such as ESF-8, Public Health, and Medical Services, are deployed to ensure effective communication and close coordination to meet response needs (FEMA 2019).

Formal online training on NIMS and the Incident Command System (ICS) is available from the Federal Emergency Management Agency (FEMA). It is important for mosquito abatement practitioners to understand this system and engage with or be a part of the local ICS structure before an incident occurs. This will position programs to 1) have emergency response plans in place, 2) know what federal support is available, 3) know what routine data should be collected and maintained for seeking reimbursement of emergency response activities, and 4) know what types of documentation will be needed during and after the event.

OVERVIEW OF DISASTER RESPONSES

The mission of the Federal Emergency Management Agency (FEMA), under the Department of Homeland Security (DHS), is to reduce the loss of life and property and protect the nation from all hazards. By leading and supporting the nation in a risk-basked, comprehensive emergency management system of preparedness, protection, response, recovery, and mitigation, FEMA assists in situations resulting from natural disasters as well as from acts of terrorism and other manmade disasters. Incidents that occur on a scale to overwhelm the ability of local, state, tribal, or territorial governments to respond may be eligible for federal assistance. Assistance must be requested from the president of the United States by the governor or chief of the state, territory, or tribal area affected. The Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. 5121 *et seq*. (Stafford Act) is the law that allows the federal government to aid citizens after a disaster. A database of ongoing and historic federally declared incidents is maintained online by FEMA. The database is searchable by state, time, type of declaration, and type of event.

The FEMA public assistance program is directed toward the response and recovery activities of public-serving entities (i.e., governments and some private nonprofit organizations). Mosquito abatement activities are potentially eligible for reimbursement under either federal emergency or major disaster declarations for public assistance. The program usually has a 75% federal and 25% local funding cost share, though in some catastrophic instances that amount has been adjusted to reduce the local cost share.

MOSQUITO ABATEMENT SPECIFIC REQUIREMENTS

Extraordinary mosquito abatement activities are potentially eligible as public assistance, Category B Emergency Protective Measures. The types of activities and items eligible for reimbursement are outlined in the FEMA Public Assistance Program and Policy Guide (PAPPG), FP 104–009-2 (FEMA 2018). This guidance document, which is essential for mosquito control directors to review and understand, discusses the types of expenses that are reimbursable and the documentation needed. Overtime, vehicle mileage, spray equipment usage, extra chemicals, and contracts are some of the topics covered. FEMA does not automatically pay all activities, such as overtime, after an event. Mosquito season and hurricane season overlap. Many mosquito control programs pay overtime or hire extra seasonal help annually. Those expenses are “normal” for the industry. For activities related to a declared incident, FEMA may pay for the extra help required beyond the seasonal hires and overtime normally seen during a typical year. FEMA provides public assistance funding

only for the increased cost of mosquito abatement. This is the amount that exceeds the average amount based on the last three years of expenses for the same period. To receive federal funding, good record keeping is essential. Daily truck mileage logs, spray equipment logs, overtime, and other records must be maintained annually to show an increase in workloads and materials due to an incident. The PAPPG covers the day-to-day expenses that may be eligible for reimbursement. Any program developing an emergency mosquito control plan should routinely collect the information needed for reimbursement.

The PAPPG contains specific guidance regarding the information needed to justify if federal reimbursement for extra spraying is eligible. For example, a mosquito control program should be able to show that there are higher levels of disease-transmitting mosquitoes in the disaster area following the event when compared to predisaster surveillance results. For example, do the numbers increase or stay the same 2 weeks after floodwater mosquito species have had time to develop? An outline of the process for requesting mosquito control, justification, surveillance, and data needs can be found in the PAPPG in Appendix G, *Mosquito Abatement*.

Part of the eligibility review for reimbursement of mosquito abatement activities is a consultation between FEMA and the CDC. Surveillance data are a critical component of this consultation and should be documented prior to spraying. Both FEMA and the CDC understand mosquito control is not done regularly in every town or every county in the USA. Even in places where mosquito control is performed, capabilities can vary widely (NACCHO 2017). The lack of a fully capable Integrated Mosquito Management (IMM) program does not disqualify an area from receiving aid. Many counties with smaller populations do not have the resources for regular mosquito control programs, or their program is a minimal operation. These counties often do not have historic surveillance data to use for comparison to current data to help justify spraying. In these cases, FEMA and CDC work with state, tribal, territorial, or local governments to determine if eligibility for spraying is warranted. Neither FEMA nor the CDC makes the decision if a jurisdiction should undertake mosquito abatement activities following a disaster. It is always the responsibility of a state, territorial, tribal, or local government to determine if mosquito abatement activities should occur, in consultation with the proper federal authorities. If there is an expectation that FEMA reimbursement will be sought, it is important that state, territorial, tribal, or local government officials consider the guidance in the PAPPG before measures are undertaken and follow all federal procurement and environmental rules, regulations, and executive orders. This usually means that that state, territorial, tribal, or local government officials should consult with FEMA before undertaking mosquito abatement measures to ensure no federal environmental requirement is missed, and that services are procured and supporting information is captured in a way that permits federal reimbursement later, if so warranted.

FEMA consults with the US Fish and Wildlife Service or National Marine Fisheries Services as required under the Endangered Species Act before spraying occurs to ensure that proposed spray areas will protect both human and listed threatened and endangered animal populations. FEMA also coordinates with agricultural or natural resource departments to ensure that economically important species, such as bees or shrimp, will not be negatively

affected by spraying. Sharing proposed spray areas as early as possible with FEMA allows legally required consultation and coordination to occur in a timely manner so they are completed before spraying. If FEMA is unable to complete the required consultations or coordination before spraying occurs, federal reimbursement for mosquito abatement actions may be jeopardized.

In addition to reimbursement for mosquito abatement, the federal government can provide direct assistance in the form of on-site subject matter experts when the state, territorial, tribal, or local government cannot perform, or contract for, required work and services. These resources must be requested formally. Neither CDC, the Department of Defense (DoD), nor any other federal agency will show up automatically. The CDC's resources include IMM expertise in surveillance and control. Teams can be requested to help with additional surveillance or guidance on appropriate control measures. Information on hurricanes, aerial spraying, adulticiding, larviciding, and other topics intended for the public can be downloaded from www.cdc.gov. The DoD has entomologists and units that can be requested to perform mosquito control. Most notably the US Air Force maintains the 910th Airlift Wing based in Youngstown, OH. This unit operates the DoD's only aerial spray capability to control pest insect populations. The federal government in general prefers not to compete with the private sector, which is often the most economical option. State, tribal, or territorial agriculture or health departments may also have subject matter experts available to provide technical assistance to local governments.

OUTBREAK RESPONSE

The CDC is the primary agency tasked with responding to disease outbreaks. The CDC, like other federal agencies, adheres to the principles of the NIMS system. Outbreaks of vector-borne diseases, like other disease outbreaks, may or may not be on a scale that requires activation of the CDC Emergency Operations Center (EOC). Activation of the EOC depends on the size and complexity of the outbreak. For example, during the Zika outbreak in 2016, subject matter experts from a wide range of disciplines needed to work together. Because of the discovery that Zika virus can affect a developing fetus, the CDC Division of Vector-Borne Diseases needed to work with specialists in pregnancy and birth defects from the CDC National Center on Birth Defects and Developmental Disabilities. Activation of the EOC and bringing all parties together was instrumental in providing accurate and consistent messages to a wide variety of clients including entomologists and obstetricians, two groups that rarely interacted professionally before the Zika virus outbreak.

Many outbreaks do not require an activation of the CDC EOC. They are handled by providing assistance directly to the local program needing technical help. The CDC does not automatically respond to increases in disease cases by sending experts into the field. The CDC must be invited to take part in outbreak investigations. There are two mechanisms that the CDC typically uses when investigating outbreaks. One is to use the Epidemiologic Assistance (Epi-Aid) program. A state, tribe, or territory makes a formal request through the Epi-Aid program at www.cdc. gov/eis/request-services/epiaids.html. Local governments may also make a request. The CDC will contact the state to make sure they are aware of that request. It is best for local governments to bring the state into the discussion early in the

process. The program is part of the Epidemic Intelligence Service (EIS), the CDC's premier epidemiology training program. When using this approach, EIS officers are used as part of their training. Other subject matter experts will also be part of the response team. The general process for requesting Epi-Aid is to make a request using the web page or to contact a CDC subject matter expert, who will reach out to the Epi-Aid program. Once an application is received, it is discussed by the CDC to determine if it can be supported. It is important to note that the CDC does not take charge of investigations; they maintain a supporting role. The local public health program generally retains custody and control over all data collected during Epi-Aid. If it is determined that the request will not be supported by the Epi-Aid mechanism, an individual CDC program can still support the request using its own program funds.

The focus of outbreak response is to support local programs in preventing additional cases and not to conduct research. Part of that support involves evaluation of activities undertaken during the outbreak and their success. Two examples of evaluations of vector control activities involved the West Nile virus (WNV) outbreak in Dallas, TX, in 2012 and the first recorded Zika virus transmission in Miami, FL, in 2016 (*Aedes aegypti* (L.)). In the Dallas outbreak, areawide mosquito adulticide applications using aircraft were conducted. This intervention occurred as the epidemiology curve was already naturally decreasing toward the end of the WNV transmission season. The reduction in cases was more rapid in areas that received the aerial spraying than in areas that did not (Ruktanonchai et al. 2014). Aerially applied adulticide and larvicide products were used in controlling *Ae. aegypti* in Miami. Unlike applications in the Dallas outbreak, aggressive control was initiated early in the outbreak. Transmission of the Zika virus in the Wynwood area of Miami–Dade County ceased after the aerial spraying occurred (Likos et al. 2016). Other areas of local transmission saw sporadic transmission, less than 1 case per week (southern Miami Beach), or no transmission (northern Miami Beach) after areawide mosquito spraying using a combination of aircraft and trucks (McAllister et al. 2020). While the CDC participated in these evaluations, the state programs retained the lead in making decisions during the outbreaks and in publication of results.

Federal agencies have differing roles and responsibilities responding to emergencies and outbreaks. Knowledge of agency rolls and routine collection of required surveillance data will save time initiating mosquito control during an emergency. Planning and preparation as well as operating under the NIMS system facilitates federal agencies and local communities in working together.

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Table 1.

Federal Emergency Support Functions (ESFs) and their areas of responsibility.[1]

ESF designation	Area of responsibility	Primary lead agencies
ESF1	Transportation	Dept. of Transportation
ESF2	Communications	National Communications System
ESF3	Public works and engineering	Army Corps of Engineers
ESF4	Firefighting	Dept. of Agriculture/Forest Service
ESF5	Information and planning	Federal Emergency Management Agency
ESF6	Mass care, emergency assistance, temporary housing, and human services	Dept. of Homeland Security/American Red Cross
ESF7	Logistics	General Services Administration/FEMA
ESF8	Public health and medical services	Dept. of Health and Human Services
ESF9	Search and rescue	Federal Emergency Management Agency
ESF10	Oil and hazardous materials response	Environmental Protection Agency
ESF11	Agriculture and natural resources	Dept. of Agriculture/Dept. of the Interior
ESF12	Energy	Dept. of Energy
ESF13	Public safety and security	Dept. of Homeland Security/Justice
ESF14	Cross-sector business and infrastructure	Dept. of Homeland Security/Cybersecurity and Infrastructure Security Agency (CISA)/FEMA
ESF15	External affairs	Federal Emergency Management Agency

[1]Source: FEMA (2019).