

## **Behavioral Health-SAMHSA, Infectious Diseases**

### **Maricopa County Department of Public Health, Office of Epidemiology**

Phoenix, Arizona

#### **Assignment Description**

Maricopa County, Arizona, is home to approximately 4 million residents (61% of Arizona's population), making it one of the largest local public health jurisdictions in the country. For comparison, the county's population is larger than the population in 24 states. Due to its size and geographical location, the county faces unique public health challenges. The Maricopa County Department of Public Health (MCDPH) exists to address these issues and to protect and promote the health and well-being of its residents and visitors.

In May 2016, MCDPH received public health accreditation. To become accredited, health departments must demonstrate that they meet the Public Health Accreditation Board's (PHAB) standards, which reflect the ten essential services of public health. By going through this process, MCDPH identified areas for improvement, restructured segments of the organization, and updated its systems to provide the highest quality public health services for the county. MCDPH is one of the largest local health departments in the country to receive the honor. The Fellow will find MCDPH's culture of high performance and quality a great environment for working with credible, recognized people in the field and expanding their skills.

The Fellow will be assigned to the MCDPH Division of Disease Control, Office of Epidemiology. The Office of Epidemiology operates in two units: Epidemiology and Data Services Unit and Communicable Disease Epidemiology Unit. The Epi & Data Services Unit is responsible for managing data requests, publishing weekly and annual morbidity and mortality reports, complex data analyses (e.g., return on investment studies or geo-spatial analyses), establishing syndromic surveillance protocols, conducting community health assessments, and preparing grant proposals and manuscripts. The Communicable Disease Epidemiology Unit is responsible for monitoring emerging and zoonotic diseases, interviewing patients with notifiable diseases, conducting outbreak investigations, and providing solutions for disease control and prevention. The Fellow will work closely with members from both units, so he/she improves skills in patient interviews, outbreak investigations, surveillance, study design, data management, statistical analysis, interpreting results, and disseminating findings.

The Fellow will focus on learning the goals and operations of the health department, completing Fellowship projects, expanding his/her applied epidemiology skill-set, and attending internal and external meetings. The Fellow will meet with the primary mentor on a weekly basis to discuss progress on training goals and project assignments. The mentors and other staff will support the Fellow as he/she manages data, monitors data quality, performs analyses, interprets findings, and prepares reports. At the end of the first year, the Fellow will meet with the mentors to report on the progress of major projects. If sufficient progress has been made, the Fellow may propose a special project that is geared toward his/her interests.

The mentors are dedicated to expanding the skill-set of the Fellow so he/she is prepared for launching a career in applied public health. In addition to expanding public health-specific skills, the primary mentor will work with the Fellow to polish his/her cover letter, personal statement, and resume/CV, as well as develop skills in preparing grant proposals, protocols, reports, manuscripts, and presentations.

### **Day-to-Day Activities**

Local health departments must adapt to shifting public health priorities. Thus, the Fellow should expect variety in their work activities from day-to-day.

At the onset of the Fellowship, the mentor and Fellow will establish timelines for completing the surveillance evaluation and major projects. This will include a discussion regarding goals for producing deliverables (e.g., presentations and reports) and what the Fellow hopes to learn from the project. Each day, the Fellow will be responsible for managing these projects in order to meet deadlines. The beginning of the Fellowship will focus on training to orient the Fellow with data sources, statistical packages, and team operations as a whole. As the Fellow becomes familiar with MCDPH procedures and protocols, the Fellow will manage their time and projects more independently. Mentors will monitor the work and make adjustments as necessary.

During special events, such as outbreaks, large-scale scheduled events, or public health emergencies, the Office of Epidemiology will shift its priorities, and the Fellow will be asked to participate in departmental activities. These activities may include patient interviews, outbreak investigation analyses, or disease control and prevention initiatives.

The Office of Epidemiology is dedicated to professional development for all staff. The Office holds regular meetings to communicate recent projects and lectures to provide scientific updates in the field. Employees have created their own in-house classes to discuss best practices for using analytical methods / software and how to apply these to their current work (e.g., statistics, SAS, R, and GIS). The Fellow will be encouraged to attend meetings, lectures, and continuing education opportunities to expand his/her own skill-set and successfully complete assignments and projects.

## **Potential Projects**

### **Surveillance      Situational awareness using traditional and syndromic surveillance Activity**

Surveillance is an essential public health activity. MCDPH relies on data from notifiable disease reports, school absentee records, 911 and poison control center call logs, hospital records, and community surveys to maintain situational awareness in the county. Over the course of the Fellowship, the Fellow will rotate through the office and work with nurses, disease investigators, data analysts, and epidemiologists to gain experience in conducting patient interviews, managing outbreak investigations, analyzing data, writing reports, and sharing findings at local, state, and national meetings. In the process, the Fellow will become intimately familiar with the means in which MCDPH systematically acquires data related for infectious diseases, environmental exposures, injuries, chronic diseases, death, and their risk factors; designs epidemiological studies; selects appropriate statistical methods to carry out real-world analyses; writes SAS and R programs to carry out tasks; develops reports; and uses data to make public health decisions.

### **Surveillance      Evaluation of respiratory syncytial virus (RSV) infection surveillance in Maricopa Evaluation      County**

Respiratory syncytial virus (RSV) is easily transmitted through droplets from a cough or sneeze and causes respiratory illness. RSV infection is very common among young children, but adults older than 65 years are also at risk. Symptoms tend to be mild and similar to a cold with runny nose, coughing, sneezing, fever, and wheezing, but the virus can cause more severe illness, such as bronchiolitis and pneumonia, or death.

RSV can be confirmed with real-time reverse transcriptase PCR or antigen detection. Arizona laboratories are required to report positive RSV results to the Arizona Department of Health Services within 5 working days. These laboratory data are used by public health officials to conduct RSV surveillance and understand the burden of RSV in their community. Epidemiologists produce epidemic curves with the number of positive laboratory results over time. In Arizona, the RSV season tends to begin in January and end by late-March.

The National Respiratory and Enteric Virus Surveillance System uses percent positivity [i.e., (positive RSV tests / total RSV tests) x 100%] to define the RSV season. The start of the season is the first of two consecutive weeks with greater than or equal to 10% of tests positive, and the end of the season is the last of two consecutive weeks with greater than or equal to 10% of tests positive. Maricopa County does not receive information about the total number of RSV laboratory tests ordered by clinicians. Without information about the number of negative RSV results, local epidemiologists cannot calculate percent positivity.

The Fellow will use CDC's guidelines for evaluating public health surveillance systems to evaluate RSV surveillance in Maricopa County. Based on the evaluation, the Fellow will explore options for

obtaining negative RSV laboratory results and provide recommendations for improving RSV surveillance in Arizona.

### **Major Project    Injection Drug Use in Maricopa County**

Arizona’s governor declared the opioid epidemic a public health emergency on June 5, 2017. In response, Arizona Department of Health Services collected three months of real-time data related to opioid overdoses (e.g., suspect opioid deaths, suspect opioid non-fatal overdoses, and life-saving naloxone administration). However, overdose is just one of many health-related complications associated with substance abuse.

People who inject drugs, a subset of the opioid-using population, are at risk for numerous injection-related injuries and diseases. These include: HIV, hepatitis C virus, abscesses, vascular damage, endocarditis, sepsis, bone and joint infections, thrombosis, and emboli.

In order to garner wide-spread support for additional evidence-based interventions in the community, the health department must provide clear evidence that illustrates the magnitude of this public health problem and the challenges that these people face. The goal of this project will be to quantify the current number of people who inject drugs in Maricopa County.

Estimating the size of this exceptionally vulnerable and hard to find population is a challenging task. Typically, the health department relies on hospital discharge and death certificate data to calculate disease prevalence, but administrative datasets do not include specific codes for injection drug use. As a government agency, health departments may face additional challenges reaching this group due to the illegal nature of the behavior.

The Fellow will collect and analyze data to estimate injection drug use in Maricopa County and describe the physical, mental, and emotional comorbidities that impact the population. Activities may include survey design, sampling in the field, and data management and analysis. With over 4 million residents, MCDPH is the third largest local public health jurisdiction in the U.S. The Fellow will be in a unique position to provide recommendations to agencies who wish to estimate the prevalence of people who inject drugs in a large, diverse community.

### **Surveillance    Arizona Behavioral Risk Factor Surveillance System 2018: Analysis of state-added Activity            questions**

The Arizona Behavioral Risk Factor Surveillance System (AZ BRFSS) is a computer-assisted telephone interview that collects health-related data from nearly 8,000 randomly selected Arizonans each year. The AZ BRFSS is comprised of CDC’s core components and state-added questions/modules selected by local stakeholders.

Local stakeholders recently voted to add numerous questions to the 2018 AZ BRFSS that have implications for physical health, mental health, and substance abuse complications. Examples include: sexual orientation and gender identity; social context; reactions to race; adverse childhood experience; opioid use / chronic pain; and substance abuse. These questions will help local health departments better understand the demographics of their community as well as the behavioral risk factors that are most prevalent among those at risk.

The Fellow will have an opportunity to explore the prevalence of these risk factors in Maricopa County and determine whether they are statistically associated with other risk factors in the dataset.

**Additional Project      Many additional projects available based on Fellow's interests**

The MCDPH Office of Epidemiology is a large, diverse group of epidemiologists, analysts, nurses, investigators, and senior managers, whose responsibilities directly or indirectly influence the ten essential public health services. Team members regularly propose new projects and request varying degrees of leadership and support from the office. The Fellow may elect to participate in projects that align with his/her interests. Examples of currently available project titles include: Integrating climate change within the public health department; Lead levels and subsidized housing; Air pollution and children's health; Developing a surveillance system for latent tuberculosis infection; Comparing sensitivity and specificity of rapid influenza test kits; Return on investment analysis for community benefit spending; Policy review of the Health Information Exchange; and Addressing the needs of homebound individuals. Notably, project topics are broad and may focus on environmental health, chronic disease, infectious disease, surveillance system evaluation, health policy and management, and/or behavioral and community health.

**Preparedness Role**

Maricopa County is home to 4 million people and several large venues, which hold major events. Recent events include: NCAA Final Four, Super Bowl, BCS National Championship, Fiesta Bowl, and the Waste Management Open. The Fellow will have an opportunity to use syndromic surveillance systems and conduct field surveillance to monitor all hazards during public health emergencies or scheduled large-scale events.

The Office of Preparedness and Response (OPR) and the Office of Epidemiology are housed in MCDPH's Disease Control Division. The Offices are located in the same office suite, which helps facilitate the exchange of knowledge, staff, and resources. The Fellow will have opportunity to participate in emergency preparedness and response initiatives, such as the annual Preparedness Expo, tabletop simulations, Point of Dispensing (POD) evaluations, and Incident Command Center

(ICC) activation. The primary mentor will arrange for the Fellow to be trained in FEMA's Incident Command System (ICS) and National Incident Management System (NIMS).

### **Additional Activities**

"Advantages of working at MCDPH include: diverse project topics; multi-disciplinary teams (rather than silos); collaborations with local universities and organizations; and opportunities to interact directly with community members. The Fellow may be asked to support a variety of internal or external public health initiatives. Recently, Office of Epidemiology employees have contributed to the following initiatives:

- "Take a Hike Do it Right!" campaign for preventing heat-related illness during hikes
- "The Great Arizona Mosquito Hunt" – partnership with 4-H to set mosquito traps and raise mosquito-borne disease awareness among youth
- Safe Sleep Awareness Campaign – to help prevent infant deaths by informing parents about unsafe sleep environments

The mentors are dedicated to providing their expertise and guidance to motivate and prepare the Fellow to become a competent, well-rounded public health professional. Together, the mentors and Fellow will discuss a plan for applying skills obtained in school to real-world scenarios. The Fellow will rotate through different divisions within the department, so he/she may gain insight related to: applying the fundamentals of epidemiology and biostatistics; infectious and chronic disease control; laboratory science; environmental health; community health; program management and evaluation; and health policy and management. If relevant skills are not obtained during day-to-day activities, projects, or rotations, the Fellow may request to sharpen those skills, and the mentors will strive to provide the appropriate experiences."

### **Mentors**

**Primary**                      Jessica White DrPH, MS, CPH  
Public Health Scientist

**Secondary**                    Vjollca Berisha MD, MPH  
Senior Epidemiologist