HEPATITIS A OUTBREAK

AFTER ACTION REPORT

PRODUCED BY THE
COUNTY OF SAN DIEGO
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HEPATITIS A OUTBREAK

2017 - 2018

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WHILE THIS REPORT INCLUDES COMMENTARY ON THE COMPONENTS OF THE REGIONAL RESPONSE TO THE HEPATITIS A OUTBREAK, IT IS NOT INTENDED AS A COMPREHENSIVE ANALYSIS FOR ALL RESPONDING AGENCIES. IT FOCUSES ON THE RESPONSE OF COUNTY DEPARTMENTS, WITH RECOGNITION THAT CITIES AND OTHER ENTITIES MAY CONDUCT THEIR OWN AFTER ACTION REVIEW.

Executive Summary

Detected in early March 2017, with cases traced back to November 2016, the hepatitis A virus (HAV) outbreak in San Diego County was exceptional in its scale and transmission characteristics. The unprecedented nature of the outbreak meant the County of San Diego (County) was challenged to design and implement new approaches to thwart the spread of the disease without the benefit of prior experiences from other jurisdictions. The County's response was characterized by a concentrated focus on the challenge at hand, a reliance on extensive public-private partnerships, and innovative approaches tested for the first time. While the response was effective in ending the epidemic, the County's strategy and the lessons learned are certain to influence future public health responses locally and beyond.

While hepatitis A is commonly spread person-to-person, most previous HAV outbreaks, both locally and nationally, had foodborne sources and involved the general public. The San Diego County HAV outbreak, however, was spread person-to-person via fecal-oral contact, mostly among transient and homeless and drug using populations. This forced the County to develop innovative ways to reach those at-risk, people who were less likely than the general public to visit a physician, walk into a public health clinic, or trust a public health authority.

County epidemiologists detected the outbreak and determined the at-risk population through routine surveillance in early March 2017. The County's initial response focused on marshalling available resources to deploy a multiagency campaign tailored to the local epidemic. Most County nurses were shifted from their routine duties and tasked with administering vaccinations, ultimately holding more than 2,500 vaccination events over a 10 month period. County experts and staff engaged thousands of traditional and non-traditional partners to assist in vaccination, sanitation and education efforts. County staff frequently consulted with the Centers for Disease Control and Prevention (CDC) and the California Department of Public Health (CDPH) to ensure local steps were coordinated with outside experts and based on the best information available.

One dose of the single-antigen HAV vaccine is 95 percent effective in preventing infection, so vaccination was the cornerstone of the County's approach, complemented by efforts in sanitation and education. Such measures in themselves are not novel, but the innovative ways the County employed these strategies were hallmarks of the response. For the first time, County nurses formed "foot teams" with staff from homeless service providers or law enforcement to engage and vaccinate the at-risk populations in riverbeds, canyons, ravines, parks and urban encampments. This strategy proved highly effective in vaccinating those most difficult to reach, and the County has since shared information about how to conduct foot teams with numerous jurisdictions across the U.S.

The diverse mix of partners was unique and extensive. Health systems, including hospitals and community clinics, homeless providers, substance abuse programs, faith organizations, law enforcement, city governments, professional associations and others all assisted in the HAV response. For the first time in a disease outbreak, it became necessary for the County to provide guidance to cities on how to clean and disinfect streets and sidewalks and to take specific measures to increase sanitation in the County's unincorporated area and in other affected areas outside its own jurisdiction.

San Diego HAV outbreak cases were documented throughout the county, with the largest number in the City of San Diego. City of San Diego staff met with County staff regularly prior to the Public Health Emergency declaration and throughout the critical period following, and their active and committed support to implement specific Public Health recommendations was essential in curtailing the outbreak.

The County also met with staff and leaders of other affected cities to coordinate response measures in an effort to prevent migration of the outbreak from one jurisdiction to the next.

Between March 6, 2017, when County epidemiologists first reported the increased number of cases, and January 23, 2018, when the local health emergency ended, 582 confirmed or probable outbreak-related HAV cases were reported, including 20 deaths. Contracting HAV is not usually life-threatening and the great majority of those infected with the virus fully recover. However, those affected in the San Diego HAV outbreak had high rates of hospitalization and death due to age and the presence of underlying health conditions, particularly chronic liver disease.

Despite the County's initial measures to curtail the outbreak, HAV cases continued to increase throughout the spring and summer of 2017. As cases continued to grow, the County determined additional vaccination, sanitation and education measures were needed, and on September 1, 2017, the County Public Health Officer declared a local health emergency (see Appendix A-1). This action supported the City of San Diego and other jurisdictions in their efforts to sanitize streets and sidewalks and to clean homeless encampments. The local emergency declaration also increased public awareness about the outbreak, increasing the chances that food handlers and those serving the homeless and drug users would receive vaccinations according to new local recommendations to prevent the outbreak from expanding. While cases did continue to spread primarily within the homeless and drug-using populations, the expanded sanitation and vaccination recommendations, as well as increased public awareness as to the most common methods of virus transmission, helped to reverse the trend and the County terminated the local health emergency on January 23, 2018. The County's cost of responding to this local HAV outbreak was $9.7 million through January 2018 and approximately $12.5 million as of the end of April 2018.

Sporadic cases associated with the San Diego HAV outbreak are still occurring, but at a greatly reduced number, and the County and its partners continue to combat the spread of the disease through vaccination, sanitation, and education. During the course of the outbreak, the County developed a model that outside entities have recognized and concurred with, including the CDC (see Appendix B-1). The unprecedented nature of the outbreak meant the County was learning as it developed creative strategies to respond, and those strategies were constantly evolving in order to provide the most effective means to combat the illness.

One can look at the response and identify areas of success as well as areas for improvement. The early detection of the outbreak, the medical response coordination with CDC and CDPH and the immediate engagement of innovative foot teams to vaccinate the vulnerable population were noteworthy successes and have earned high praise from experts around the country. Expanding the vaccination teams through short-term contracts and utilizing nurses from the Medical Reserve Corps to augment the field teams had a significant positive impact on vaccination results. However, it is equally important to note the need for improvement in coordination and communication amongst the impacted agencies and community partners and clarification of roles and responsibilities during a public health outbreak that crosses jurisdictions. A more formal incident management structure is needed for future outbreaks. A policy group that mirrors the successful model used by the Office of Emergency Services which includes executive leadership from impacted jurisdictions that convenes regularly to coordinate the collective response is needed.

Following the Executive Summary of this report is the Response Strategy which offers a review of the actions, methods and strategies used to reverse the spread of HAV. The report wraps up with a Recommendations section and an Action Plan to ensure follow-up activities are completed in a timely

manner. This report addresses actions taken during the HAV outbreak and does not directly relate to the broader issues of homelessness or illegal drug use or poverty; however, those issues have consequences beyond the obvious impact of affected individuals, families and the larger community, as witnessed by this HAV event. These issues are challenging many places across the U.S., and while the San Diego HAV outbreak was unprecedented, a number of other jurisdictions have now experienced HAV outbreaks among homeless and drug using populations. Notably, an unrelated but nearly contemporaneous outbreak in Detroit, Michigan, and surrounding areas had recorded 821 cases and 25 deaths as of April 25, 2018.[1]

Locally, the County is working with the Regional Task Force on the Homeless, the San Diego Housing Commission, other public housing agencies, cities, substance abuse treatment providers and the broader community to improve services and systems for people struggling with homelessness, mental health issues, addiction and poverty. Significant County resources have increasingly been dedicated to this effort; examples include Project One for All, which aims to provide housing and wraparound services for thousands of people facing homelessness and mental illness, and implementation of the Drug Medi-Cal Organized Delivery system to improve and expand access to substance abuse services. While we cannot count on these efforts to prevent a future outbreak, they will help by providing support to individuals to achieve stability and greater self-sufficiency. They also follow the County's vision of achieving a region where every San Diegan and the entire community are healthy, safe, and thriving.

[1] Michigan Hepatitis A Outbreak webpage: http://www.michigan.gov/mdhhs/0,5885,7-339-71550_2955_2976_82305_82310-447907--,00.html

Response Strategy

In a typical communicable disease outbreak in San Diego County and most other public health jurisdictions in the United States, the response strategy and process of engaging those who should take action for outbreak control generally follow a standard approach.[2] Managing communicable diseases involves surveillance, case and contact investigations, and laboratory testing. An outbreak is generally detected through vigilant surveillance of communicable disease reports, with reliance upon laboratory testing to confirm diagnoses. Typically, County staff members conduct interviews and outreach in response to reported cases of communicable diseases. The affected individuals may then be referred to the appropriate medical providers for treatment and vaccination (including post-exposure vaccination as needed). The County uses communication channels including social media, traditional media and outreach such as posters and fliers to more broadly inform the general public and special populations (see Appendix C). If County staff identifies individuals who may have been exposed to a particularly serious or rare communicable disease, they may arrange to visit them at a known address to engage them appropriately in next steps. In some instances, if a communicable disease has been detected at a particular site—for example, a specific school or restaurant—County staff will work with that site to coordinate a response.[3]

HAV can be spread two ways: person-to-person via the fecal-oral route or through exposure to contaminated food or water. Person-to-person transmission via the fecal-oral route occurs when an uninfected person takes in the virus by mouth due to contact with objects (such as drug paraphernalia or cigarettes), food, or drinks that have been contaminated with feces from an infected person. Most HAV infections in the United States result primarily from travel to another country where HAV transmission is common, close personal contact with infected persons, close contact among men who have sex with men, and behaviors associated with injection drug use (see Appendix D-1, CDC Hepatitis A General Information, Publication No. 21-1072).

In the years between the introduction of the HAV vaccine in 1995 and the San Diego HAV outbreak discussed in this report, three HAV outbreaks occurred in San Diego County in 2008, 2013, and 2014. The 2008 and 2013 outbreaks were associated with multistate outbreaks linked to food sources and included an average of 20 local cases for each incident. The 2014 outbreak was a cluster of four cases spread via person-to-person contact. Standard processes for investigating and responding to these three previous outbreaks were generally followed, and duration of these outbreaks ranged from approximately two weeks to three months. The current San Diego HAV outbreak was determined to be spread person-to-person via the fecal-oral route. No common sources of contaminated food, beverage or drugs were identified as having contributed to the outbreak.

The current San Diego HAV outbreak was different from past HAV outbreaks locally and necessitated adjustments to standard approaches. This can be primarily attributed to the populations most at risk of infection and their other associated risk factors, coupled with the long incubation period of the disease and ability to transmit the disease for up to two weeks prior to and one week after symptom onset. The

[2] Heymann, DL et al. Control of Communicable Disease Manual, 18th edition p. xxviii, American Public Health Association. "The response to an outbreak report must be management of those infected, and containment of the outbreak by interrupting transmission of the infectious agent. Steps in an outbreak response are systematic and based on epidemiological evidence despite the fact that public and political reaction, urgency and the local situation may make this difficult."
[3] Centers for Disease Control and Prevention, Principles of Epidemiology in Public Health Practice, Third Edition An Introduction to Applied Epidemiology and Biostatistics, Lesson 6, Section 2, September 2016, https://www.cdc.gov/ophss/csels/dsepd/ss1978/lesson6/section2.html

time between exposure to HAV and the development of symptoms is between 15 and 50 days.

The majority of the HAV cases in the outbreak were, and continue to be, among people who are homeless and/or illicit drug users. These populations may lack regular access to sanitary living conditions; personal hygiene and a sanitary living environment, especially among those who live in close quarters to each other, are key to preventing and stopping the person-to-person transmission of HAV. These populations may be less likely to be vaccinated against communicable diseases such as HAV to begin with, making the task of ensuring adequate vaccinations are available and accessible a significant one.[4] For most adults, contracting HAV is not life-threatening and most fully recover, but if an adult has other co-morbidities such as liver disease, the risk of grave impacts including hospitalization and death are higher. There is no specific treatment for HAV once contracted, so preventing infection before it strikes is especially important for populations like those who are homeless and/or illicit drug users, who may have such co-morbidities.

Moreover, the single-antigen HAV vaccine is a two-dose series, with the second dose to be given no sooner than six months after the first dose. According to CDC, the first dose may be up to 95% effective, with the second dose nearly 100% effective. Ensuring those at-risk during the outbreak receive not only one dose but a follow-up dose of vaccine presented challenges. Members of the at-risk populations are often transient and may experience barriers in trusting and consistently engaging with outreach and services offered by government or healthcare organizations.

These risk factors were compounded by HAV's long incubation period of 15 to 50 days. Persons with HAV are infectious to others from two weeks before through one week after the onset of symptoms, so identifying and contacting those who were close contacts of an infected person in order to provide preventive vaccination is key to an HAV response strategy (see Appendix D-3 for CDPH Hepatitis A Public Health Investigation Guidance). However, it is difficult to determine the precise mechanism of how any one individual was infected even under the best of conditions; a dietary, social and environmental history must be obtained in detail, and few people can recall all of their activities over that time period. Again, due to the often transient nature of the homeless and/or illicit drug using populations, as well as challenges in building trust with and engaging them in outreach and services often offered by government and/or healthcare organizations, typical strategies for making these connections and offering services to prevent the spread of disease needed to be retooled.

Together these factors shaped the nature of the response, necessitating a strategy composed of three primary components: vaccination, sanitation, and education. As outlined in the Sequence of Events section of this report and described below, the County partnered with an extensive network of state, federal, and local stakeholders to mobilize actions in these three areas. This collaborative approach was instrumental in deploying an effective, sustained response.

Vaccination

The County vaccination strategy centered upon assessing the at-risk populations and making vaccines as accessible as possible to these individuals.

[4] (2012) Vaccination Programs among Urban Homeless Populations: A Literature Review. J Vaccines Vaccin 3:156. doi:10.4172/2157-7560.1000156, https://www.omicsonline.org/vaccination-programs-among-urban-homeless-populations-a-literature-review-2157-7560.1000156.php?aid=9427.

Local vaccination recommendations were developed to complement federal recommendations

Since the introduction of an effective HAV vaccine in 1995 and subsequent routine childhood recommendations to receive it, most HAV cases in the United States have occurred in adults. Cases in the United States are most often associated with international travel, consumption of food contaminated by HAV, or person-to-person transmission in communities of adults with risk factors for infection.

Though the CDC has recommended that specific adult subgroups with risk factors for infection receive HAV vaccine, vaccination rates in these groups are typically low.[5] Furthermore, although those who use illicit drugs are identified by CDC as a subgroup that is recommended to receive HAV vaccination, homeless individuals are not.

The initial California Health Alert Network (CAHAN) from the County to the medical community about the San Diego HAV outbreak contained recommendations to augment the basic CDC recommendations to support detection of potential HAV cases as well as vaccination of at-risk populations (see Appendix E-1 for the March 10, 2017, communication "Hepatitis A Virus Outbreak Associated with Homelessness, Drug Use in San Diego County"). CAHAN communications are the County's day-to-day mechanism for elevating public health information and recommendations to the medical community. More than 3,060 individuals in San Diego County are registered with CAHAN, including physicians, nurses, assisted living facility staff, community clinics and hospital systems, managed care organizations, and public safety personnel (i.e., police/fire, tribal and local government members).

The San Diego CAHAN recommended that the medical community consider HAV when symptoms were present; that confirmed and suspected cases be reported to the County Epidemiology Program while cases were still at the medical facilities; post exposure prophylaxis (i.e., vaccination after being potentially exposed to HAV to prevent becoming infected) be provided to contacts of confirmed cases; and that the HAV vaccine be given to any homeless individuals and illicit drug users who were not immunized. The County Public Health Officer made the recommendation to provide vaccinations to homeless individuals with the support of CDC subject matter experts.

As HAV cases climbed through the spring and the summer of 2017, the County Public Health Officer added additional local vaccination recommendations. These recommendations were made to protect people at increased risk of exposure to the disease and also to prevent it from spreading to other populations.

CDC Vaccination Recommendations	Local Vaccination Recommendations
• All children at age one year • Family and caregivers of adoptees from countries where HAV is common • Men who have sexual encounters with other men • Users of recreational drugs, whether injected or not • People with chronic or long-term liver disease, including hepatitis B or hepatitis C • People with clotting-factor disorders • People with direct contact with others who have HAV • Any person wishing to obtain immunity (protection) • Travelers to countries where HAV is common	CDC Vaccination Recommendations, plus: • March 10, 2017: Homeless individuals • May 4, 2017: Homeless service providers and volunteers • May 4, 2017: Public safety workers who work with at-risk people • May 4, 2017: Behavioral health providers who work with the at-risk populations • May 31, 2017: Selected healthcare workers • July 13, 2017: Sanitation and janitorial workers • August 16, 2017: Food handlers

[5] Results from the CDC National Health Interview Survey in 2016 show that HAV vaccination coverage (≥2 doses) was 9.5 % for adults ≥19 years, 13.4% for adults 19-49 years, and 5.4% for adults ≥50 years, similar to the estimates for 2015.

A new model was created to estimate the HAV epidemic trajectory and impact of vaccinations

In order to optimize intervention planning, it was important to estimate and model the potential magnitude and duration of the HAV epidemic, as well as the necessary vaccination response to contain the outbreak.

To develop estimates of the size of the at-risk population of homeless and drug using individuals, the County used multiple sources. These included local population data derived from the U.S. Census Bureau American Community Survey (ACS), estimates of substance use rates from the Substance Abuse and Mental Health Services Administration (SAMHSA) and the National Health and Nutrition Examination Survey (NHANES).

Local data sources were also useful. The Health and Human Services Agency (HHSA) identified approximately 30,261 individuals documented or being served in San Diego County. This number was the sum of San Diego County Regional Task Force on Homelessness (RTFH) Systems of Care assessment (24,476) and Behavioral Health Services data for clients who were methamphetamine (meth) users only, intravenous (IV) drug users only, and IV and meth users (5,785). It was acknowledged that this latter number was underestimated, and does not represent the full number of the San Diego at-risk population who are illicit drug users, or the number of people that need to be vaccinated.

Herd immunity, or the percent of the-at-risk population that would need to be vaccinated to contain the outbreak, was calculated at 70% and at 80%. However, existing vaccination rates were unknown, and there was very little scientific literature on HAV outbreaks among the at-risk populations.

To address this knowledge gap and support an effective response, the County HHSA worked with University of California San Diego (UCSD) Division of Infectious Diseases and Global Public Health to estimate the potential magnitude and duration of the HAV epidemic, and potential impact of vaccination efforts. A dynamic epidemic model of HAV transmission among homeless and/or illicit drug users was developed using the data sources previously discussed, weekly HAV case counts in San Diego County, and weekly vaccination numbers by provider type. Uncertainty in the at-risk population estimates contributed significantly to the uncertainty in the developed model. However, the model correctly projected that the epidemic could continue until early 2018, and also that it could be controlled through comprehensive vaccination efforts targeting a high proportion (likely >80%) of the most at risk population. As the scope of the outbreak increased, a second model was developed to include expanded definitions of high-risk groups and to include occupational risk groups and potential risk groups. Subsequent work is assessing the likely impact of the vaccination efforts in terms of infections averted and costs saved.

The County worked with federal and state partners to secure HAV vaccine supply

Critical to the implementation of vaccination efforts was ensuring adequate supply of HAV vaccine. Two manufacturers produce the HAV vaccine, GlaxoSmithKline (GSK) and Merck & Co., Inc., with approximately 1.5 million doses of vaccine made available each year.

The County obtains federally funded vaccines through CDPH. Section 317 of the federal Public Health Service Act makes available vaccines to local government health departments to fill critical public health needs, such as vaccines for uninsured adults or, with state approval, for any individual in an at-risk

population during an outbreak.[6] The County requested and received 43,870 doses of the 317-funded vaccine throughout the outbreak for immunizing the priority populations. The County also received 7,500 doses of state-funded vaccine from CDPH.

As the outbreak continued, and public awareness meant more people in low-risk categories were requesting the vaccine, the County took measures to obtain additional doses of vaccine to ensure sufficient supply would be available for the most at-risk populations. As the outbreak continued locally, the vaccine supply was reported as "strained" due to only one manufacturer having vaccine available, coupled with national and international demand for the vaccine. To ensure an adequate local supply of the vaccine was available for at-risk populations, the County applied for and was approved by GSK to receive the vaccine directly at a public discount. The County subsequently procured 41,250 doses of private vaccine, ensuring an adequate supply.

Reaching at-risk populations to provide vaccines required partnerships and field work

Containing the San Diego HAV outbreak posed unique challenges, and reaching the at-risk population required new approaches. Initially, strategies utilized for HAV vaccination included partnering with homeless service providers, faith-based organizations, substance use providers, municipalities, medical partners, and many others to offer vaccines at different service delivery sites.

It was quickly determined by the County's nurses, who were delivering vaccines at several sites, as well as community partners collaborating on these efforts, that a portion of at-risk homeless population was not accessing services where the vaccines were being offered. These individuals were observed to remain in more difficult-to-access areas, such as encampments, which can be challenging to identify and gain safe entry to, and otherwise are generally not naturally well-suited for setting up clinical service delivery such as vaccines.

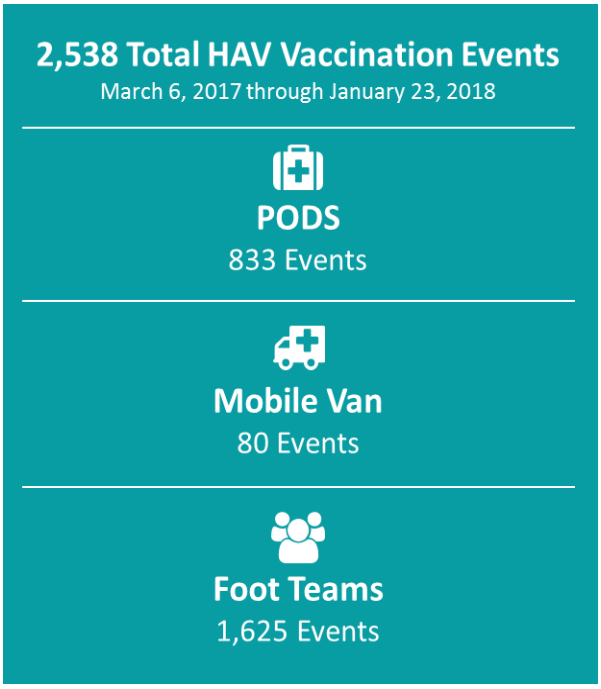
The County and its partners determined that traditional strategies would need to be augmented with other approaches to effectively reach at-risk populations. Persons at highest risk faced significant barriers to obtaining vaccine through more traditional clinical venues, including timely access to information, transportation, behavioral health issues, and lack of trust in the medical system. New, tailored approaches that built on community partnerships were implemented to help overcome these barriers, and to reach people where they were.

Starting in March 2017 and continuing throughout January 2018, the County response focused on holding different types of field vaccination events to reach the at-risk population. County nurses helped lead the vaccination efforts, working closely with the County Epidemiology Program to identify case locations and contacts, prioritize vaccination efforts, and monitor the success of the vaccinations in containing the disease.

Vaccination events were produced using three primary models: Points of Dispensing (PODs) where nurses vaccinate at-risk people on-site, conducting a mass vaccination clinic at locations such as a homeless services provider; on-site immunizations via mobile vans; and "foot teams," where nurses joined public safety officers and social service providers to find homeless individuals and administer vaccines in the field.

[6] Centers for Disease Control and Prevention, Questions Answered on Vaccines Purchased with 317 Funds, July 2013, https://www.cdc.gov/vaccines/imz-managers/guides-pubs/qa-317-funds.html

The foot teams started as a pilot in early May 2017 and were quickly expanded after proving their effectiveness in reaching those hardest to access. The County collaborated with numerous partners to form the foot teams, including Homeless Outreach Workers from Family Health Centers of San Diego and Episcopal Community Services; Homeless Outreach Teams from San Diego, Oceanside, Carlsbad, El Cajon and Chula Vista police departments; Homeless Outreach Teams from the San Diego County Sheriff's Department; park rangers; public works staff; and housing agency staff. Many at-risk individuals contacted by the foot teams were not easily convinced to receive the vaccine; often several interactions with an individual took place before he or she agreed to be vaccinated. Having representatives from organizations that had already established trust with these individuals proved critical to build rapport and understanding to enable service delivery.



Vaccination locations were identified through a combination of data analysis, and County staff and community partner input

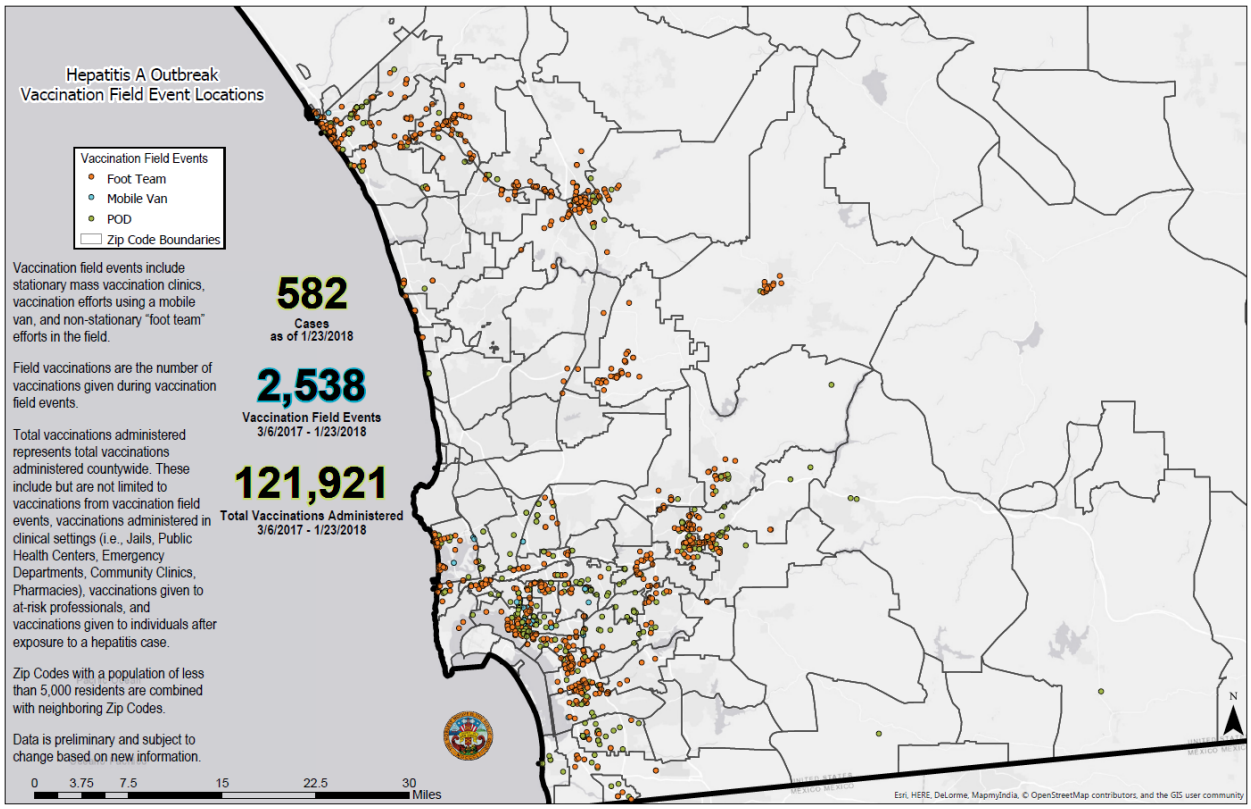
Locations for field vaccination events included homeless services providers, substance abuse treatment providers, faith-based organizations that serve the homeless, single-room occupancy hotels, parks, County and City libraries, mental health programs that serve the homeless, sober living homes and even businesses frequented by people who are homeless.

To determine locations for field vaccinations, the County used a combination of data and subject matter expert input from County staff and community partners. The goal was to produce field vaccination events in areas frequented by individuals most at risk for HAV. Geographic Information Systems (GIS) maps were produced by County staff that showed locations where homeless individuals concentrated in the 2017 Point-in-Time Count, an annual event through the Regional Task Force on the Homeless that sends teams to map and count homeless individuals.

The County then worked with partners, including cities and the Regional Task Force on the Homeless, to identify additional locations where homeless and other at-risk individuals may frequent. For example:

- County Department of Environmental Health (DEH) staff outreached to partners including faith-based organizations to identify and connect with entities with food-serving permits who provide meals for homeless people.
- The County Probation Department and HHSA coordinated to ensure high-risk individuals on probation received vaccines at vaccination events at public health clinics.
- In an effort to reach homeless individuals who receive General Relief, a County cash assistance benefit for eligible county residents who have no other means of support, the County coordinated vaccination events outside Family Resource Centers, which issue the benefit.

- The County worked with the City of San Diego, Alpha Project, and Veteran's Village of San Diego to support outbreak response goals and protocols at the City's three new tent facilities. Starting in December 2017, the facilities implemented processes that included checking the vaccination status of residents with the assistance of the County, providing vaccines on site and providing transportation for individuals to the County's infection control residence for people who identified as potentially being infectious.
- HAV vaccines were provided at County clinics, including its six Public Health Centers, its Sexually Transmitted Disease (STD) clinics, its Tuberculosis Clinic, and at the County Psychiatric Hospital, in an effort to reach at-risk populations.



Collaboration with local health care providers was key in vaccinating at-risk populations

Throughout the outbreak, the County worked closely with health care providers to broadly support vaccination efforts in the region. Outreach included:

- Alerts and communications through the CAHAN San Diego (see Appendix E);
- Working with Emergency Departments, behavioral health facilities, and the medical community at large on offering vaccine routinely to at-risk groups;
- Close coordination with CDPH, to provide information for California Health Alerts issued by the state;
- Presentations to the San Diego County Medical Society, the Hospital Association of San Diego and Imperial Counties board, and medical stakeholders throughout the county;
- Establishing a provider resource page on the County website dedicated to the San Diego HAV

outbreak; and

- Official letters from the County Public Health Officer with recommendations, requests, and directions (see Appendix F).

The County also asked local providers to leverage their own health records and the San Diego Immunization Registry (SDIR) to determine the HAV vaccination status of their at-risk patients, and to proactively contact those who needed to be vaccinated. The SDIR is a collaborative effort of the County and other public and private health care providers, schools, and organizations. The Registry provides an electronic record of all immunizations given to an individual by participating providers in both the public and private sectors. By doing so, SDIR can be leveraged as a tool to reduce unnecessary immunizations and decrease vaccine preventable diseases by identifying shots that are needed.

The County worked especially closely with health care providers where the at-risk populations were most likely to receive medical care: emergency departments, Federally Qualified Health Centers, and substance use disorder and mental health providers serving at-risk populations. Starting in April 2017, the County initiated memoranda of agreement (MOAs) with hospitals to facilitate the administration of vaccine to at-risk patients who received care in emergency departments. These MOAs for storing and administering vaccine allowed the County to provide hospitals with doses of federally-funded 317 and State-purchased vaccine, as well as privately purchased vaccine. Nineteen hospitals and emergency departments entered into MOAs with the County and engaged their own staff in administering the HAV vaccine. The County also entered into MOAs with 42 outpatient clinics and pharmacies as well as two fire/Emergency Medical Services agencies to facilitate the administration of vaccine to at-risk patients.

VACCINATIONS

Total HAV vaccinations administered in San Diego County from (March 6, 2017 - January 23, 2018):

121,921

Total At-Risk Population vaccinated (estimated):

103,000

The County further assisted vaccination efforts by offering guidance to local emergency medical services agencies on requirements to enable paramedic teams to provide the vaccine to at risk-individuals, and coordinating authorization from the State Emergency Medical Services Authority for a time-limited Local Optional Scope of Practice to enable paramedics to deliver vaccinations in field events. Typically only nurses and doctors are allowed to give the vaccine.

The vaccination partnerships with health care providers often necessitated that the County provide administrative and technical support, including site visits, to help providers comply with specific requirements for storing and administering the vaccine. This was especially important for providers and settings in which vaccines were not routinely administered, such as emergency departments. Before providing vaccines to these providers, agreements, evidence of proper storage and temperature monitoring, and training were required and then weekly logs were needed afterwards.

The collaborative efforts with local health care partners were highly successful, with more than 70,000 doses administered through the non-County healthcare system. A total of 121,921 vaccines were administered countywide as of January 23, 2018.

Nurses were critical to the vaccination effort

County Public Health Nurses work in a variety of settings; for example, they provide care and immunizations at Public Health Clinics, visit pregnant women at home to provide neonatal education and care, perform outreach for Aging & Independence Services clients, and case manage foster care children and children with severe disabilities. During the San Diego HAV outbreak, the majority of County Public Health Nurses were engaged in field and clinic HAV vaccinations, with only staff deemed critical, such as foster care Public Health Nurses, remaining in their routine assignments. The County Public Health Nurses stepped outside their routines and exercised creativity and compassion to reach the at-risk population. Throughout the outbreak, the number of County Public Health Nurses assigned to respond to the HAV outbreak ranged from 100 to 132. The County also employed seven nurses from its "Intermittent Worker" list. Existing processes for training County Public Health Nurses in vaccination practices helped support a workforce knowledgeable about vaccines as well as practices used in large-scale outbreaks. Annually, all nurses complete CDPH online vaccination modules focused on vaccine management and administration. County nurses attend annual immunization updates provided by the County Immunization Program staff to ensure new vaccine protocols and recommendations are communicated and followed. Nurses also receive annual training on how to hold PODs in the event of a large-scale outbreak.

In addition, County Public Health Services maintains a surge nursing protocol to respond to a need to engage nurses beyond County staff, as well as training guidelines for onboarding temporary staff. Because nurses were so critical to the vaccination effort, the County implemented its surge protocol. In addition to the existing training guidelines, the County developed specialized training for contract and other surge nurses to respond to the unique emergency. The County activated standing contracts and initiated new contracts to bring on additional nurses − with 121 contract nurses at the height of the response. Additionally, 30 Medical Reserve Corps (MRC) nurses were activated as part of the local emergency. The MRC nurses are licensed nurses who register and agree to be contacted in local emergencies in case they are able to assist in the response.

Focused vaccination efforts were implemented in County jails

The San Diego County Sheriff's Department provides detention services at seven jails. In one year, more than 51,000 different people are booked, and the jail system has an average daily population of 5,700. More than 70 percent of men and women booked into jail report using illicit substances, according to recent San Diego Association of Governments data, and a significant number of homeless individuals cycle through the County jails on a daily basis. With such a high proportion of at-risk individuals in the jail population, jail vaccinations were a strategy to prevent HAV outbreaks in jail and to improve immunity in the community.

Throughout the outbreak, there were confirmed HAV cases associated with the jails, meaning that the affected person spent some time in jail during a period when they could have contracted the virus or exposed someone to it. Most of these cases had some type of exposure in the community or were already in an infectious stage when entering the jail system. Jail-associated cases include index cases, cases where an inmate was exposed to HAV in the community prior to booking into jail and was then diagnosed with HAV in jail; contact cases, cases where an inmate was exposed to HAV from another inmate with infectious HAV and diagnosed while still in the jail; and out of custody cases, cases where an inmate was incarcerated in the jail during incubation period and was diagnosed with HAV after being released to the community. Twenty HAV cases were diagnosed in jail, including 15 index cases and 5 cases contracted from infected people in jail. The County also recorded out-of-custody cases diagnosed in the community. In these out-of-custody cases, the likelihood the person was infected in jail was small compared to the

likelihood the person was exposed in the community, particularly in cases in which a person spent only hours in a jail booking area at some point during the disease's 15-to-50 day incubation period.

Jail Vaccinations

County Jail Vaccinations provided through January 23, 2018:

8,335

Beginning in May 2017, Sheriff's Detention nurses began vaccinating high-risk inmates at intake at the Las Colinas booking facilities, with additional Sheriff's Department nurses normally assigned to administration assigned to assist. HAV vaccines were voluntary in the jail, just as they were in the community; therefore, nurses, Sheriff's Department correctional counselors, mental health clinicians and deputies played an important role educating inmates and encouraging them to get vaccinated. Beginning July 3, 2017, additional nurses from County Public Health Services were deployed to offer daily vaccinations to inmates in Central Jail booking, which books inmates who may serve custody in any of five jails.

The Sheriff's Department also mandated that all inmate workers who handle food be vaccinated. Starting in October 2017, this effort was expanded to offer vaccinations to all inmates in housing units at the Sheriff's seven facilities. Deputies accompanied the nurses, and the team talked to the inmates about preventing HAV infection; this team approach played a significant role in increasing the number of inmates electing to get vaccinated. Jail-focused education and outreach supported HAV awareness and vaccinations in the jails. Each morning, detention staff used the public address system to remind the jail populations about the importance of being vaccinated and frequent handwashing. Posters and videos in the jails supported the messages.

Focused vaccination efforts were implemented for food handlers

The San Diego HAV outbreak was determined to be transmitted person-to-person via the fecal-oral route and there was no specific common food or water source that contributed to the outbreak. However, there was always the possibility that an infectious person in a sensitive occupation, such as a food handler, day care worker, or healthcare provider, could transmit HAV to others. Starting in May 2017 and continuing regularly throughout the outbreak, the County DEH provided information and guidance materials to their more than 15,800 permitted facilities throughout the region regarding the importance of food handler HAV vaccination and disinfection for HAV. In addition to general information on the outbreak, guidance documents on HAV disinfection, HAV Vaccination Information for Food handlers and HAV Guidance for Food Facilities were developed, shared by email and posted on the County website (see Appendices C-1 to C-6). The HAV vaccination information for food handlers document and HAV disinfection guidance document were also translated into Spanish, Tagalog, Arabic, and Vietnamese, and were posted on the County website. During the same timeframe, County DEH food inspectors additionally shared and discussed the San Diego HAV outbreak information, guidance documents, and encouraged HAV vaccination of food handlers during more than 13,250 food inspections.

Measures were taken to encourage HAV vaccination of food handlers. In August 2017, the County Public Health Officer added the local recommendation for all food handlers to be vaccinated (see Appendix F-5) and communicated in a September letter to the restaurant industry that this vaccination was "strongly recommended" for all local food handlers (see Appendix F-14). The California Restaurant Association and the San Diego Food and Beverage Association mobilized to communicate this information out to their associations, totaling nearly 12,000 members. Additionally, the County, the California Restaurant Association, the San Diego Food and Beverage Association, and the San Diego Hotel-Motel Association

hosted food handler vaccination events in September and October 2017, targeting food handlers in geographic areas where case numbers were high.

The County also worked with the food industry to get the word out about the County Public Health Center locations and operating hours and other recommended means of obtaining vaccination, such as working with an employer or private medical provider. Also in September 2017, the County, in partnership with the California Restaurant Association and the San Diego County Pharmacists Association, piloted food handler vaccination clinics at local pharmacies.

These combined efforts resulted in vaccinating nearly 3,900 food handlers throughout the San Diego region.

Focused vaccination efforts were implemented for at-risk County employees

In response to the local recommendation that at-risk employees should be vaccinated, County Public Health Services worked with the County Department of Human Resources to implement the recommendation for affected County employees.

The County Department of Human Resources' Medical Standards Unit assembled an emergency response team to coordinate education and administration of vaccinations to at-risk employees through its occupational health program. "At-risk employees" were determined to be food handlers, janitorial workers and occupations that have regular interactions with or clean up after at-risk people, such as police officers, firefighters, paramedics, homeless service providers, and healthcare professionals.

Activities included:

- Providing resources to County departments to educate them about HAV, teaching prevention methods, and assisting them in identifying at-risk employees with the potential of being exposed in the course of their job;
- Scheduling clinics at County work locations;
- Sending correspondence to identified at-risk employees to offer the option to go to the County's occupational health medical provider for the vaccine. Many employees elected to get vaccinated through their primary health care providers; and
- Tracking all employee participation for reporting purposes and to contact staff to receive the second dose.

A total of 4,505 at-risk San Diego County employees received the first dose of the two-dose HAV vaccine and 480 at-risk employees received the second dose. The County Department of Human Resources coordinated 24 onsite events at County locations. The County Department of Human Resources will continue to coordinate HAV vaccination as individuals become due for their second dose at multiple on-sites Countywide through June 2018 and at the County's occupational health provider.

The HAV outbreak marked the first time the Public Health Officer issued a local vaccination recommendation specifically for public sector public safety workers, and the County also supported affected cities in their efforts to vaccinate employees.

Focused vaccination efforts were implemented for men who have sex with men

CDC recommendations identify men who have sex with men (MSM) as being at risk for HAV infection and a population that should receive HAV vaccination. Due to disproportionate numbers of HAV cases among MSM in Michigan and other metropolitan cities, as well as in Europe, the County proactively targeted vaccination and outreach efforts in order to protect this vulnerable population. [7, 8, 9]

The County partnered with the San Diego LGBT Community Center (the Center) to conduct and promote four vaccination events for MSM in October and November 2017. Three more vaccination events were conducted in the Hillcrest neighborhood in December 2017 at Urban Mo's, the Hillcrest Farmers Market, and the Hillcrest Rite Aid.

In addition, the County provided educational information about HAV and promoted vaccination events through several channels to reach the MSM population. Social media messaging was developed and distributed through ads aimed at the target population. Posters and social media messaging materials were also sent to several organizations that interact with the MSM population, including HIV prevention contractors, LGBT centers at local colleges and universities, and providers who conduct HIV risk reduction services and testing. These organizations then posted these materials on their respective social media and distributed them at their sites.

The County also reached out to medical providers that serve the MSM population, encouraging providers to vaccinate MSM in the County's monthly STD report and presenting about the HAV risk among MSM to provider organizations such as the HIV Consumer Committee, the Getting to Zero medical advisory board, and the San Diego Immunization Coalition.

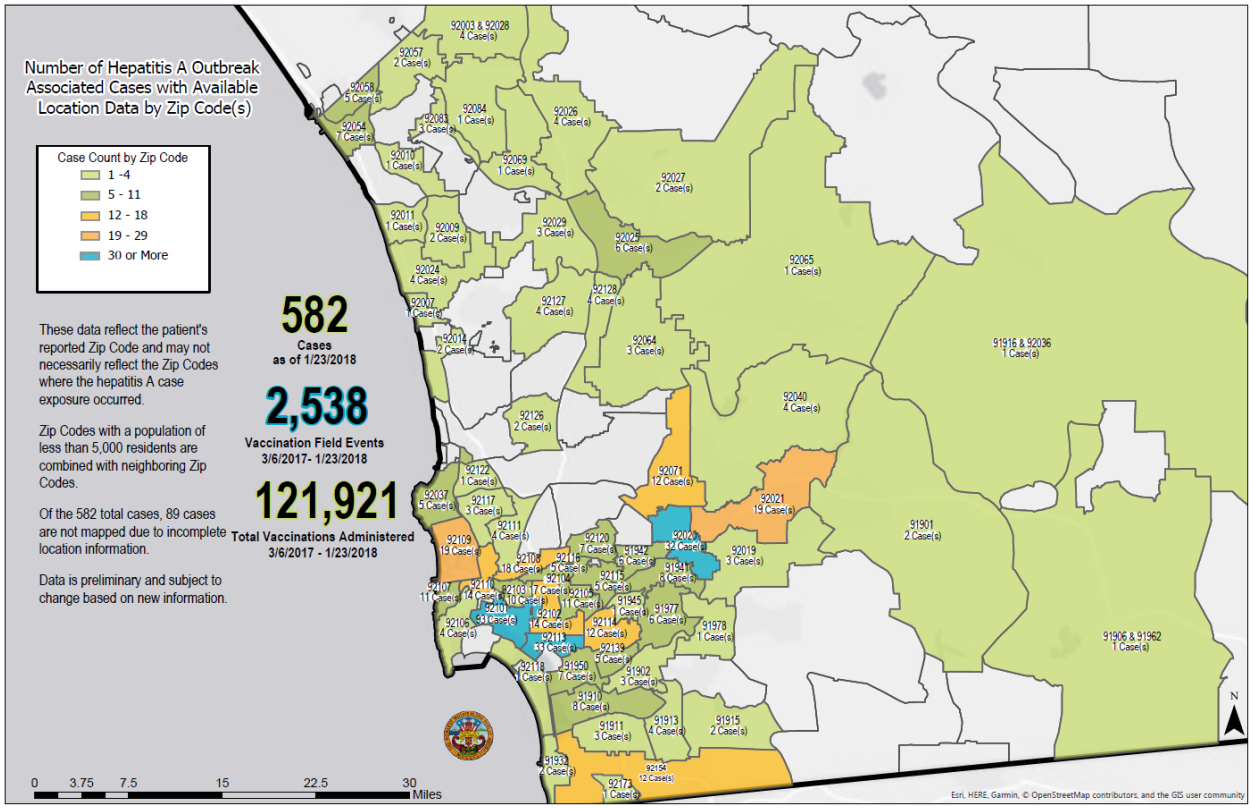
Data and technology supported vaccination efforts

The data management for the current HAV outbreak had unique strengths and challenges reflecting the nature of this outbreak. As noted previously, health care providers were encouraged to use the San Diego Immunization Registry (SDIR) to record HAV vaccinations given. Nurses giving vaccine during field events were able to look up client immunization records in SDIR with their smart phones prior to administering vaccine. SDIR staff members were also critical partners in the jail vaccinations by matching inmate lists with SDIR records, to assist public health nurses in identifying those in greatest need of vaccination. The SDIR was powerful for tracking immunizations, but it was limited in capturing some of the ancillary information related to the outbreak, such as risk category and type of vaccination event.

To facilitate data management and quality assurance, the County's Constituent Relationship Management system was customized to develop an Outbreak Response Management System (ORMS). ORMS went live in October 2017 and was designed to help manage field event vaccination efforts associated with the outbreak. It includes tools to schedule and staff events with community partners, collect contact information for staff and partners, and reporting tools for vaccinations and risk status of those vaccinated. This functionality extends the capacity of County Public Health Services to manage vaccine-preventable outbreaks and complements the SDIR and other systems.

[7] France reports nearly 800 hepatitis A cases in first five months of 2017. Outbreak News Today; June 30, 2017: http://outbreaknewstoday.com/france-reports-nearly-800-hepatitis-cases-first-five-months-2017/
[8] Michigan Hepatitis A Outbreak webpage: http://www.michigan.gov/mdhhs/0,5885,7-339-71550_2955_2976_82305_82310-447907--,00.html
[9] NYC DOHMH Health Alert: Increase in Cases of Hepatitis A among Men Who Have Sex with Men; September 25, 2017: https://www1.nyc.gov/assets/doh/downloads/pdf/han/alert/alert34-hepatitis-a-among-men.pdf

Geographic Information System (GIS) mapping is another technology tool that was instrumental for data visualization to support vaccination efforts. County GIS staff created maps to help County decision makers visualize, analyze, and interpret data to understand relationships, patterns, and trends.



County Public Health Laboratory capacity was key in supporting the overall response

Throughout the San Diego HAV outbreak, the County Public Health Laboratory worked closely with the local medical community, the County Epidemiology Program, the County DEH, CDPH and CDC laboratories to support an effective response.

In order to manage the emerging outbreak, it was important that cases identified in the community be confirmed, and a system of linking the cases be developed. In partnership with CDC Viral Hepatitis Laboratory, the County Public Health Laboratory began to collect samples from community laboratories that were positive for HAV by serology testing. In April 2017, the County had the specimens tested at CDC to confirm the presence of HAV and to perform genetic sequencing (often called “fingerprinting”) to determine if cases were related to the outbreak.

At the same time, the County made the determination that local resources needed to be expanded and began the process of purchasing equipment to perform sequencing and acquiring the knowledge, skills and materials to perform detection and confirmation of HAV in patient samples. Between April and August 2017, the County Public Health Laboratory and CDC exchanged methods and techniques. Once the necessary equipment arrived, staff began validating the methods to ensure accuracy and began the confirmation testing locally, in October 2017. At the same time, the CDPH Viral and Rickettsial Disease Laboratory (VDRL) completed their process validation.

During October 2017, County Public Health Laboratory staff traveled to CDC to learn the sequencing process. Over the next two months, sequencing of HAV specimens was performed in parallel at the County Public Health Laboratory and CDPH VDRL to ensure consistent and accurate reporting. Since November of 2017, the County Public Health Laboratory has continued to build its capacity and expertise and now has the ability to detect and sequence HAV, as well as hepatitis B and C viruses. As of January 4, 2018, the Public Health Laboratory was fully capable of conducting polymerase chain reaction (PCR) and genotyping for HAV specimens. Since acquiring this equipment, the lab turnaround time has decreased from four to six weeks to one to two weeks. This decrease in turnaround time allowed staff to link cases in an efficient manner, which improved the outbreak response. In addition, the County is in process to validate sequencing methods for a variety of disease agents that can cause outbreaks, including *Salmonella*, *E. coli*, *Listeria*, *Campylobacter* and *Shigella*. Sequencing is a powerful tool that will help investigators quickly determine the relatedness of cases during an outbreak.

Sanitation

The second element of the County response strategy, sanitation, addressed personal hygiene and a clean environment. HAV can live on surfaces for months, and in countries with poor sanitation and low vaccination rates, HAV outbreaks are much more common than in the United States. HAV can spread if a person has contact with another person or an object or surface with even microscopic HAV infected fecal matter. When contact with HAV is coupled with a lack of personal hygiene and handwashing, people are subject to infection.

The County's sanitation measures included efforts to support personal hygiene; supporting and educating numerous partners in their sanitation efforts; actions in the unincorporated area to promote sanitation; and supporting other jurisdictions' efforts for sanitation in the areas under their purview.

Thousands of kits were distributed to promote personal hygiene

The County and its partners distributed hygiene kits throughout the outbreak during vaccination and other events to at-risk populations. This effort was rolled out starting in April 2017 at locations serving homeless people or where homeless people spent time, including the Rachel's Women's Center in San Diego, the San Diego downtown library, and St. Vincent de Paul Village. The kits included educational materials about the importance of hygiene as well as non-alcohol based hand sanitizer, soap, individual cleansing towelettes, a plastic waste disposal bag, and bottled water. Over 10,000 hygiene kits had been distributed as of the end of January 2018.

Handwashing stations were deployed throughout San Diego County

During the outbreak, the County leveraged current contracts to furnish, place and maintain handwashing stations in 12 affected cites and the unincorporated area. While public sanitation is the mandated responsibility of each local jurisdiction, the County deployed handwashing stations throughout the region and tracked utilization. Increased sanitation is important to stopping HAV infections; however, the specific impact of the handwashing stations in preventing further spread of the virus, particularly among the most at-risk populations, was not known and thus tracking their use was important. The County recommended locations for placing the stations within affected cities and its own unincorporated-area jurisdiction, and it also took requests for stations from cities and the community based on areas of need. The County first piloted the use of handwashing stations by placing two units on County property in the City of San Diego on July 13, 2017, at the County Health Services Complex on Rosecrans Street in San Diego. In total, the

County placed 160 handwashing stations in 13 incorporated cities and the unincorporated County. Eighty-two (51%) of the stations were placed in the City of San Diego.

During the months of November and December 2017, the usage of handwashing station supplies, such as soap and towels, was evaluated. Stations were evaluated as low, medium and high usage, with low usage defined as supplies being full or nearly full on average at each check, and high usage defined as supplies being empty or nearly empty on average at each visit. Stations were assessed multiple times throughout the two month period. Fifteen of the stations were rated high usage, 88 medium usage, and 57 low usage.

The County engaged restaurants and other industry partners in supporting healthy food handling environments

Although this outbreak was not foodborne, restaurants play an important role in preventing the potential spread of HAV through proper sanitation of public areas and safe food handling practices by food handlers. Throughout the outbreak, outreach included restaurants and food facilities and organizations that provide meals to homeless, including service providers and faith-based organizations. Beginning in May 2017, the County began email distribution of educational materials developed on HAV, including HAV disinfection guidelines (see Appendix G-1), HAV vaccination information for food handlers (see Appendix G-3), and HAV guidance for food facilities (see Appendix G-5). These documents included information for food operators on how to disinfect their facility, the importance of handwashing to prevent the spread of illness, and employee health guidelines. The HAV disinfection guideline and HAV vaccination information for food handlers were translated to Spanish, Tagalog, Arabic, and Vietnamese, posted on the County website, and emailed to permitted food facilities throughout the region, reaching more than 10,000 restaurants, food facilities, and industry partners. In addition, County DEH inspectors provided guidance to operators during more than 13,250 food facility inspections. The County DEH conducted a foodborne illness workshop for local food facilities and food handlers on August 8, 2017. More than 150 food industry professionals attended and took the information to share with other employees at their restaurant facilities.

The County also conducted outreach to stakeholder groups with large networks to expand the reach of information. These included the California Restaurant Association, San Diego Food and Beverage Association, San Diego County Schools, and food banks and pantries. The California Restaurant Association, for example, distributed information to more than 1,800 of its members statewide, and the San Diego Food and Beverage Association notified 10,000 food handlers and members in the San Diego region.

In addition, efforts were taken to monitor for potential HAV exposures in food service establishments. County Public Health Services identified which HAV cases had dined in public restaurants and which HAV cases were amongst individuals who worked in food service establishments. County DEH then collaborated with County Public Health Services to conduct investigations at identified food facilities, guide the food facilities on disinfection measures, educate on HAV prevention and coordinate vaccination efforts for food handlers.

In one instance, it was determined that notification to the general public was necessary to allow those potentially exposed to be aware and seek vaccination to potentially prevent HAV transmission (see County News Center article, Hepatitis A Case Reported at Pacific Beach Restaurant). No secondary cases were identified that were linked to the restaurant that had the public notification.

Sanitation guidance was provided to businesses with public restrooms

Businesses with public areas or restroom facilities found the HAV disinfection guidelines, which include information regarding employee health and hygiene (see Appendix G-1), were useful for their operations, and starting in September 2017 and continuing through the duration of the local health emergency, multiple County departments shared the guidelines with their permitted operators, stakeholder partners, and during their regulatory program inspections. The County communicated the importance of disinfecting public restrooms and employee health and hygiene to more than 3,300 permitted hazardous materials facilities, more than 2,700 permitted agricultural operators including farmers markets and growers, and almost 2,400 permitted pool facilities throughout the region. The County also sent HAV educational notifications to permit holders in various other regulatory programs, including air pollution control, storm water, wastewater, solid waste, housing and body art, and massage facilities. The County's handwashing poster was subsequently shared with these more than 30 organizations and their contacts. In addition, the County encouraged cities to send this information to businesses via their business license contact lists.

The County supported sanitation efforts of local jurisdictions, including identifying products and practices most effective against HAV

Individual municipalities have regulatory authority and responsibility for sanitation of their public right-of-ways, streets, roads and other public infrastructure. As the outbreak continued through the summer, the County and others were concerned about unsanitary conditions, in particular areas where large number of homeless people slept and stayed outside. In the summer of 2017, the County consulted with the CDC for guidance on sanitation methods for streets and sidewalks and other surfaces. While the County does not have purview over another jurisdiction's public right-of-way or regulatory expertise for sidewalk and street sanitation, the County Department of Environmental Health (DEH) researched available best practice information (from CDC, U.S. Army, City of Los Angeles and California Division of Occupational Safety and Health). The City of Los Angeles, Department of Public Works, had developed a sanitation strategy and protocol for cleaning areas with large homeless populations living on the streets and on August 14, 2017, the County shared the City of Los Angeles sanitation protocol with the City of San Diego. On August 23, 2017 (and updated in September and October 2017) the DEH drafted operating procedures and recommendations for the sanitation of public right–of–ways in times of elevated public health risks (see Appendices G-7 to G-12). In August 2017, this sanitation guidance document was shared with municipalities during leadership meetings regarding the San Diego HAV outbreak.

On August 31, 2017, the County Public Health Officer directed certain actions to stop the spread of HAV in the City of San Diego (see Appendix F-9).

The Health Officer directed the City to:

1) Immediately implement the cleaning and sanitation protocol contained in the document: "Sanitation Procedures for Public Right-Of-Ways" (see Appendix F-10); and

2) Immediately expand access to public restrooms and handwashing stations within the City limits that are adjacent to at-risk populations. Included recommended handwashing station locations.

With the directive in place, the County placed 40 handwashing stations in the City of San Diego September 1-2, 2017, and the City of San Diego implemented a public right-of-way sanitation program within its jurisdiction.

County Agriculture, Weights and Measures (AWM) and DEH worked with CDPH and California Department of Pesticide Regulation (CDPR) to identify approved sodium hypochlorite disinfectant products that could be legally used as directed by public health agencies in California who were responding to outbreaks of HAV in their communities (see Appendix B-4). AWM continues to collaborate with CDPR and California Agricultural Commissioners and Sealers Association on requesting a Special Local Need disinfectant registration and has submitted proposed regulatory changes to CDPR to streamline future public health disinfection activities.

Efforts were undertaken to expand public access to sanitary facilities and promote hygiene in County facilities and public spaces

In light of the elevated risk to public health, the County of San Diego made operational changes to County facility janitorial efforts to require that County facilities with public areas or restrooms be cleaned with disinfectants that had been approved to be effective against killing HAV.

To expand public access to sanitary facilities and promote hygiene, the County opened overnight restrooms at four park locations in the communities of Spring Valley and Lakeside on September 29, 2017. The County also placed 10 temporary portable restrooms and 12 portable handwashing stations in public right-of-way areas and on park properties. County staff identified the locations for the facilities based on assessments that showed nearby homeless encampments, unsanitary conditions and limited existing access to sanitary restrooms. Full-time security guards were provided at restroom locations to ensure safety for users and the public.

The County also placed portable restrooms on County property in the City of San Diego at or near the County Administration Center in downtown San Diego.

The County conducted cleanups of areas in unincorporated San Diego County

The unincorporated area in the county is over 3,500 square miles and has fewer urban areas and a lower population density than most incorporated cities. Homeless populations in the unincorporated areas typically shelter in flood channels, road culverts, parks, open spaces, and on private properties.

In June and July 2017, the County first used a multi-disciplinary approach for a public and private property clean-up in the community of Lakeside. Following the declaration of the local health emergency on September 1, 2017, the County increased the frequency of assessments in the unincorporated area to determine locations of active homeless camps on public and private properties, to respond to complaints of encampments and to conduct clean-up activities as needed.

On September 26, 2017, County staff from multiple departments involved in the County's local health emergency response visited downtown Los Angeles, where large numbers of homeless people are living on the streets, to gain first-hand knowledge about how the City of Los Angeles conducts homeless area clean-ups and provides services to the homeless. Based on information learned from the City of Los Angeles and information provided by County DEH and Public Health Services, in late September 2017, County staff developed clean-up procedures and best practices for sanitizing public road right-of-ways, culverts, channels, and soft scape areas for the unincorporated area. City of Los Angeles staff subsequently came to San Diego on October 6, 2017, for an event hosted by the County and provided a presentation to local agencies to share successful strategies and lessons learned from their homeless programs.

On October 4, 2017, an additional multi-disciplinary team was established to oversee the San Diego HAV outbreak response, including conducting camp cleanups while providing education, vaccinations and services to homeless individuals in the unincorporated area. The team included staff from the County's Departments of Planning & Development Services, Parks and Recreation, and Public Works; the Land Use and Environment Group (LUEG); and HHSA. This team received support from the DEH, AWM, Purchasing and Contracting, County Public Health Services, the Sheriff's Department, and County Counsel, making this an enterprise-wide collaborative effort.

Homeless sanitation activities in the unincorporated area during the local health emergency focused on adding additional and enhanced services. These activities included increasing the number of assessments in areas of known homelessness, providing County staff with specialized training for working around the unique hazards in homeless encampments, enhancing clean-up contracts to implement lessons learned from the City of Los Angeles, hiring a contractor to store personal property collected during clean-ups to allow homeless individuals to reclaim their personal property, and coordinating with property owners for clean-up of homeless encampments on private property.

During the HAV emergency, the County conducted 125 cleanups of areas where homeless people had been living as part of a health and sanitation effort. In assessing sites and in clean-ups, the County employed the multi-disciplinary approach to ensure a helpful and safe response while being courteous of those who were being impacted.

The County used the Regional Task Force on the Homeless Point in Time count, prior experience with homeless populations, and other sources to identify homeless encampments in the unincorporated area. The approach to cleaning encampments included deploying site assessment teams. These teams included staff from the County Department of Public Works, County Department of Parks and Recreation, County Department of Planning & Development Services, HHSA, the Sheriff's Department, and County public health nurses. Prior to any camp clean up, staff from these teams visited the encampments to offer assistance and services. This outreach approach before clean-up of encampments proved to be an effective means of engaging with the homeless population to offer vaccinations, interim housing options, and other services. The presence of the Sheriff's Department on site during clean-up activities helped ensure that the environment remained safe for staff, contractors, and the homeless population. County information technology and GIS staff adapted existing platforms to develop and implement a smartphone mobile application to facilitate collecting information on encampment conditions and reporting site status in real time.

During the emergency, the teams conducted more than 1,000 assessments of over 100 locations with a known history of homeless encampments. The information collected during these assessments helped the County to identify placement locations of temporary restrooms and handwashing stations, to prioritize clean-up and sanitation of encampment areas, and to identify areas where homeless services were needed. Staff encountered homeless encampments in multiple public and private facilities throughout the unincorporated area, the largest number being located in Lakeside, Spring Valley, unincorporated areas of El Cajon, and Sweetwater River areas. HHSA provided interim housing for the homeless using hotel vouchers for over 115 individuals during the period of the local health emergency.

In the case of confirmed homeless encampments on private property, County staff promptly notified property owners of their responsibility to maintain their property. Many property owners were unaware of the homeless encampments on their property. Following staff outreach, a majority of private property owners cleaned the property themselves or hired a contractor to clean the property. Clean-up efforts initiated by private property owners frequently included coordination of services provided by the Sheriff

and Integrative Services to assist homeless individuals. When property owners were unwilling or unable to clean their property themselves, County staff proceeded with abatement at the property owner's expense.

Removal of encampments on public and private properties conducted by the County followed these steps during the declared emergency:

- **Assessment** – Multiple assessment teams regularly inspected known and reported encampment areas. When homeless camps were located, the locations were provided to County HHSA who then visited the encampments before clean-ups were conducted to offer services to the homeless.
- **Prioritize & Schedule** – Cross-departmental teams met on a weekly basis to prioritize and schedule clean-up of encampments based on information collected from assessments.
- **Notification** – Prioritized sites scheduled for clean-up were posted with a notification at least 72 hours before commencing clean-up activities.
- **Removal, Storage, & Sanitation** – After the notification period, contractor crews removed and properly disposed of any remaining debris, collected personal property for storage, and if needed, sanitized the area. The County procured services to provide storage for any personal property items collected during clean-up activities. Storage facilities were located in North, Central, and South County, and information on where to retrieve personal items was posted at the encampment site after clean-up and was provided to any individuals present to allow homeless individuals to reclaim personal property.
- **Reassessment** – Assessment teams continued to inspect areas with a known history of encampments on a daily to weekly basis. If an encampment reestablished, the steps above were repeated.

The County worked with CDC to confirm that testing of local waterways was not warranted

As the outbreak progressed, questions were raised by members of the public regarding the potential for waterborne transmission of HAV and whether this could be contributing to the outbreak. On October 11, 2017, the County Public Health Officer requested a formal confirmation of guidance that CDC staff had previously provided regarding waterborne transmission of HAV (see Appendix B-8). Specifically, confirmation of the following was requested: that there has not been a documented waterborne outbreak of HAV in the United States in well over 30 years; and that environmental sampling had not been recommended for the HAV outbreak response in the San Diego region. Additionally the County Public Health Officer asked if there is anything that would warrant a change in the guidance that CDC had previously provided, whereby the CDC would recommend the testing of waterways in order to investigate the outbreak.

CDC responded on October 17, 2017, and confirmed that there was no indication that the San Diego HAV outbreak had a water source; and that there is no evidence that either water or environmental sampling provides additional information for addressing person-to-person HAV transmission (see Appendix B-10). CDC also noted that investing in water or environmental sampling activities could

unnecessarily divert resources needed to contain the outbreak in “proven and effective ways (vaccination, education, restrooms, and hand hygiene practices).”

Education

As described throughout this report, community partners and stakeholders were critical in supporting vaccination and sanitation efforts. Similarly, these partners played a critical role in supporting and complementing County outreach and education. This section will focus on specific campaigns, materials and actions to educate these partners and the public not previously noted or expanded upon elsewhere in the report.

The County worked with the media to inform the general public

Between April 7, 2017, and January 23, 2018, the County released 20 press releases on County News Center to notify the media and the public of the HAV outbreak. These releases were also sent directly to more than 150 reporters, editors and producers from print and broadcast media outlets. County News Center releases were also disseminated through the County and HHSA social media accounts, which combined have roughly 100,000 Twitter followers and 24,800 Facebook followers. The press releases included information about the outbreak – case counts, deaths, and impacted populations – as well as prevention tips and vaccine recommendations. In addition to press releases, the County also frequently used social media to reinforce key messages and to promote educational materials related to HAV prevention, including videos and fliers on proper hand-washing and vaccination recommendations.

The County also responded to more than 215 media requests between April 7, 2017, and the end of the local health emergency. Most responses included interviews with County officials in addition to providing data and information related to the outbreak. While the majority of coverage was by local media, the County responded to national and international media outlets as well. These included CNN, NBC Nightly News, CBS Evening News, National Public Radio and The Daily Mail. In addition to interviews and providing outbreak information, the County also coordinated ride-alongs for media to join nurse foot teams to help reporters cover how the County and its partners were addressing the outbreak through street outreach and the vaccination campaign. The media outlets that went on ride-alongs included the San Diego Union-Tribune, the Associated Press, the Boston Globe, and Home Box Office’s Vice News Tonight.

Tailored educational materials were produced and disseminated widely

Tailored educational materials were developed and disseminated through service provider organizations for at-risk populations, cities, numerous County departments and facilities, such as libraries, health care systems and partner organizations. These materials include an HAV webpage, fliers, an information card, fact sheets, frequently asked questions (FAQs), posters, and a general PowerPoint presentation.

In April 2017, the County published the first HAV FAQ, which was subsequently updated throughout the outbreak. At the same time, the County published an HAV fact sheet in five languages and focused on distributing it widely to reach at-risk populations, coordinating with homeless service providers, behavioral health providers, the San Diego Housing Commission, and the Regional Task Force on the Homeless, among others. The County established the HAV outbreak webpage in May 2017 and updated it regularly with materials including the County California Health Alert Network (CAHAN) notices (see Appendix E) and the County News Center stories, and information about vaccinations and sanitation. Also in May

2017, fliers were distributed to all County General Relief clients, a cash relief program that includes a high ratio of homeless people among its enrollees. In August 2017, the County distributed pocket cards to at-risk homeless providers and at points of vaccine dispensing to give to clients. These cards provided HAV information and a place to record the date for a second vaccination.

Three versions of posters promoting handwashing and vaccinations were printed in English and Spanish and distributed starting in May 2017 (see Appendix C-4 to C-6). In June, the County engaged a media agency to develop posters in five languages and place them online and on Metropolitan Transit System and North County Transit District trolleys, trains, buses and stops.

The County conducted 188 presentations between early March 2017 and January 31, 2018, to educate the region about the outbreak and prevention. In May 2017, the County developed a standard PowerPoint presentation with information on vaccination and proper handwashing hygiene, and trained community partners, nurses, providers, senior homes and at-risk populations that work with homeless populations to give the presentation.

Focused educational efforts were implemented in partnership with faith-based organizations

The County developed focused educational efforts for faith-based organizations, because these entities frequently serve charitable meals to or otherwise interact with the outbreak at-risk populations. County DEH staff outreached to partners including faith-based organizations to identify and connect with entities with food-serving permits who provide meals for homeless people. The County also sent out educational materials and a letter from the County Public Health Officer to inform local faith-based organizations about HAV vaccine recommendations and effective food handling and hygiene practices (see Appendix F-21).

Focused educational efforts were implemented to reach other at-risk populations

The County also developed materials for specific populations indicated for vaccination and at elevated risk due to the local outbreak. A vaccine recommendation document for individuals with chronic liver disease was distributed through public health nurses and the local chapter of the American Liver Foundation in November 2017 (see Appendix C-3). To reach the at-risk men who have sex with men (MSM population), the County provided information to local colleges and universities to share with campus-based LGBTQ groups. The County also produced and provided a poster to promote vaccination events targeting MSM in November. County contractors specifically serving the MSM population received information to distribute. The risk to the MSM population was also highlighted in a County News Center story, CAHAN communications, and through community presentations.

California Health Alert Network communications were used to reach the medical community

The County issued ten alerts to the medical community related to HAV via the CAHAN between March 10, 2017, and February 15, 2018 (see Appendix E). The communications contained updates, background, and clearly delineated recommendations for medical providers to take measures that would help detect and prevent HAV cases. More than 3,060 individuals in the San Diego County area are registered with CAHAN, including physicians, nurses, assisted living facility staff, community clinics and hospital systems, managed care organizations and public safety personnel. The CAHAN communications are routinely published on the San Diego County Medical Society website and sent to all physician members. CAHAN advisories on HAV were also distributed when published to all local emergency department directors, FQHC medical directors, and members of the American Academy of Family Physicians.

2-1-1 San Diego was leveraged to provide outbreak and vaccination information

In times of nonemergency, the County maintains a contract with 2-1-1 San Diego to provide a range of information about, referrals to and enrollment in County services, including behavioral health services, veterans services, and public benefit eligibility and enrollment. In a declared emergency, 2-1-1 San Diego is the County's call center to provide direct public information. County outreach began referring the public to 2-1-1 San Diego for HAV information in September 2017, and the County provided information to 2-1-1 about the outbreak and vaccination recommendations and locations. 2-1-1 San Diego answered 1,599 calls about HAV through January 31, 2018. Individuals called from 93 different zip codes, with 71% requesting information about HAV vaccines, 16% requesting general information about HAV, and 13% requested both HAV general information and vaccines.

Information was shared with other jurisdictions and communities to support the broader HAV response

As other local public health jurisdictions in California and other state health departments responded to HAV outbreaks in their communities, starting in October 2017, the County shared its various educational materials and guidance documents with those agencies and disseminated them through statewide industry associations, such as California Conference of Directors of Environmental Health, and through the CDPH Center for Infectious Diseases. County Public Health and DEH staff also made themselves available for conference calls or webinars with other agencies to discuss the San Diego response to the local HAV outbreak and share information.

Outbreak Emergency Management

Emergency management principles were deployed to support the overall response strategy

The County Public Health Officer is authorized under California law to declare a local health emergency, which must be ratified and continued by the Board of Supervisors any time it extends beyond seven days[10] (see Appendix A). The declaration allows certain actions, such as requests to the state to temporarily suspend laws that may interfere with the emergency response. The local health emergency also adds some emergency powers of government, and suspends liability for actions by personnel responding to the emergency. The declaration also opens the possibility of recovering emergency costs from the state, including the costs incurred by all local public agencies that respond to the emergency. A local health emergency is generally invoked when the emergency overwhelms a County health department's ability to provide resources for the emergency or when a County and its mutual aid agencies such as cities seek emergency legal powers or legal immunities for emergency actions.

Despite the County's initial measures to stop the outbreak, HAV cases continued to increase throughout the spring and summer of 2017. As cases continued to grow, the County determined additional vaccination, sanitation and education measures were needed to contain the outbreak, including public-right-of way sanitation measures that had never been utilized in the region before. On September 1, 2017, the County Public Health Officer declared a local health emergency (see Appendix A-1). This action supported the City of San Diego and other jurisdictions in their efforts to sanitize streets and sidewalks and to clean homeless encampments.

[10] Cal. Health and Safety Code § 101080, http://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=101080.&lawCode=HSC

The declared health emergency also raised public awareness about the outbreak. Prior to the local emergency, the County had focused the majority of its resources on reaching the most at-risk individuals, people who were homeless or drug users. But with the outbreak continuing with a high number of cases, it was important to raise awareness to highlight who should be vaccinated to prevent the HAV outbreak from expanding. The local health emergency declaration raised awareness of the local vaccination recommendations for at-risk employees and volunteers as well as a recommendation by the County Public Health Officer that all food handlers be vaccinated to reduce the potential risk of foodborne spread (see Appendix F-5 and F-14).

The County continued the local emergency until January 23, 2018. At that point, the number of monthly outbreak cases had been steadily declining. The case volume was within the normal capabilities of the epidemiology staff to investigate and provide post-exposure prophylaxis, as needed.

On October 13, 2017, the Governor proclaimed a State of Emergency after HAV vaccine supply constraints potentially limited California counties from preventing or controlling HAV outbreaks. At this point, additional California counties experienced increases in HAV cases related to the San Diego County outbreak.[11,12,13] The declaration specifically authorized CDPH to purchase vaccines directly from manufacturers to increase the state's supply of vaccine. Furthermore, vaccine supplies intended for wholesale distribution were held subject to the control and coordination of CDPH as necessary to control the HAV outbreak. In addition, paramedic licensees in the affected locations were provided the authority with sufficient training and oversight to administer HAV vaccines to at-risk populations.[14]

In a public health outbreak, the County applies standard emergency management principles including the Incident Command System (ICS) emergency management structure to develop and deploy a tailored response strategy. Prior to the declared health emergency, the County managed the outbreak primarily through the County's Public Health Services, with the Public Health Officer and designees coordinating with County departments and numerous outside agencies to manage the outbreak. Some ICS management principles were applied, such as setting clear objectives for education, vaccination, and sanitation, designating outbreak roles and responsibilities, and establishing regular status reports and meetings to coordinate and forward the response.

The County activated its Medical Operations Center (MOC) at a Level 2 following the declared emergency. In a Level 2, the MOC includes County staff from multiple departments to coordinate the County response. The County Land Use and Environment Group (LUEG) also activated a Department Operations Center (DOC), using the ICS structure to coordinate response in the unincorporated area. The LUEG DOC included representatives from HHSA and the MOC coordinated closely with the LUEG DOC.

While the MOC, which led the regional response, coordinated actions effectively, certain elements were not included in the incident management structure that would have made it more effective. Notably, the

[11] Governor Brown Declares State of Emergency to Increase Supply of Hepatitis A Vaccines, October 13, 2017, https://www.gov.ca.gov/2017/10/13/news20018/

[12] California Department of Public Health, Immunization Branch, Hepatitis A Outbreak in California, April 11, 2018, https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/Immunization/Hepatitis-A-Outbreak.aspx

[13] Cases related to San Diego HAV outbreak included cases in Santa Cruz, Los Angeles, and Monterey Counties, as well as the states of Arizona (Phoenix), Utah, and Kentucky (especially Louisville). Of note, the Michigan HAV outbreak started before and is not related to the San Diego HAV outbreak.

[14] As noted in the *Sequence of Events*, the County Health and Human Services Agency, as the local emergency medical services agency (LEMSA) made a request to the State Emergency Medical Services Authority for paramedics to be able to dispense HAV vaccine in certain situations on September 20, 2017. The waiver was granted to San Diego County on October 2, 2017 and approved through April 1, 2018.

Level 2 activation did not include a policy group of County and regional executive leaders with a direct, daily connection to the MOC. By contrast, when the County's Emergency Operations Center is activated in a regional disaster such as a wildfire, it generally includes staff from affected jurisdictions and agencies, and also a group of executive leadership to quickly make decisions and coordinate regional actions. Regularly convening a policy group, including leadership from impacted jurisdictions, and instituting formal emergency management structure within the MOC upon activation would have been appropriate for the HAV response.

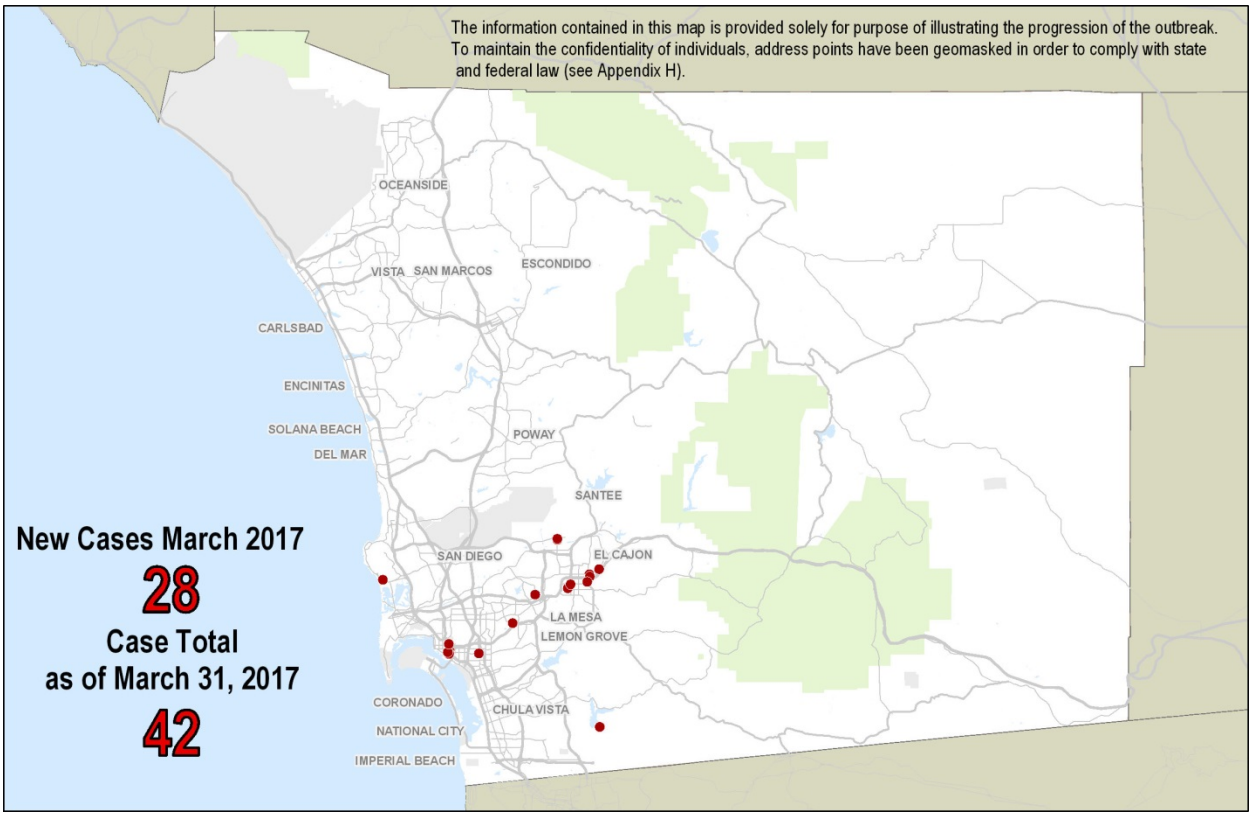
The ICS incident management structure, the National Incident Management System (NIMS), and the Standardized Emergency Management System (SEMS) are standardized management structures that are useful in a complex, fast moving or extended incident to establish daily and long range objectives, clarify incident emergency roles and responsibilities, and coordinate actions among staff from multiple County departments and other jurisdictions who are called away from their routine jobs to assist in the incident. The systems are designed to work whether or not someone has practiced them; however, when staff members are familiar and comfortable with the incident management systems, it strengthens their abilities to most effectively use the systems or assume new duties for a novel emergency.

Some County staff and leaders participate in drills or exercises to practice emergency management and specific emergency roles each year. But in the HAV outbreak, some staff members called to respond were not as familiar with emergency management systems and organizational structures. Additional training in ICS, NIMS/SEMS will help staff at all levels better understand how to follow standardized practices to manage and coordinate goals and actions in an emergency and to prepare them for the sometimes-extended experience of taking on a non-routine role.

Sequence of Events

MARCH 2017

- **Hepatitis A virus (HAV) outbreak is first detected and County of San Diego officials, as well as the Centers for Disease Control and Prevention (CDC) and the California Department of Public Health (CDPH) are notified. Outbreak cases total 42 by the end of March, including one death.**
    - County Epidemiology Program staff note a consistent increase above baseline of HAV reports. The demographics of these cases are noted to have shifted from persons who were international travelers (i.e. most typical case demographics) to individuals who were homeless and/or illicit drug users.

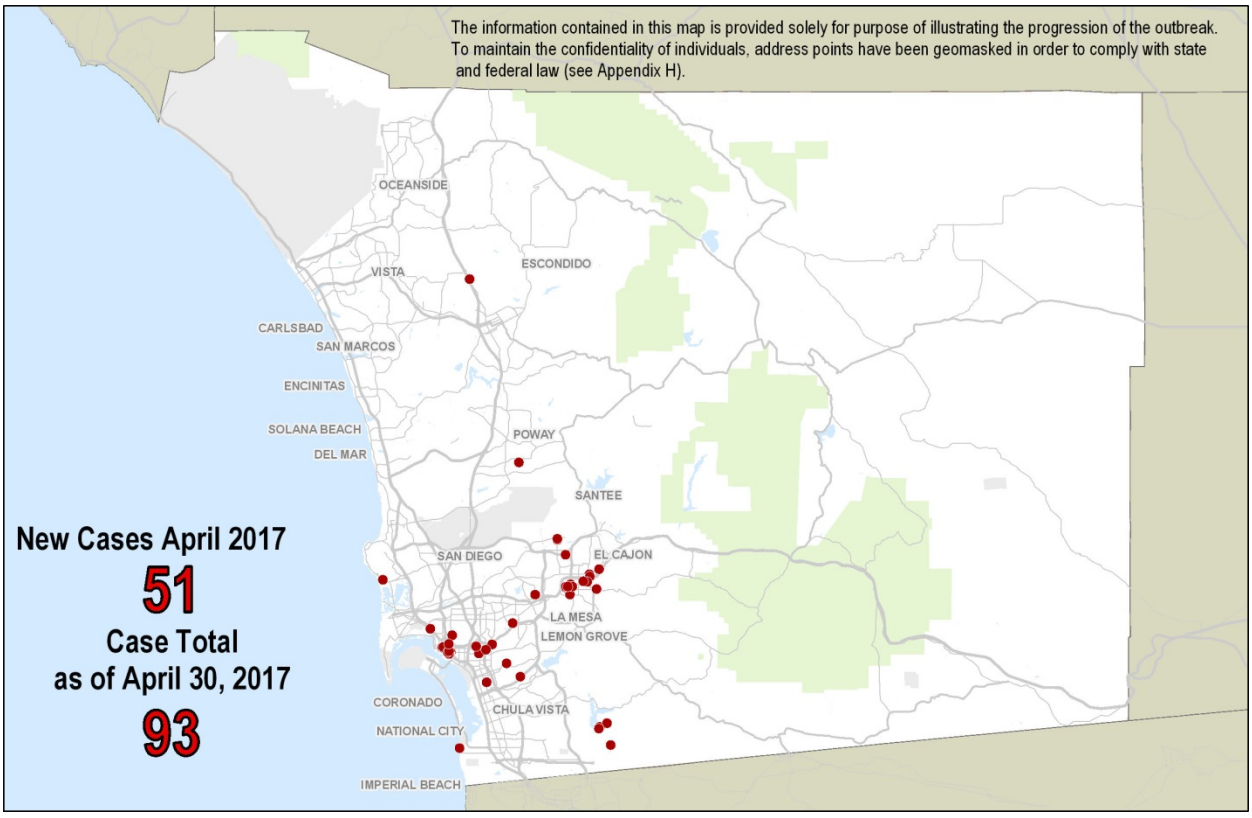


- **The County mobilizes vaccinations as part of outbreak response strategy. As of March 31, 307 vaccinations are administered by the County and its partners**.
    - The County mobilizes focused efforts to provide vaccinations to at-risk groups by contacting homeless service providers, substance use disorder service providers, healthcare service providers, and other stakeholders to identify approaches to immunize their clients and patients.
    - The County contacts the Centers for Disease Control and Prevention (CDC) to discuss expanded vaccination recommendations and to arrange laboratory testing of cases to determine genetic constitution (genotype) of the virus.
    - The County facilitates obtaining and distributing a supply of the federal 317 vaccine from CDPH.

- **The County continues ongoing efforts to promote sanitation and healthy environments.**
  - The County Department of Environmental Health (DEH) conducted an investigation of a retail food facility related to HAV. It is the sixth HAV-related investigation in 2017 to date, well over the annual average of one HAV-related food facility investigation.
- **The County engages stakeholders to provide communication and education regarding the outbreak**
  - The County issues recommendations from County Public Health Officer that medical providers provide HAV vaccination to homeless individuals and those who have CDC indications for immunization, including illicit drug users (see Appendix E-1, California Health Alert Network [CAHAN] San Diego notification to medical community and other stakeholders: “Hepatitis A Virus Outbreak Associated with Homelessness, Drug Use in San Diego County”).
  - The County commences calls and presentations about the HAV outbreak in San Diego County (San Diego HAV outbreak) to the medical community, homeless service providers, substance use disorder treatment providers, and other stakeholders.

APRIL 2017

- **Through April 30, 93 cases are associated with the outbreak, including three deaths.**



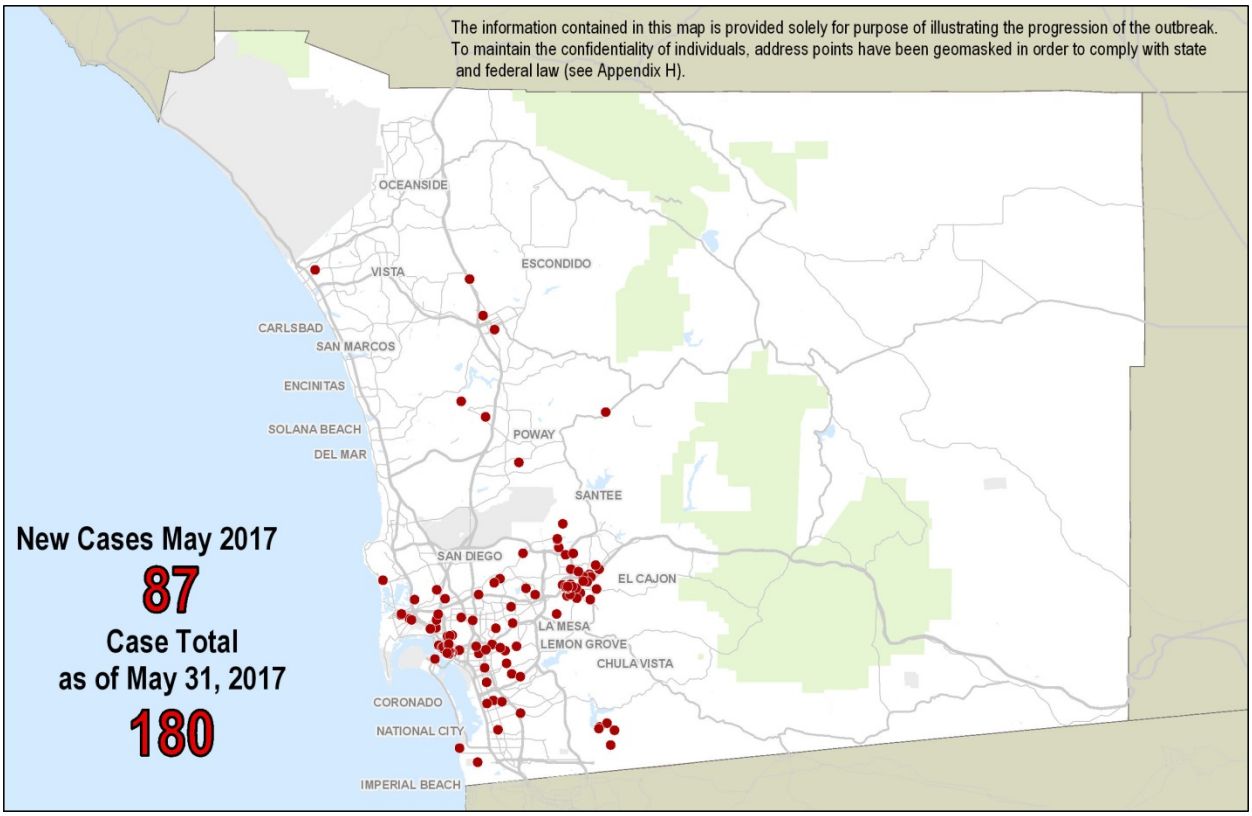
- **The County continues efforts to provide vaccinations to at-risk groups. As of April 30, 2017, 3,621 vaccinations are provided by the County and its partners.**
  - First mass vaccination field event occurs at Father Joe's Village on April 7, 2017.

- As of April 30, 2017, 5 field vaccination events (including 5 point of dispensing events) are conducted.
- The County initiates memoranda of agreement (MOAs) with hospitals to facilitate the administration of vaccine to at-risk patients receiving care in emergency departments.
- The County begins offering HAV vaccinations to County staff at risk of infection.
- The County continues working with homeless service providers, substance use disorder service providers, healthcare service providers, and other stakeholders to mobilize approaches to immunize at-risk groups.

- **The County continues efforts to promote sanitation and healthy environments**
  - County DEH staff conducts six investigations of retail food facilities related to the HAV outbreak.
  - County commences distribution of personal hygiene kits to at-risk populations, including via partnerships with homeless service providers.
- **County continues to engage stakeholders and the broader public to provide communication and education regarding the outbreak**
  - On April 7, the County publishes County News Center article and press notification: 2 Hepatitis A Deaths Reported; Virus on the Rise in San Diego.
  - County issues CAHAN San Diego notification to medical community and other stakeholders: "Update: Hepatitis A Virus Outbreak in San Diego County" (see Appendix E-3).
  - The County continues facilitating calls and presentations about the HAV outbreak to medical community, homeless service providers, substance use disorder treatment providers, and other stakeholders.
- **The County pursues other complementary efforts to support an effective outbreak response**
  - County pursues technical assistance through HUD to assist with homeless service providers, via the Regional Task Force on the Homeless. Technical assistance was obtained through a request made by Regional Task Force on the Homeless, and proposed recommendations from HUD TA were implemented.
  - County Public Health Laboratory initiates process to obtain, document, and transport specimens on a weekly basis to CDC in order to conduct sequencing that identifies the strains related to the local HAV outbreak.

MAY 2017

- **There are 180 cases associated with the outbreak as of May 31, 2017, including four deaths.**



- **The County continues efforts to provide vaccinations to at-risk groups. As of May 31, 2017, 6,726 vaccinations are provided by the County and its partners.**
  - The County pilots foot team concept to deliver vaccinations and other services in the field.
  - As of May 31, 2017, 34 field vaccination events (including 19 point of dispensing events, 11 foot teams, and four mobile van events) are conducted.
  - The County recommends that HAV vaccine should be available and encouraged for unvaccinated healthcare workers caring for HAV patients or other unvaccinated healthcare personnel concerned about increased exposure to HAV. County Public Health Officer also recommends HAV vaccination for "individuals who have frequent, ongoing contact with homeless individuals and illicit drug users in non-healthcare environments." This includes persons working in public safety, homeless shelters, and homeless and behavioral service provider agencies.
  - The County Department of Human Resources offers 14 Sheriff's Department at-risk employee HAV vaccine clinics at all detention centers and at East County Sheriff's stations, which were considered most at-risk.
  - Sheriff's Detention Facility nurses begin vaccinating high risk inmates at intake at the Las Colinas booking facility, with additional Sheriff's Department's nurses normally assigned to administration are redirected to assist.
  - The County develops MOAs with hospital Emergency Departments and other medical community

partners to receive and administer vaccines.

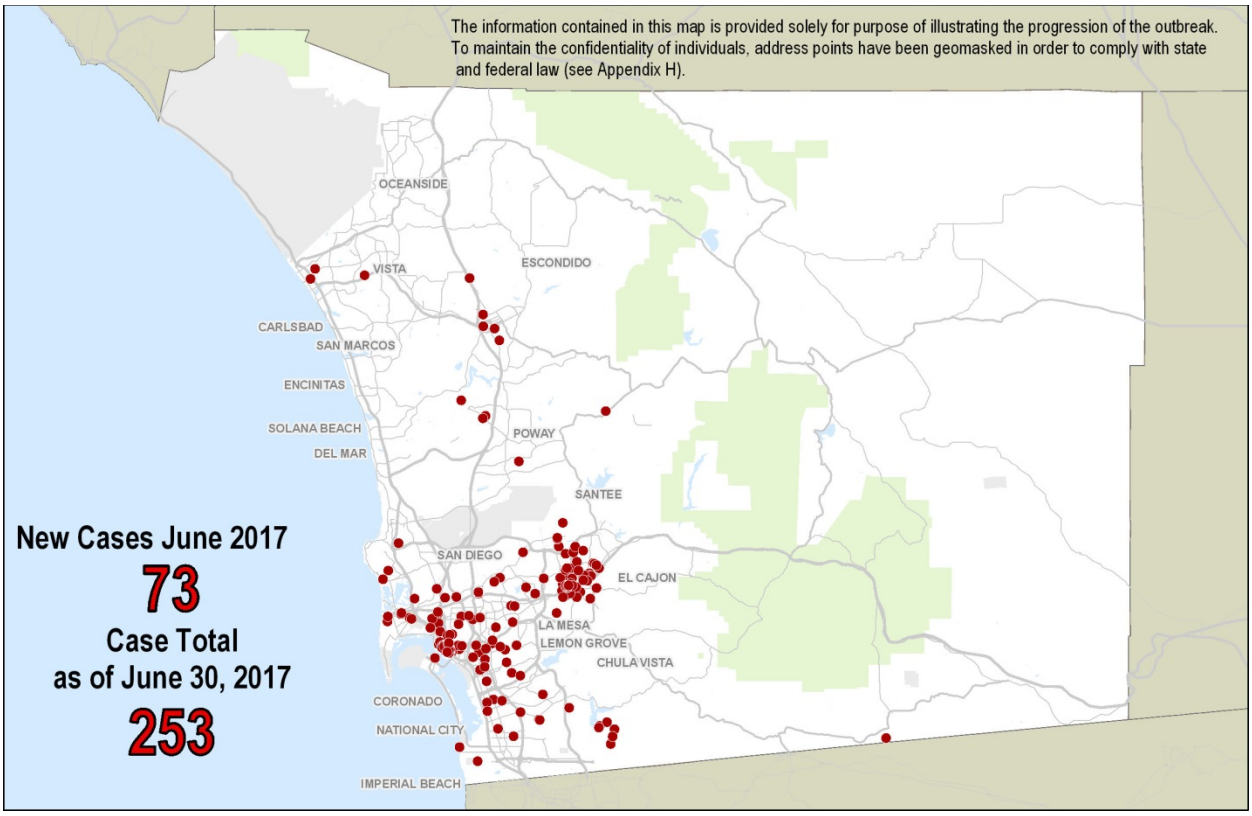
- The County continues offering vaccinations to County staff at risk of infection.
- The County continues working with homeless service providers, substance use disorder service providers, healthcare service providers, and other stakeholders to mobilize approaches to immunize at-risk groups.

- **The County continues efforts to promote sanitation and healthy environments**
  - County DEH works with Sheriff's Detention Facility to discuss detention facility employee hygiene and training for all staff related to HAV.
  - County DEH staff conducts six investigations of retail food facilities related to the HAV outbreak.
- **The County continues to engage stakeholders and the broader public to provide communication and education regarding the outbreak**
  - The County establishes public webpage presence for HAV outbreak: https://www.sandiegocounty.gov/content/sdc/hhsa/programs/phs/community_epidemiology/dc/Hepatitis_A.html.htm.
  - In collaboration with HHSA, County DEH conducts outreach to food facilities and organizations that provide meals to homeless throughout the region. Guidance provided included education on proper handwashing and food handling, effective sanitization of common areas, such as public restrooms, and the County Public Health Officer's open letter (see Appendix F-1), encouraging food handlers and other at-risk professional groups to get HAV vaccinations.
  - County DEH staff begin providing and discussing San Diego HAV outbreak information during routine inspections, an effort that informs key stakeholders in more than 13,250 food inspections during the local health emergency.
  - County Health and Human Services Agency (HHSA) Director provides information on HAV at Regional Task Force on the Homeless meeting.
  - County issues CAHAN San Diego notifications to medical community and other stakeholders: "Update #2: Hepatitis A Virus Outbreak in San Diego County" (see Appendix E-5) and "Update #3: Hepatitis A Virus Outbreak in San Diego County" (see Appendix E-7).
  - County publishes County News Center article and press notification: Third Hepatitis A Death Reported in County.
  - HAV educational fliers disseminated to General Relief clients.
  - County issues San Diego HAV outbreak frequently asked questions (FAQs) resource.
  - County DEH notifies via email nearly 10,000 permitted food facilities in the region about the San Diego HAV outbreak, how to prevent the spread of HAV, guidance on facility sanitation, and employee health and hygiene. County DEH begins providing HAV outbreak information and guidance to food facilities during routine inspections.
  - County continues facilitating calls and presentations about the San Diego HAV outbreak to medical community, homeless service providers, substance use disorder treatment providers, and other stakeholders.
- **The County pursues other complementary efforts to support an effective outbreak response**
  - County convenes meetings with the City of San Diego to discuss HAV outbreak.

- County requests CDC staffing support, via CDPH. Two CDC epidemiologists are brought on and stationed with County staff.

JUNE 2017

- **There are 253 cases associated with the outbreak as of June 30, 2017, including five deaths.**



- **The County continues efforts to provide vaccinations to at-risk groups. As of June 30, 2017, 10,481 vaccinations have been provided by the County and its partners.**
  - As of June 30, 2017, 83 field vaccination events (including 52 point of dispensing events, 27 foot teams, and four mobile van events) have been conducted.
  - County continues offering vaccinations to County staff at risk of infection.
  - County continues working with homeless service providers, substance use disorder service providers, healthcare service providers, and other stakeholders to mobilize approaches to immunize at-risk groups.
- **The County continues efforts to promote sanitation and healthy environments**
  - Two of three clean-ups occur as part of a County multi-agency approach for homeless encampment clean-up in the unincorporated community of Lakeside. This first clean-up occurs on private property by the property owner. The second County-led clean-up occurs on public property.
  - County develops HAV disinfection guidelines for commercial locations, such as restaurants. The guidelines are piloted at food facility investigations throughout the month and modified to

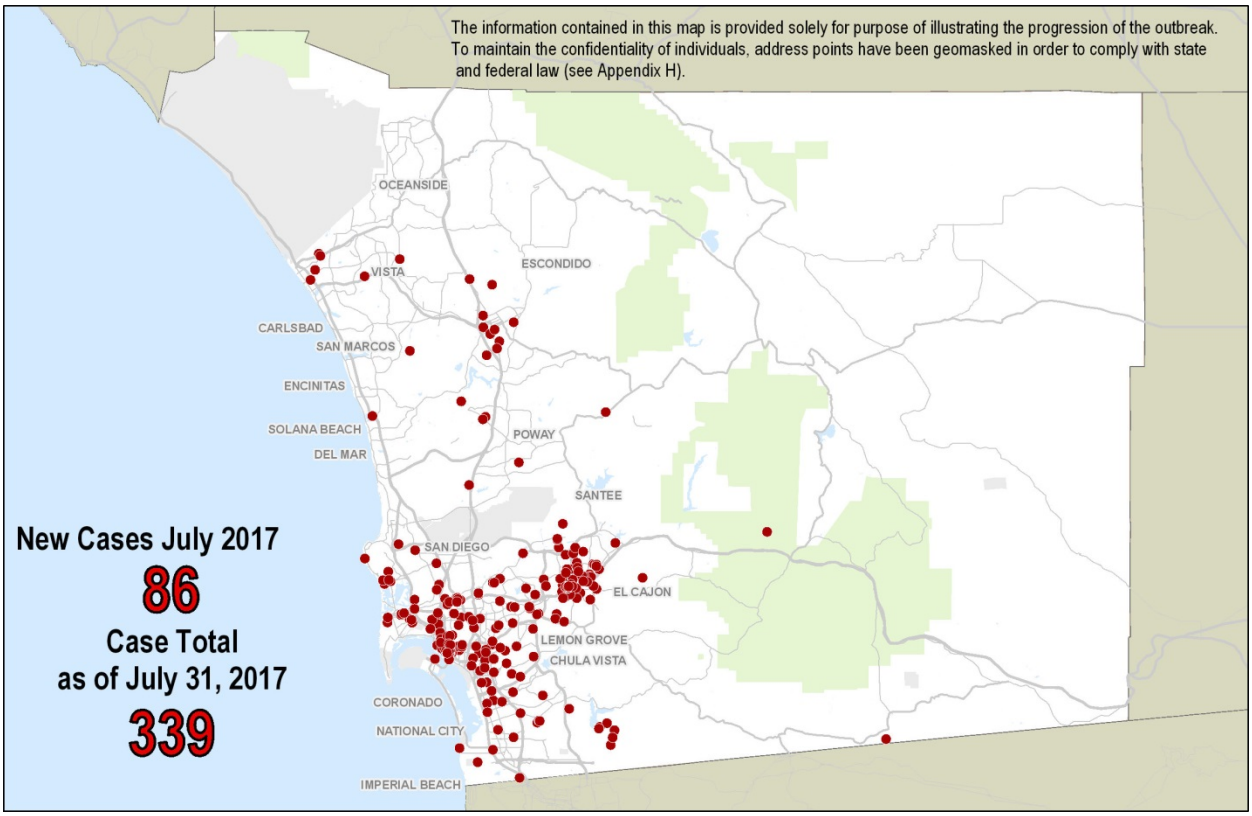
decrease the disinfection time based on operator feedback.

- County DEH staff conducts 16 investigations at retail food facilities related to the HAV outbreak.
- County DEH staff reaches out via email to nearly 10,000 permitted food facilities in the region with an update on the San Diego HAV outbreak, a County News Center article, guidance on how to prevent the spread of HAV, facility sanitation, and employee health and hygiene. DEH staff continues to provide HAV outbreak information and guidance to food facilities during routine inspections.

- **The County continues to engage stakeholders and the broader public to provide communication and education regarding the outbreak**
  - County HHSA Director provides update on HAV at Regional Task Force on the Homeless meeting; County Deputy Public Health Officer answers questions from task force members and audience.
  - County Deputy Public Health Officer presents to Mayor and Homeless Service Provider Executives at City of San Diego's Homeless Solutions meeting.
  - County Deputy Public Health Officer presents to Substance Use Disorders (SUD) Provider Meeting.
  - County Deputy Public Health Officer presents to Hospital Partners Behavioral Health Workgroup.
  - County publishes County News Center article and press notification: Hitting the Streets to Battle the Hepatitis A Outbreak and Fourth Death Reported in Continued Hepatitis A Outbreak.
  - County continues facilitating calls and presentations about the San Diego HAV outbreak to medical community, homeless service providers, substance use disorder treatment providers, and other stakeholders.
  - County continues to update public webpage with information on HAV outbreak.

JULY 2017

- **There are 339 cases associated with the outbreak as of July 31, 2017, including eleven deaths.**



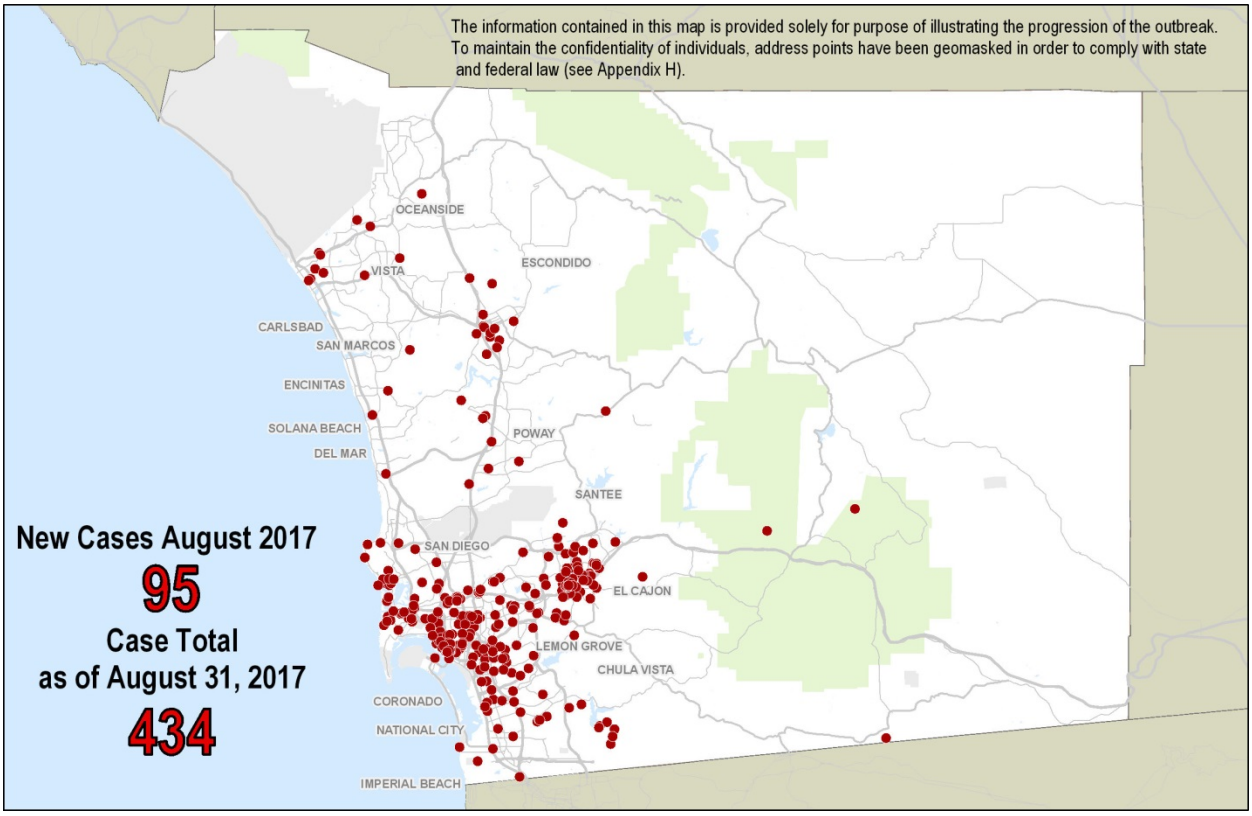
- **The County continues efforts to provide vaccinations to at-risk groups. As of July 31, 2017, 14,715 vaccinations have been provided by the County and its partners.**
  - As of July 31, 2017, 153 field vaccination events (including 106 point of dispensing events, 43 foot teams, and four mobile van events) have been conducted. Sanitation workers with potential exposure to homeless and illicit drug users added to list of occupational recommendations for HAV vaccination.
  - County stations Public Health Nurses at strategic locations, including at San Diego Central Jail intake, which provides booking for five facilities, to provide vaccinations.
  - County issues Request for Statement of Qualifications (RFSQ) to secure additional nurses to support vaccination efforts.
  - County continues working with homeless service providers, substance use disorder service providers, healthcare service providers, and other stakeholders to mobilize approaches to immunize at-risk groups.
  - County continues offering vaccinations to County staff at risk of infection.
- **The County continues efforts to promote sanitation and healthy environments**
  - County pilots the use of handwashing stations by placing two units outside of the County Health Services Complex in San Diego.

- Third of three clean-ups occurs as part of a County multi-agency approach for public and private property homeless encampment clean-up in the unincorporated community of Lakeside. The third clean-up occurred on public property.
- County DEH staff conducts 13 investigations at retail food facilities related to the HAV outbreak.
- County DEH reaches out via email to nearly 10,000 permitted food facilities in the region. Notification provides updates on the San Diego HAV outbreak, recent County News Center articles, and guidance on facility sanitation, employee health and hygiene. The notification also includes distribution of a HAV disinfection guidance document. DEH staff members continue to provide HAV outbreak information and guidance to food facilities during routine inspections.

- **County continues to engage stakeholders and the broader public to provide communication and education regarding the outbreak**
  - County Deputy Public Health Officer presented at Adult and Older Adult Behavioral Health Services Systems of Care Quarterly Long Term Care meeting.
  - County Deputy Public Health Officer provides HAV update to Regional Task Force on the Homeless.
  - County develops handout on HAV infectious period, and issues for use by hospital discharge planners.
  - County issues San Diego HAV outbreak frequently asked questions (FAQs) resource.
  - County publishes County News Center articles and press notifications: Fifth Death Reported in Hepatitis A Outbreak and More Hepatitis A Outbreak Deaths Reported
  - County issues CAHAN San Diego notification to medical community and other stakeholders: "Update #4: Hepatitis A Virus Outbreak in San Diego County" (see Appendix E-10) and "Immune Globulin Dosage Increased for Hepatitis A Virus Prophylaxis" (see Appendix E-14).
  - County continues facilitating calls and presentations about the San Diego HAV outbreak to medical community, homeless service providers, substance use disorder treatment providers, industry associations, and other stakeholders.
  - County continues to update public webpage with information on HAV outbreak.
- **The County pursues other complementary efforts to support an effective outbreak response**
  - County Public Health Laboratory purchases Thermocycler and ancillary equipment (i.e., Polymerase Chain Reaction, or PCR). This equipment tests whether an individual is positive or negative for HAV and will provide results in three days compared to up to six weeks from CDPH or CDC.
  - County Public Health Laboratory also purchases sequencing instrumentation equipment. This equipment provides a "genetic fingerprint" of HAV from each infected individual, allowing staff to more readily determine which cases are connected to the outbreak, reducing turnaround time from four to six week to one to two weeks.
  - County begins the development of the Outreach Response Management System (ORMS). The ORMS system was designed to manage HAV field event vaccination efforts. It includes tools to schedule and staff events with community partners, contact information for staff and partners, reporting tools for vaccinations, and risk status of those vaccinated.

AUGUST 2017

- **There have been 434 cases associated with the outbreak as of August 31, 2017, including 16 deaths.**



- **The County continues efforts to provide vaccinations to at-risk groups. As of August 31, 2017, 22,142 vaccinations have been provided by the County and its partners.**
  - As of August 31, 2017, 320 field vaccination events (including 193 point of dispensing events, 122 foot teams, and five mobile van events) have been conducted.
  - County issues requirement for vaccinations for inmate and volunteer food handlers in County jails.
  - County Public Health Officer makes recommendation that people who handle food get HAV vaccination.
  - County continues working with homeless service providers, substance use disorder service providers, healthcare service providers, and other stakeholders to mobilize approaches to immunize at-risk groups
  - County continues offering vaccinations to County staff at risk of infection.
- **The County continues efforts to promote sanitation and healthy environments**
  - County contacts the City of Los Angeles Public Works Department to obtain their protocol for street sanitation.
  - County DEH drafts sanitation protocol for public right-of-way.

- County provides letter with sanitation protocol to the City of San Diego, based on CDC guidelines and protocols used by the City of Los Angeles, Department of Public Works (see Appendix F-7). County meets with the City of San Diego to discuss HAV outbreak.
- County issues directive to City of San Diego to immediately implement cleaning and sanitation protocol contained in the "Sanitation Protocol for Public Right-of-Ways" (see Appendix F-9).
- County DEH reaches out via email to nearly 10,000 permitted food facilities in the region with an invitation to attend a foodborne illness prevention workshop. County conducts foodborne illness prevention workshop to over 150 local food facilities and food handlers.
- County DEH staff conducts 25 investigations at retail food facilities related to HAV outbreak.
- County DEH staff inspects Facility 8 and George F. Bailey Detention Facilities, and provides and reviews HAV information during the routine inspections.
- County DEH communicates with Sheriff's Department Food Service Manager regarding HAV and disinfection.
- County DEH staff continues to provide HAV outbreak information and guidance on sanitation, and food handler vaccination, and employee health and hygiene during routine food facility inspections.
- County DEH shares Health Officer's letter to occupational groups recommended for vaccination, which includes food handlers, to industry associations who distribute the information to their 12,000 members (see Appendix F-5).
- County DEH reaches out via email to permitted Certified Unified Program Agency permitted businesses in the region sharing HAV outbreak information and HAV disinfection guidance.

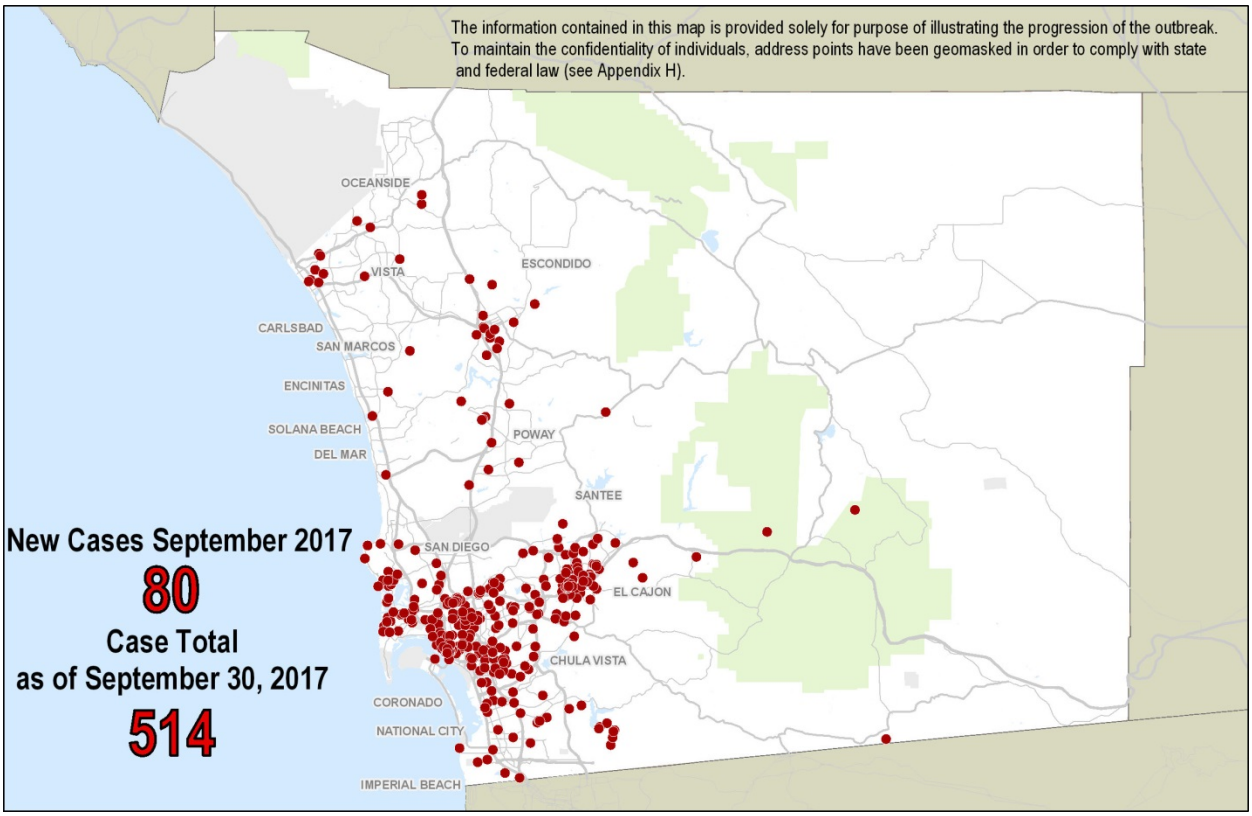
- **The County continues to engage stakeholders and the broader public to provide communication and education regarding the outbreak**
  - County continues facilitating calls and presentations about the San Diego HAV outbreak to medical community, homeless service providers, substance use disorder treatment providers, industry associations, food industry professionals, stakeholders and other jurisdictions.
  - County staff members present to the local chapter of the California Restaurant Association Executive Committee and Full Board; guidance information emailed to local membership and distributed to more than 1,800 association members statewide.
  - County issues new San Diego HAV outbreak education campaign posters for placement in trolleys and bus stations; posters are also made available to partners.
  - County Deputy Public Health Officer and other County officials meet with City of El Cajon to discuss San Diego HAV outbreak, including sanitation recommendations.
  - County continues to meet with the City of San Diego to provide updates on the San Diego HAV outbreak and coordinate response efforts.
  - County Deputy Public Health Officer and other County officials present to National City Police Department.
  - County issues CAHAN San Diego notification to medical community and other stakeholders: "Update #5: Hepatitis A Virus Outbreak in San Diego County" (see Appendix E-16).
  - County publishes County News Center article and press notification: New Vaccination Recommendations Issued for Hepatitis A Outbreak.

- County continues to update public webpage with information on HAV outbreak.

- **The County pursues other complementary efforts to support an effective outbreak response**
  - County meets via teleconference with HUD to discuss the San Diego HAV outbreak and discuss options for technical assistance.

SEPTEMBER 2017

- **There have been 514 cases associated with the HAV outbreak as of September 30, 2017, including 18 deaths.**



- **County Public Health Officer declares a public health emergency on September 1; declaration later ratified on September 6 by the San Diego County Board of Supervisors. Declaration is extended later in September 2017.**

- **Approximately 57,755 vaccinations have been administered by the County and its partners as of September 30, 2017.**
  - As of September 30, 2017, 772 field vaccination events (including 356 point of dispensing events, 392 foot teams, and 24 mobile van events) have been conducted.
  - County opens HAV vaccination clinic at the County Health Services Complex.
  - County sends letter to the local restaurant industry to “strongly recommend” vaccination of all food handlers (see Appendix F-14).
  - County continues working with homeless service providers, substance use disorder service providers, healthcare service providers, industry associations, and other stakeholders to mobilize

approaches to immunize at-risk groups.

- County continues offering vaccinations to County staff at risk of infection.

- **The County continues efforts to promote sanitation and healthy environments**
  - City of San Diego begins street cleaning and sanitation efforts pursuant to County Public Health Officer recommendations.
  - County begins increased field assessment of homeless encampments in public and private locations within the unincorporated area to identify locations for deployment of temporary restrooms and handwashing stations, prioritize clean-up and sanitation of encampment areas, and identify areas where homeless services were needed.
  - After-hours restrooms with overnight security guards were opened in four unincorporated area County parks: Goodland Acres Park, Lamar Park, and Spring Valley Park in community of Spring Valley; and Lindo Lake Park in community of Lakeside.
  - By September 30, 2017, the County has placed 63 handwashing stations in areas of the City of San Diego with high concentrations of at-risk homeless populations, as well as three others in other municipalities in San Diego County.
  - County continues distributing hygiene kits (5,252 have been distributed as of September 30, 2017).
  - HAV food facility investigation results in necessary notification to the public for public health protection. County publishes County News Center article to inform the public: Hepatitis A Case Reported at Pacific Beach Restaurant.
  - County DEH updates “Sanitation Protocol for Public Right-of-Ways” (see Appendix G-9).
  - County DEH reaches out via email to nearly 10,000 permitted food facilities in the region with three email notifications including distribution of a guidance document on HAV Vaccination Information for Food handlers, Health Officer’s vaccination of food handler’s letter, locations for vaccination, and upcoming food handler vaccination events.
  - County DEH reaches out to 15,800 permitted facilities in the region with public restroom, such as fitness and recreation centers, with information regarding the HAV outbreak and the HAV disinfection guidance document.
  - County DEH staff continues to provide HAV outbreak information and guidance on sanitation, and food handler vaccination, and employee health and hygiene during routine food facility inspections.
  - County DEH staff conducted 36 investigations at retail food facilities related to HAV outbreak.
  - County DEH communicates with Sheriff’s Department regarding disinfection of common areas in detention facilities and shares disinfection guidelines.

- **The County continues to engage stakeholders and the broader public to provide communication and education regarding the outbreak**
  - County HHSA Director, Public Health Officer, and Deputy Public Health Officer meet with the Mayor of San Diego to provide update on the HAV outbreak.
  - The County begins meeting with the City of San Diego on a twice weekly basis to provide updates on the San Diego HAV outbreak and coordinate response efforts.

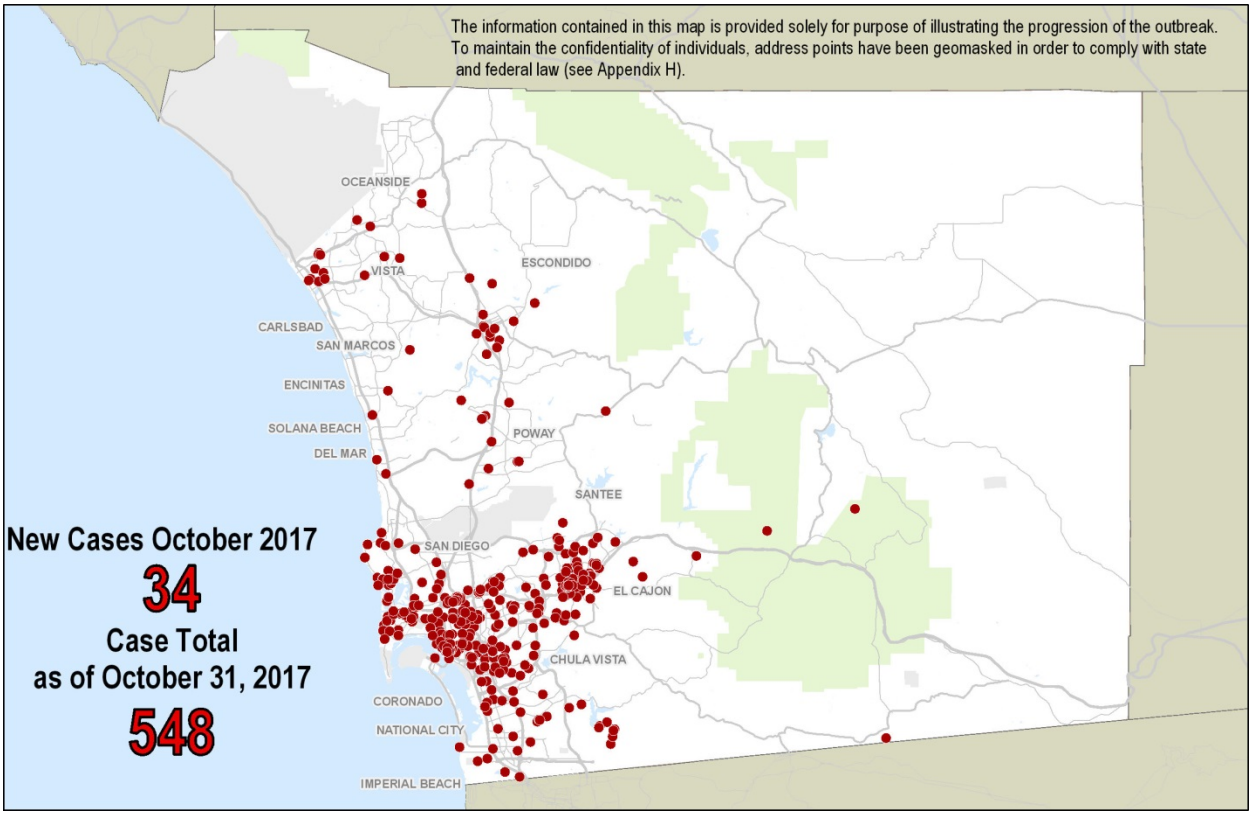
- Press event with City of San Diego and County leadership to update the media and the community on the status of the San Diego HAV outbreak.
- County Public Health Officer presents to the San Diego City Council's Select Committee on Homelessness to provide an update on the San Diego HAV outbreak.
- County hosts regional meeting regarding the San Diego HAV outbreak with all municipalities invited. Topics discussed included: Overview of HAV and the outbreak, three pronged response strategy (vaccination, sanitation, and education), and how the Cities can assist.
- County Deputy Public Health Officer and Assistant Chief Operations Officer from City of San Diego provide joint presentation on the San Diego HAV outbreak response at Regional Task Force on the Homeless.
- County Public Health Officer and other County officials meet with Fire Chiefs and City Manager staff of the City of National City to provide update on the San Diego HAV outbreak.
- County Deputy Public Health Officer and other County officials meet with Mayor of Chula Vista to provide update on HAV outbreak.
- County Public Health Officer and other County officials meet with City Manager of the City of Escondido to provide update on the San Diego HAV outbreak.
- County Public Health Officer present at the City Council meeting of National City to provide update on HAV outbreak.
- County Deputy Public Health Officer and other County officials meet with City of La Mesa to provide update on HAV outbreak.
- County Deputy Public Health Officer and other County officials meet with City of Santee to provide update on HAV outbreak.
- County Deputy Public Health Officer presents at Community Health Improvement Partner's Independent Living Association lunch and learn.
- County Deputy Public Health Officer presents at Mental Health Contractors Association General Member meeting.
- County Deputy Public Health Officer and other County officials present to City of Oceanside City Manager's Office to provide update on HAV outbreak.
- County DEH presents at HAV education and outreach at a conference for detention food service managers.
- San Diego County Medical Society hosts Healthcare Providers Meeting on HAV.
- County DEH communicates with the San Diego Hotel/Motel Association on HAV outbreak, potential impact to their operators, vaccination efforts and HAV prevention.
- Starting in September and continuing throughout the duration of the local health emergency, multiple County departments shared the HAV disinfection and employee health and hygiene guidance document with their permit operators, stakeholder partners, and during their regulatory program inspections.
- California Board of Pharmacy issues email to members regarding rules around coverage for individuals seeking HAV vaccine; County conducts presentation to the San Diego County Pharmacists Association regarding the San Diego HAV outbreak.

- County provides HAV educational materials to Seattle-King County Health Department for adaptation.
- County continues facilitating calls and presentations about the San Diego HAV outbreak to medical community, homeless service providers, substance use disorder treatment providers, and other stakeholders.
- County publishes County News Center articles and press notifications: Local Public Health Emergency for Hepatitis A Outbreak Ratified by Board of Supervisors and County, City Urge Public to Help Stop Spread of Hepatitis A and Board of Supervisors Extends Local Health Emergency.
- County issues California Health Alert Network (CAHAN) San Diego notification to medical community and other stakeholders: "Update #6: Hepatitis A Virus Outbreak in San Diego County" (see Appendix E-20).
- County continues to update public webpage with information on HAV outbreak.

- **The County pursues other complementary efforts to support an effective outbreak response**
  - County Medical Operations Center (MOC) activated to support HAV outbreak response.
  - County staff from multiple departments involved in the local health emergency response visit downtown Los Angeles, where large numbers of homeless people are living on the streets, to gain first-hand knowledge about how the City of Los Angeles conducts homeless area clean-ups and provides services to the homeless.
  - HUD conducts a site visit to San Diego region to provide technical assistance, pursuant to a request from the Regional Task Force on the Homeless.

OCTOBER 2017

- **There are 548 cases associated with the HAV outbreak as of October 31, 2017, including 20 deaths.**



- **Governor Jerry Brown declares a state of emergency due to 576 HAV cases in California, including San Diego County, Santa Cruz County, and Los Angeles County. The declaration includes orders that:**
  - CDPH take all measures necessary to obtain HAV vaccines and prioritize the vaccination of at-risk individuals in affected locations.
  - All drugs and medical supply stocks intended for wholesale distribution shall be held subject to the control and coordination of the CDPH as necessary to control the HAV outbreak.
  - Emergency Medical Technician-Paramedic licensees in the affected locations shall have the authority to administer the appropriate vaccines to at-risk populations.
- **The County continues efforts to provide vaccinations to at-risk groups. Approximately 92,487 people have been vaccinated by the County and its partners as of October 31, 2017.** This includes:
  - As of October 31, 2017,1,354 field vaccination events (including 501 POD events, 794 foot teams, and 59 mobile van events) have been conducted.
  - County request for paramedics to be able to dispense HAV vaccine in certain situations is

approved by the State Emergency Medical Services Authority.

- County Public Health Officer issues letter to local community clinics, hospitals, and pharmacies, encouraging them to fill out a survey to gauge the availability of adult HAV vaccines throughout the County on a weekly basis.
- County continues offering vaccinations to County staff at risk of infection.
- County continues working with homeless service providers, substance use disorder service providers, healthcare service providers, and other stakeholders to mobilize approaches to immunize at-risk groups.

- **The County continues efforts to promote sanitation and healthy environments**
  - County Department of Agriculture, Weights and Measures (AWM) provides California Department of Pesticide Regulation's (CDPR) guidance on licensing and a temporary exemption for specified levels of licensing requirements where emergency health situations existed and immediate applications of registered pesticides to control the San Diego HAV outbreak was needed.
  - County DEH updates "Sanitation Protocol for Public Right-of-Ways" (see Appendix G-11).
  - Ten temporary restrooms with full-time security guards and twelve handwashing stations installed in unincorporated area of the county.
  - In the unincorporated areas, the County continues to assess private and public properties to locate homeless encampments.
  - By October 31, 2017, the County has placed 149 handwashing stations throughout the County in areas with high concentrations of at-risk homeless populations.
  - Based on assessments of public and private properties to identify locations of homeless encampments, clean-up and sanitization activities begin in the unincorporated area of the County. As part of clean-up efforts in the unincorporated area, County HHSA Integrative Services performs outreach to homeless individuals to offer temporary housing and homeless support services.
  - County DEH staff conducted seven investigations at retail food facilities related to the San Diego HAV outbreak.
- **The County continues to engage stakeholders and the broader public to provide communication and education regarding the outbreak**
  - County Deputy Public Health Officer meets with the Imperial Beach City Council to provide update on HAV outbreak.
  - County hosts event for city staff in charge of sanitation, public works, and parks to discuss sanitization of drainage culverts/channels/softscape areas, streets, sidewalks, and gutters. City representatives who attended shared best practices for homeless encampment sanitization, learned from guest presenters from the City of Los Angeles, and were encouraged to establish sanitization protocols and procedures.
  - Meeting convened with County officials, Mayor of San Diego, Hospital Association of San Diego and Imperial Counties (HASDIC) board to further coordination of HAV vaccination efforts across local health systems.
  - County meets with City of San Diego on weekly basis to provide update on the San Diego HAV outbreak and coordinate response efforts.

- County Public Health Officer presents at the City Council meeting of City of Chula Vista to provide update on the San Diego HAV outbreak.
- County Deputy Public Health Officer presents to the City of Santee to provide update on the San Diego HAV outbreak.
- County Deputy Public Health Officer meets with City of Poway to provide update on the San Diego HAV outbreak.
- County Public Health Officer presents to the Public Safety and Livable Neighborhoods Committee of the City of San Diego City Council to provide an update on the San Diego HAV outbreak.
- County continues facilitating calls and presentations about the San Diego HAV outbreak to medical community, homeless service providers, substance use disorder treatment providers, and other stakeholders.
- County DEH reaches out via email to nearly 10,000 permitted food facilities in the region with three email notifications including an update on the ongoing HAV outbreak, links to guidance and information posted online, and a handwashing poster. A notification also included distribution of a HAV guidance document for food facilities.
- County DEH staff continues to provide HAV outbreak information and guidance on sanitation, and food handler vaccination, and employee health and hygiene during routine food facility inspections.
- Multiple County departments continue to share the HAV disinfection and employee health and hygiene guidance document with their permit operators, stakeholder partners, and during their regulatory program inspections.
- County issues California Health Alert Network (CAHAN) San Diego notification to medical community and other stakeholders: “Hepatitis A Vaccination Recommendations during the Current San Diego County Outbreak” (see Appendix E-24) and “Update #7: Hepatitis A Virus Outbreak in San Diego County” (see Appendix E-26).
- County publishes County News Center articles and press notifications: One Shot of Hep A Vaccine Can Stop Outbreak and Hep A Emergency Declaration Extended Again and Hepatitis A Outbreak Update.
- County continues to update public webpage with information on HAV outbreak.

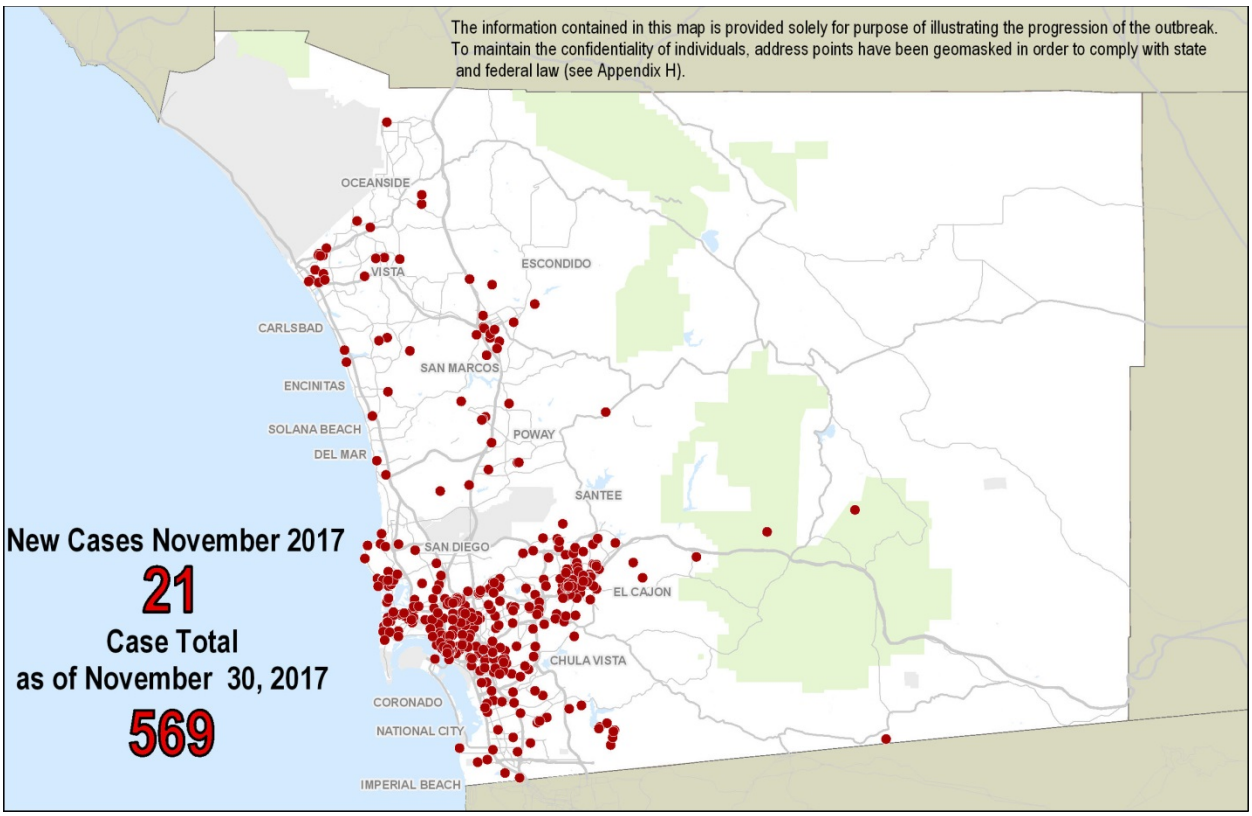
- **The County pursues other complementary efforts to support an effective outbreak response**
  - San Diego County Board of Supervisors votes to extend local health emergency.
  - United States (US) EPA Region 9 sends response letter to U.S. Representative Scott Peters on HAV, who had inquired whether contaminated water pathways are contributing to the outbreak (see Appendix B-3). The letter acknowledges that US EPA does not have public health expertise, but endorses the advice already provided to remove trash, debris, and human feces from urban areas where it could impact waterways. Letter also states that no one is presently monitoring surface water for any hepatitis viruses based on information obtained from the Southern California Coastal Water Research Project (SCCWRP), a Joint Powers Authority with expertise in local water quality issues.
  - California Department of Pesticide Regulation (CDPR) issues “Pesticide Regulatory Guidance on Control of Hepatitis A with Sodium Hypochlorite, Applicator Licensing, and Business Licensing Requirement” to County Agricultural Commissioners (see Appendix B-4).
  - County Public Health Officer reaches out to the Director of the CDC Division of Viral Hepatitis, in

response to questions and concerns regarding the potential for waterborne transmission of HAV virus (see Appendix B-8). Guidance is received from CDC confirming that there is no indication that the San Diego HAV outbreak had a water source and that there is no evidence that either water or environmental sampling provides additional information for addressing person-to-person HAV transmission. (see Appendix B-10)

- San Diego City Councilman David Alvarez writes to SCCWRP Executive Director requesting the organization undertake surface water monitoring in urban waterways that are impacted by homeless encampments. SCCWRP Executive Director writes back to Councilman Alvarez that public health officials, including CDC, have determined that waterborne transmission of HAV is unlikely and CDC has recommended against conducting any "water or environmental sampling" for HAV (see Appendix B-12). Letter also notes that USEPA has not recommended water testing, but instead has endorsed removal of trash, debris, and human feces from urban areas where it could impact waterways. Letter notes that such cleanup efforts were already underway at the time.
- County meets with HUD to discuss ongoing technical assistance.
- County fully rolls out ORMS HAV outbreak management database.

NOVEMBER 2017

- **There are 569 cases associated with the HAV outbreak as of November 30, 2017, including 20 deaths.**



- **The County continues efforts to provide vaccinations to at-risk groups. Approximately 104,540 vaccinations have been provided by the County and its partners as of November 30, 2017.**

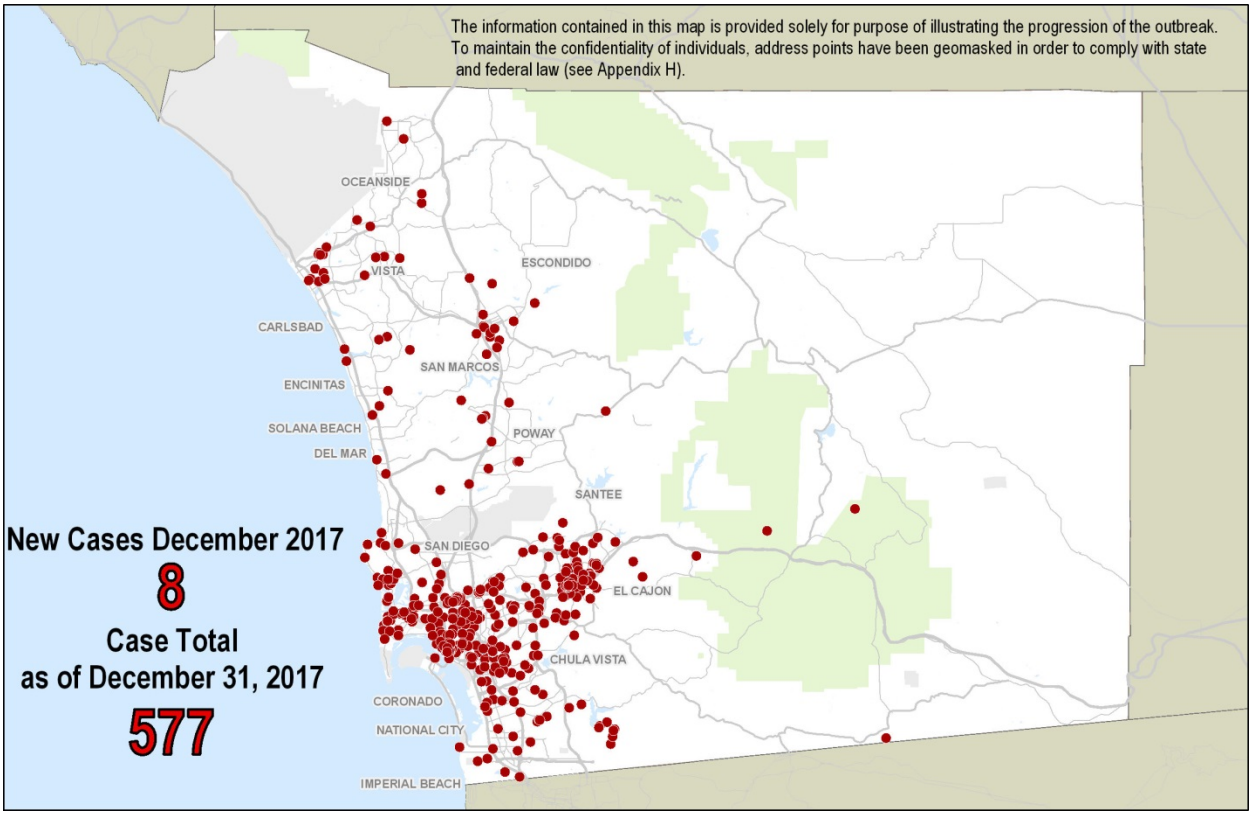
This includes:

- As of November 30, 2017, 1,780 vaccination field events (including 610 point of dispensing events, 1098 foot teams, and 72 mobile van events) have been conducted.
- County continues working with homeless service providers, substance use disorder service providers, healthcare service providers, and other stakeholders to mobilize approaches to immunize at-risk groups.
- County continues offering vaccinations to County staff at risk of infection.

- **The County continues efforts to promote sanitation and healthy environments**
  - County DEH staff conducts four investigations at retail food facilities related to the San Diego HAV outbreak.
  - County DEH staff continues to provide HAV outbreak information and guidance on sanitation, and food handler vaccination, and employee health and hygiene during routine food facility inspections.
  - Multiple County departments continue to share the HAV disinfection and employee health and hygiene guidance document with their permit operators, stakeholder partners, and during their regulatory program inspections.
  - By November 30, 2017, the County has placed 158 handwashing stations throughout the County in areas with high concentrations of at-risk homeless populations.
  - In the unincorporated areas, the County continues to assess private and public properties to locate homeless encampments, continues to offer homeless services at locations of known homelessness, and continues clean-up and sanitization of homeless encampments.
- **The County continues to engage stakeholders and the broader public to provide communication and education regarding the outbreak**
  - County continues facilitating calls and presentations about the San Diego HAV outbreak to medical community, homeless service providers, substance use disorder treatment providers, and other stakeholders.
  - County publishes County News Center article and press notification: Local Public Health Emergency Extended Again and Hepatitis A Outbreak is Showing Signs of Slowing and Hepatitis A Outbreak Slows; Health Emergency Continues.
  - County Epidemiology and Immunization Services Branch Medical Director presents to Medical Advisory Committee for the American Liver Foundation, Pacific Coast Division to provide an update on the San Diego HAV outbreak.
  - County Deputy Public Health Officer discusses hepatitis A outbreak at general/closing and another session of the National Healthcare Coalition Preparedness Conference.
  - County continues to update public webpage with information on the San Diego HAV outbreak.
  - County meets with City of San Diego on weekly basis to provide update on the San Diego HAV outbreak and coordinate response efforts.
- **The County pursues other complementary efforts to support an effective outbreak response**
  - San Diego County Board of Supervisors votes to extend local health emergency.

DECEMBER 2017

- **There are 577 cases associated with the HAV outbreak as of December 31, 2017, including 20 deaths.**



- **The County continues efforts to provide vaccinations to at-risk groups. Approximately 111,107 HAV vaccinations provided as of December 31, 2017**
  - As of December 31, 2017, 2,182 vaccination field events (including 724 point of dispensing events, 1,383 foot teams, and 75 mobile van events) have been conducted.
  - County continues working with homeless service providers, substance use disorder service providers, healthcare service providers, and other stakeholders to mobilize approaches to immunize at-risk groups.
  - County continues offering vaccinations to County staff at risk of infection.
- **The County continues efforts to promote sanitation and healthy environments**
  - County DEH staff conducts one investigation of a retail food facility related to the San Diego HAV outbreak.
  - County DEH staff continues to provide HAV outbreak information and guidance on sanitation, and food handler vaccination, and employee health and hygiene during routine food facility inspections.
  - Multiple County departments continue to share the HAV disinfection and employee health and hygiene guidance document with their permit operators, stakeholder partners, and during their

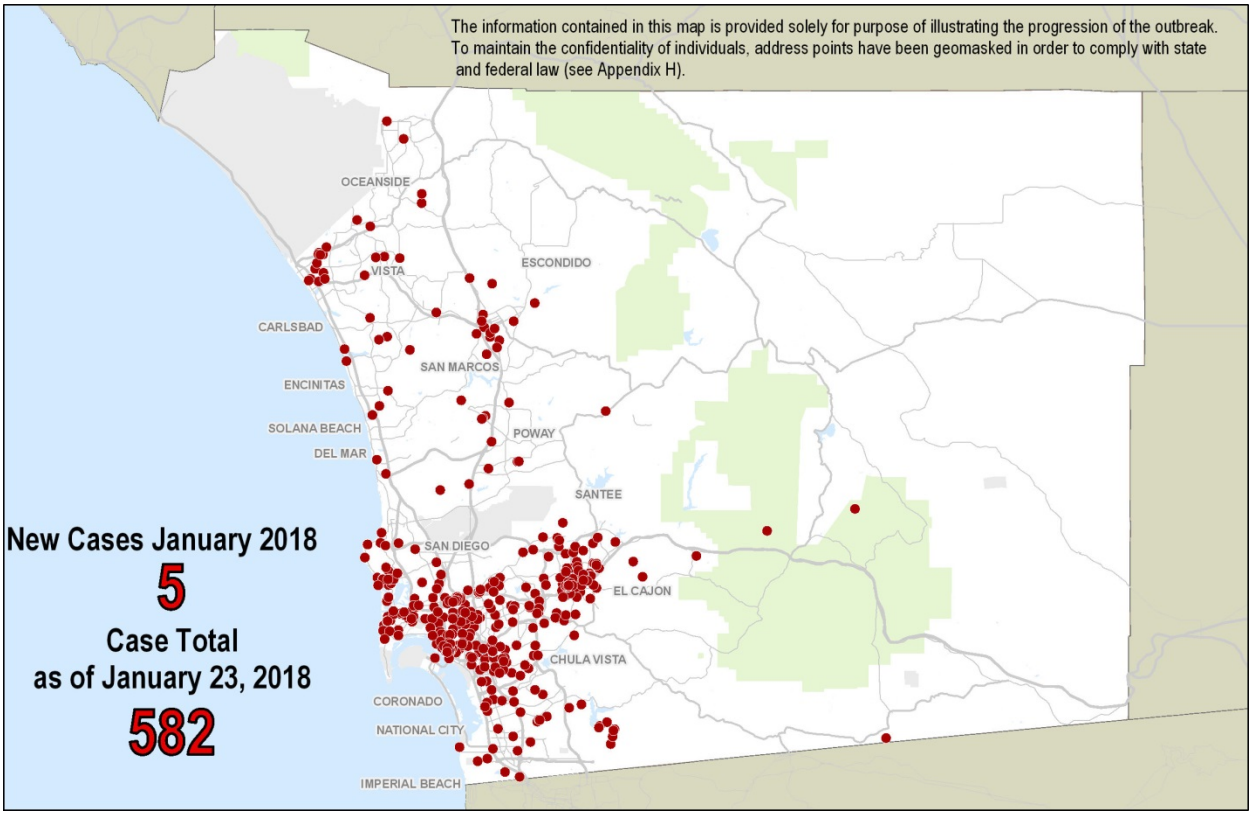
regulatory program inspections.

- By December 31, 2017, the County has placed 160 handwashing stations throughout the County in areas with high concentrations of at-risk homeless populations.
- In the unincorporated areas, the County continues to assess private and public properties to locate homeless encampments, continues to offer homeless services at locations of known homelessness, and continues clean-up and sanitization of homeless encampments.

- **The County continues to engage stakeholders and the broader public to provide communication and education regarding the outbreak**
  - County continues facilitating calls and presentations about the San Diego HAV outbreak to medical community, homeless service providers, substance use disorder treatment providers, and other stakeholders.
  - County meets with Mayor of San Diego to provide update on the San Diego HAV outbreak.
  - County meets with the City of San Diego on biweekly basis to provide update on HAV outbreak and coordinate response efforts.
  - Deputy Public Health Officer presents on HAV and HAV and illicit drug users at Methamphetamine Strike Force Quarterly Meeting.
  - Deputy Public Health Officer presents on HAV and HAV and illicit drug users at Methamphetamine Strike Force Quarterly Meeting.
  - County publishes County News Center article and press notification: Hepatitis A Cases Down Again; Emergency Continues and New Hepatitis A Cases Drop Significantly.
  - County continues to update public webpage with information on HAV outbreak.
- **The County pursues other complementary efforts to support an effective outbreak response**
  - San Diego County Board of Supervisors votes to extend local health emergency.

JANUARY 2018

- **There are 582 cases associated with the HAV outbreak as of January 23, 2018, including 20 deaths.**



- **The County continues efforts to provide vaccinations to at-risk groups. Approximately 115, 171 vaccinations have been provided. Additionally, 6,750 vaccinations have been administered to the at-risk professionals, for a total of 121, 921 vaccinations.**
  - As of January 23, 2018, 2,538 field vaccination events (including 833 point of dispensing events, 1,625 foot teams, and 80 mobile van events) have been conducted.
  - County continues offering vaccinations to County staff at risk of infection.
- **The County continues efforts to promote sanitation and healthy environments**
  - County DEH staff conducts two investigations at retail food facilities related to the San Diego HAV outbreak.
  - County DEH staff continues to provide HAV outbreak information and guidance on sanitation, and food handler vaccination, and employee health and hygiene during routine food facility inspections.
  - Multiple County departments continue to share the HAV disinfection and employee health and hygiene guidance document with their permit operators, stakeholder partners, and during their regulatory program inspections.
  - In the unincorporated areas, the County continues to assess private and public properties to

locate homeless encampments, continues to offer homeless services at locations of known homelessness, and continues clean-up and sanitization of homeless encampments.

- County continues distributing hygiene hits (over 10,000 have been distributed as of January 23, 2018).

- **County continues to engage stakeholders and the broader public to provide communication and education regarding the outbreak**
  - County publishes County News Center article and press notification: Hepatitis A Emergency Winding Down.
  - County Deputy Public Health Officer and other County officials meet with City of El Cajon and City of Chula Vista officials to provide an update on the San Diego HAV outbreak.
  - County officials meet with City of Santee and City of La Mesa officials to provide an update on the San Diego HAV outbreak.
  - County staff meets with the City of San Diego staff to provide update on the San Diego HAV outbreak and coordinate response efforts.
- **The County pursues other complementary efforts to support an effective outbreak response**
  - County hosts regional meetings where city jurisdictions and other agencies convened to discuss their HAV response activities, share best practices, and discuss sustainability efforts.
- **San Diego County Board of Supervisors votes to end local health emergency on January 23, 2018.**

Recommendations

Recommendations to prevent future outbreaks and address any outbreaks that do occur are outlined below. These recommendations may be considered by other jurisdictions that respond to a similar public health threat.

RECOMMENDATION 1:

For future public health outbreaks with the potential for regional impacts, the County should enhance its use of incident management structures to coordinate regional actions. One key structure should be a policy group of County and regional executive leadership from affected jurisdictions that convenes regularly during the outbreak.

During the HAV outbreak, County staff and leadership coordinated efforts with the region through meetings, outreach, and communication between staff in the Medical Operations Center (MOC) and partner jurisdictions. Adding additional elements of formal emergency management structures based on the federal Incident Command System (ICS), the National Incident Command System and Standardized Emergency Management Systems (NIMS/SEMS) would enhance regional coordination and decision-making. The local model can be adjusted to meet the needs of the particular response, but it should include certain standard structures. In particular, convening a policy group of County leaders and executive leaders from affected jurisdictions could facilitate swift, coordinated and informed actions across multiple jurisdictions. This group would interact with the MOC or the Emergency Operations Center and address regional matters, such as declaring health emergencies, procuring and allocating resources, and conducting public outreach and education.

RECOMMENDATION 2:

Train additional Public Health and other County staff in emergency management structures and roles to enhance their readiness to respond to a public health emergency.

The County routinely conducts drills to practice for public health emergencies and provides trainings to staff on the federal Incident Command System (ICS), the National Incident Command System and Standardized Emergency Management System. However, the San Diego HAV outbreak demonstrated that hundreds of staff members from across County departments (in addition to thousands of partners from other entities) may be part of a public health emergency response. An effective ICS structure is important to managing a large-scale, long-lasting and unique public health emergency. Training additional staff in ICS and NIMS/SEMS will further bolster staff resources that can be deployed when an outbreak or other threat becomes more complex, grows in scope or scale, or otherwise results in a need for staff to be called away from their everyday roles to participate in the response.

RECOMMENDATION 3:

Develop a notification process to communicate pertinent information to municipalities and other governmental agencies to assist in response to emerging public health issues.

The County has California Health Alert Network (CAHAN) San Diego, which serves as the County's routine mechanism for disseminating urgent and comprehensive medical information to the healthcare community about emerging or continuing public health issues and issuing recommended actions. A parallel notification system could be developed for non-medical notifications for when the County needs to conduct outreach to regional emergency managers and other identified contacts. This would allow affected jurisdictions to respond as early as possible to emerging public health threats.

RECOMMENDATION 4:

Share information with the Centers for Disease Control and Prevention (CDC), California Department of Public Health (CDPH), and other agencies to inform future HAV responses around the United States.

Since the San Diego outbreak, numerous other communities have been challenged by HAV outbreaks primarily among homeless and drug using populations. As in San Diego, these communities had never previously responded to this particular character of HAV outbreak. The County's response now provides a model for other communities, and the County has shared information with at least 16 other jurisdictions. The County approach and lessons learned were presented to representatives from around the nation in November 2017 at the general/closing session of National Healthcare Coalition Preparedness Conference and at an April 2018 health emergency preparedness conference. The County's model helped other jurisdictions react quickly to HAV activity or to take steps to prevent an HAV outbreak. The County should continue to share information on its response with state, federal and local officials.

RECOMMENDATION 5:

Work with the local medical community and other stakeholders to encourage the routine review and administration of adult hepatitis A (HAV) vaccines to individuals.

A large percentage of the people who contracted HAV had existing CDC indications to receive the HAV vaccine, because they were either illicit drug users, men who have sex with men or they had chronic liver disease. However, none had documentation of being previously vaccinated with the full HAV vaccination series. Many of those who were ill reported never having been offered the HAV vaccine by a medical provider. Routinely incorporating recommended vaccines into adult patient care could prevent many serious diseases, including HAV. Additionally, during the San Diego HAV outbreak, hospital emergency departments, behavioral health providers, public safety agencies, Sexually Transmitted Disease (STD) clinics and other non-primary care partners engaged in vaccinating or facilitating vaccination of at-risk clients. The at-risk population may not have regular access to primary care, and mechanisms to offer vaccine via other avenues will help address this barrier. The County will continue to work with local healthcare partners and other stakeholders on these efforts.

RECOMMENDATION 6:

Pursue systems and policy changes to support increased entry of adult vaccinations into immunization registries.

The San Diego Regional Immunization Registry (SDIR) is a collaborative effort of the County of San Diego, healthcare providers, schools, and other stakeholders. SDIR provides an electronic record of all immunizations given to an individual by participating providers in both the public and private sectors. Registry use in the San Diego region can decrease unnecessary immunizations as well as decrease vaccine preventable diseases by identifying vaccines that are needed. Currently, of the civilian healthcare systems, all of the local healthcare systems and approximately 75-80% of eligible providers participate in SDIR. More robust participation of local healthcare providers would support documentation of vaccines into the SDIR, which helps ensure that vaccination resources can be deployed most efficiently.

Additionally, San Diego Health Connect − the local health information exchange − acts as a pass-through for immunization data to SDIR.[15] Currently, 60% of all immunization records are received electronically into SDIR through San Diego Health Connect. As more providers participate in San Diego Health Connect, this will help further bolster the SDIR's efforts to document local vaccinations.

RECOMMENDATION 7:

Work with the Centers for Disease Control and Prevention (CDC) to add homeless individuals to the nationally recommended list of those who should receive the HAV vaccination.

The local recommendation that the homeless population receive HAV vaccines will remain in place. However, with HAV occurring in homeless populations in other jurisdictions, and homelessness being a nationwide issue, adding homeless individuals as an indicated group by CDC for HAV vaccine would help prevent future HAV outbreaks.

RECOMMENDATION 8:

Conduct ongoing outreach to service providers to make them aware of the continued local recommendation that people who work with homeless individuals or drug users should receive the HAV vaccine.

The local recommendation for at-risk workers, such as food handlers, sanitation and janitorial workers and those who work directly with homeless individuals and illicit drug users, will remain in place, but with San Diego HAV outbreak cases now very low, awareness of the local recommendations will wane. Continued outreach to organizations that employ these workers will help protect them, particularly as

[15] http://sdhealthconnect.org/

scattered cases involving homeless or illicit drug using individuals related to the San Diego HAV outbreak continue.

RECOMMENDATION 9:

Continue activities to promote second doses of HAV vaccine.

The single-antigen HAV vaccine is given as a two-dose series, six months apart. It is so effective that the first dose alone confers protections for years, and, when given to enough people, is effective to contain an outbreak to manageable levels. To have long-term immunity to HAV, a second dose is recommended. Since ending the local health emergency, the County has made significant efforts to encourage and offer second dose vaccinations. These include issuing two County News Center stories and a California Health Alert Network bulletin, conducting numerous field events across the region, and continuing to offer the vaccine at County Public Health Centers. Some second-dose events were coordinated with municipalities and partners such as the California Restaurant Association to target at-risk employees and food handlers respectively as well as homeless service providers, and substance use treatment facilities. The County will continue to promote second-dose vaccinations through such events and work with the medical community and other partners to institutionalize processes to routinely offer first and second dose vaccinations to-at risk individuals.

RECOMMENDATION 10:

Educate all County jail inmates on HAV risks and encourage them to be vaccinated.

The majority of inmates in County jail are illicit drug users and a significant number of homeless individuals cycle through the county jails on a daily basis. HAV vaccinations are recommended for these populations, and jail medical staff will continue to educate inmates on the importance of receiving HAV vaccinations. During the intake medical screening, everyone will be informed of the availability of the HAV vaccine and other adult vaccines in jail, and inmates will be encouraged to request these vaccines as part of their health care while in custody. Custody medical staff will reinforce the message.

RECOMMENDATION 11:

In the event of a future disease outbreak, employ foot teams to engage difficult-to-reach populations who may not routinely access traditional medical care and may not have access to public information about health calls to action.

Foot teams (and other types of multidisciplinary field teams) were piloted in this emergency and proved effective in extending the County's reach into areas where those most at-risk were located. Protocols and agreements with public safety agencies and other community partners will be used to formalize the partnerships for deployment as needed. The benefits of utilizing foot teams should be balanced with the costs of required resources, including nursing staff, homeless outreach workers/public safety support, and equipment for appropriate vaccine storage and transport.

RECOMMENDATION 12:

Use cleaning products that are effective against HAV and other viruses in public areas and facilities.

The County will continue using cleaning products in public areas of County facilities that are effective in killing HAV and other viruses and will continue to follow sanitization procedures indicating where cleaning products should be used. Other jurisdictions should similarly consider using cleaning products in areas under their purview.

RECOMMENDATION 13:

Use a multi-disciplinary approach to monitor public right-of-ways and address sanitation needs.

The HAV outbreak showed the importance of sanitation efforts in the public right-of-way. Sanitation of public facilities and right-of-ways is the responsibility of individual jurisdictions, but this regional recommendation is included to encourage public health and best practice throughout the region. The County has continued to assess areas of known homelessness and address homeless camps in unincorporated areas, and conduct assessments of public right-of-ways in the unincorporated County. This approach will continue to be a multi-disciplinary, fully-threaded engagement that includes coordination with the Sheriff's Department and Health and Human Services Agency departments and others to ensure representatives from these groups are present in the field. The multi-disciplinary sanitation approach was an effective means of safely and efficiently engaging with the homeless population to offer vaccinations, interim housing options, and other services. The County recommends that other jurisdictions proactively monitor their own right-of-ways and address any sanitation needs. Using multi-disciplinary teams as needed as part of these efforts is also recommended, in alignment with the County's own efforts. The County will continue to work closely with jurisdictions in their efforts to deploy a multi-disciplinary approach.

RECOMMENDATION 14:

Support California Department of Pesticide Regulation (CDPR) regulatory changes to streamline public health disinfection activities to be used in future public health responses.

County Agriculture, Weights and Measures identified amendments to current State regulations that, if approved, would further facilitate a timely response to future public health emergencies. These amendments include language that would streamline public health disinfection activities by providing the same level of exemptions to public health emergency activities as are currently provided to vector control activities. The related regulations ("Public Health Pesticide Applications" proposed changes for 3CCR Section 6621) are listed on CDPR's 2018 Rulemaking Calendar. The County will continue to pursue opportunities to weigh in on these proposed regulations during the rulemaking period.

RECOMMENDATION 15:

Encourage the Environmental Protection Agency (EPA) to provide additional tools and resources to manage HAV outbreaks.

EPA has lists of registered products effective against hepatitis B and tuberculosis but no similar list for HAV. The list of products effective against norovirus (a non-enveloped virus like HAV) is sometimes used to select products that are likely to be effective against HAV. Due to the multiple outbreaks of HAV occurring around the country, EPA should strongly consider creating a list of specific registered products effective against HAV to help businesses, homeless service providers, and others across the country effectively sanitize against HAV.

RECOMMENDATION 16:

Enhance local surge capacity to respond to a public health need.

A future public health response may require a surge of health care professional resources, but may not necessitate a local emergency declaration. The state's Medical Reserve Corps (MRC), however, is specifically designed to provide registered nurses and other health care professionals with confirmed current licenses to respond to declared local or state health emergencies. Some California counties have been able to draw from the MRC's volunteer list outside a declared emergency by developing local hiring and liability coverage protocols. An alternative process for the San Diego region to further leverage MRC professionals will continue to be developed. The County will also pursue a policy at the State level to allow the MRC to be used for surge health care staffing and respective drills in the absence of a local emergency or local health emergency declaration.

Additionally, the County leveraged temporary nursing staff to support the HAV outbreak response. During the outbreak, the County expanded existing and developed additional contracts for temporary staffing. Following the H1N1 outbreak, the County maintained a contract for surge capacity. Due to the number of nurses needed to support the vaccination efforts of the HAV outbreak, the County now has multiple contracts in place in case there is a need for increased surge capacity. The County will work with the contract providers and the MRC to ensure volunteer and temporary nurses receive appropriate training on working in mass vaccination clinics to enhance their ability to respond during an outbreak.

RECOMMENDATION 17:

Encourage federal agencies to create guidance to assist homeless service providers in addressing sanitation and hygiene in their respective settings.

Local resources were created to assist with guiding sanitation and hygiene efforts by homeless service providers during the San Diego HAV outbreak, but these providers may benefit from federal guidance on maintaining adequate sanitation and hygiene in their settings. There are many specific scenarios that homeless service providers are faced with, such as high rates of occupant turnover in some settings such as shelters, which may warrant specialized guidance. Federal agencies, including EPA, CDC, and

Housing and Urban Development (HUD), that employ national subject matter experts in sanitation, hygiene, and homeless service provision should work together to create such guidance documents which could be disseminated via regional continuums of care including the local Regional Task Force on Homeless.

RECOMMENDATION 18:

Coordinate with Regional Task Force on the Homeless and other key stakeholders to include reports on public health issues affecting vulnerable populations as a standing agenda item.

The Regional Task Force on the Homeless is composed of community leaders and stakeholders who coordinate and oversee a continuum of services for homeless people in the San Diego region. During the San Diego HAV outbreak, County officials shared information at the Regional Task Force on the Homeless and also facilitated a working group with stakeholders to plan and implement strategies to combat the outbreak. Continued coordination between the County, the Regional Task Force on the Homeless, and other stakeholders will help address the public health needs of the homeless population. Health is now a standing agenda item at the membership meetings, which occur several times a year, allowing for ongoing discussion of public health needs.

RECOMMENDATION 19:

Coordinate with substance use disorder treatment providers and other key stakeholders to offer vaccinations to illicit drug users.

Illicit drug use is an independent risk factor for getting HAV and CDC has long recommended that illicit drug users to be vaccinated. County Public Health Services will continue to coordinate routine vaccination activities with County Behavioral Health Services, as well as contracted and non-contracted substance use and mental health treatment facilities across the region. This will help ensure that this vulnerable group is protected against HAV. The County will continue education efforts targeted to behavioral health providers and clients to ensure awareness of HAV and knowledge of preventive measures to include vaccination and sanitation.

RECOMMENDATION 20:

Maintain and continue developing the capacity of the County Public Health Laboratory.

To keep pace with the scale and scope of the San Diego HAV outbreak, the County increased its capacity for diagnostic testing and identifying strains of HAV in the County Public Health Laboratory. Equipment purchased during the declaration of the HAV local health emergency has capabilities to be used for other communicable disease diagnostics. County Public Health Laboratory staff continue to develop and validate protocols, and train and increase capacity of public health microbiologists to perform testing and sequencing to support the response to current and future outbreaks.

RECOMMENDATION 21:

Pursue broader solutions to addressing homelessness and illicit drug use.

The County has taken numerous steps to address both homelessness and services for those with substance use disorders. Notable recent efforts include Project One For All, a comprehensive effort by the County and its partners to provide intensive wraparound services, including mental health counseling and housing, to homeless individuals with serious mental illness. The County is also preparing to implement the Drug Medi-Cal Organized Delivery System in order to improve care for those with substance use disorders and to enhance the availability of services. Vulnerable populations will benefit from the enhanced system through access to appropriate treatment services for their individual needs.

ACTION PLAN				
#	**Issue**	**Recommendation**	**Responsible Agency/ Department**	**Completion Date**
1	In the San Diego HAV outbreak, the County led meetings, outreach and communication to coordinate actions with cities and other jurisdictions. However, a more formal incident management structure would improve coordination in future outbreaks, facilitating swift coordinated decision making. Convening a policy group of County and regional leadership from affected cities as a regular part of the County's incident command system is an essential element that should be added in future responses.	For future public health outbreaks with the potential for regional impacts, the County should enhance its use of incident management structures to coordinate regional actions. One key structure should be a policy group of County and regional executive leadership from affected jurisdictions that convenes regularly during the outbreak.	HHSA	By 11/30/2018: Develop a protocol that directs the convening of a Policy Group upon use of an Incident Command System for a public health threat
2	An effective Incident Command System (ICS) structure is important in managing a large-scale, long-lasting and unique public health emergency. The San Diego HAV outbreak demonstrated that hundreds of staff members from across County departments (in addition to thousands of partners from other entities) may be part of an emergency response.	Train additional Public Health and other County staff in emergency management structures and roles to enhance their readiness to respond to a public health emergency.	HHSA	By 6/30/2019: Provide online training on the Incident Command System and emergency response to identified staff.
3	The County has California Health Alert Network (CAHAN) San Diego, which serves as the County's routine mechanism for disseminating urgent and comprehensive medical information about emerging or continuing public health issues and issuing recommended actions to the healthcare community. A parallel notification process could be developed for non-medical notifications for when the County needs to conduct outreach to regional emergency managers and other identified contacts. This would allow affected jurisdictions to respond as early as possible to emerging public health threats.	Develop a notification process to communicate pertinent information to municipalities and other governmental agencies to assist in response to emerging public health issues.	HHSA	By 11/30/2018: Develop a protocol that prompts the notification of municipalities and other governmental agencies upon use of the Incident Command System in a regional disease outbreak.

#	Issue	Recommendation	Responsible Agency/ Department	Completion Date
4	Since the San Diego HAV outbreak, numerous other communities have been challenged by HAV outbreaks among homeless and drug using populations. As in San Diego, these communities had never previously responded to this particular character of HAV outbreak. The County's response now provides a model to help other communities stop or prevent HAV.	Share information with the Centers for Disease Control and Prevention (CDC), California Department of Public Health (CDPH), and other agencies to inform future HAV responses around the United States.	HHSA	By 8/31/2018: (1) Continue to share information with jurisdictions as requested and present at state and national conferences where possible. (2) Develop a mechanism to track the distribution of information shared with others.
5	A large percentage of the people who contracted HAV had existing CDC indications to receive the HAV vaccine, because they were either illicit drug users or had chronic liver disease. However, none had documentation of being previously vaccinated with the full HAV vaccination series.	Work with the local medical community and other stakeholders to encourage the routine review and administration of adult hepatitis A (HAV) vaccines to individuals.	HHSA	By 8/31/2018: (1) Continue to include this recommendation in all presentations to the medical community. (2) Follow up with key stakeholders to formally request the routine review and administration of adult HAV vaccines to individuals as part of sustainability efforts.
6	Currently, 60% of all immunization records are received electronically into the San Diego Regional Immunization Registry (SDIR) through San Diego Health Connect, the local health information exchange. More provider participation in San Diego Health Connect would help further bolster the SDIR's efforts to document local vaccinations.	Pursue systems and policy changes to support increased entry of adult vaccinations into immunization registries.	HHSA	By 7/31/2018: Create marketing materials for SDIR and promote to providers and systems currently not participating. By 12/31/2018: Expand the current pilot of the bi-directional interface with medical systems using the Health Information Exchange to allow for easier view and input abilities of immunization data.

#	Issue	Recommendation	Responsible Agency/ Department	Completion Date
7	With HAV occurring in homeless individuals in other jurisdictions, and homelessness being a nationwide issue, adding homeless individuals as an indicated group by CDC for HAV vaccine would help prevent future HAV outbreaks.	Work with the Centers for Disease Control and Prevention (CDC) to add homeless individuals to the nationally recommended list of those who should receive the HAV vaccination.	HHSA	*The California Department of Public Health and the County of San Diego have already added homeless individuals to the statewide list of those who should receive the HAV vaccination.* By 10/31/2018: Continue to engage the CDC through the Advisory Committee on Immunization Practices by presenting to this committee on HAV and homeless individuals By October 31, 2018.
8	The local recommendation for at-risk workers to be vaccinated will remain in place, but with the San Diego HAV outbreak cases now very low, awareness of the recommendation will wane. Continued outreach to these workers will help protect them.	Conduct ongoing outreach to service providers to make them aware of the continued local recommendation that people who work with homeless individuals or drug users should receive the HAV vaccine.	HHSA	By 9/30/2018 (same date annually): (1) Continue to include this recommendation in all presentations to the appropriate service providers, including homeless providers, behavioral health, substance use, first responders, etc. (2) Send out written communication to these providers encouraging their staff to receive the HAV vaccine on an annual basis and reassess need after two year.

#	Issue	Recommendation	Responsible Agency/ Department	Completion Date
9	The single-antigen HAV vaccine is given as a two-dose series, six months apart. It is so effective that the first dose alone confers protections for years. To have long-term immunity to HAV, a second dose is recommended.	Continue activities to promote second doses of HAV vaccine.	HHSA	Ongoing: (1) Continue to utilize 211 San Diego, the County website, and other media outlets to promote the second dose of HAV vaccine. (2) Continue to schedule and track the second dose events via Outbreak Response Management System (ORMS) through December 31, 2018.
10	The majority of inmates in County jail are illicit drug users and a significant number of homeless individuals cycle through the County jails. HAV vaccinations are recommended for these populations.	Educate all County jail inmates on HAV risks and encourage them to be vaccinated.	Sheriff's Department	By 9/15/2018: Enhance ongoing education and vaccination efforts by: 1) Revising intake questions to standardize the advisement of HAV risks and jail vaccinations 2) Working with County public health staff to expand the jail HAV educational program
11	In the San Diego HAV outbreak, the at-risk population was difficult to reach and did not routinely access traditional medical care or public information about health calls to action. Future outbreaks may involve similar individuals, with these continuing barriers.	In the event of a future disease outbreak, employ multidisciplinary field/foot teams to engage difficult-to-reach populations who may not routinely access traditional medical care and may not have access to public information about health calls to action.	HHSA	By 5/31/2019: Incorporate the field/foot team model as well as education regarding how to engage difficult to reach populations in emergency preparedness training activities.
12	Local agencies are more effective in protecting the public when they use products that kill HAV and other viruses to clean buildings and other public spaces.	Use cleaning products that are effective against HAV and other viruses in public areas and facilities.	General Services	Ongoing

#	Issue	Recommendation	Responsible Agency/ Department	Completion Date
13	The HAV outbreak showed the importance of sanitation efforts in the public-right-of way. In the unincorporated areas, a multi-disciplinary approach to addressing homeless camps that included coordination with the Sheriff's Department and the County Health and Human Services Agency effectively addressed public safety and sanitation while engaging homeless individuals with vaccinations, housing options, and other services.	Use a multi-disciplinary approach to monitor public right-of-ways and address sanitation needs.	*For Unincorporated Areas:* Department of Public Works and Department of Parks & Recreation	Ongoing
14	The California Department of Pesticide Regulations currently have no public health emergency exemptions in place to streamline public health disinfection activities	Support California Department of Pesticide Regulation (CDPR) regulatory changes to streamline public health disinfection activities to be used in future public health responses.	Agriculture, Weights and Measures	Anticipated 2019
15	While the EPA has lists of registered products effective against hepatitis B and tuberculosis, there is currently no similar list of registered products determined to be effective against HAV	Encourage the Environmental Protection Agency (EPA) to provide additional tools and resources to manage HAV outbreaks.	HHSA	By 11/30/2018: Identify CDC, EPA and any other federal departments or divisions with involvement in product classification process.
16	A future public health response may require a surge of health care professional resources, but may not necessitate a local emergency declaration. Currently, the state's Medical Reserve Corps (MRC) is specifically designed to provide registered nurses and other health care professionals with confirmed current licenses to respond to declared local or state health emergencies. Some California counties have been able to draw from the MRC's volunteer list outside of a declared emergency by developing local hiring and liability coverage protocols.	Enhance the local surge capacity available to respond to a public health need.	HHSA	By 6/30/2019: Pursue local and statewide avenues in order to utilize the MRC volunteer list outside of a declared emergency status.
17	Local homeless service providers may benefit from federal guidance on maintaining adequate sanitation and hygiene in their settings.	Encourage federal agencies to create guidance to assist homeless service providers in addressing sanitation and hygiene in their respective settings.	HHSA	By 9/30/2018: Initiate dialogue with the United States Interagency Council on Homelessness to facilitate obtaining federal guidance on sanitation and hygiene guidelines for homeless service providers.

#	Issue	Recommendation	Responsible Agency/ Department	Completion Date
18	The Regional Task Force on the Homeless (RTFH) coordinates and oversees a continuum of services for homeless people in the San Diego region. During the San Diego HAV outbreak, County officials shared information at RTFH meetings and also facilitated a working group to plan and implement strategies to combat the outbreak. Ongoing coordination with the RTFH will address the public health needs of the homeless population.	Coordinate with Regional Task Force on the Homeless and other key stakeholders to include reports on public health issues affecting vulnerable populations as a standing agenda item.	HHSA	Ongoing: Include a standing agenda item at all Regional Task Force on the Homeless Full Membership meetings on Public Health issues. *This was initiated in April, 2018 and will continue for each of the 6 meetings per year.*
19	Illicit drug use is an independent risk factor for getting HAV and has been a longstanding group recommended by CDC to be vaccinated.	Coordinate with substance use disorder treatment providers and other key stakeholders to offer vaccinations to illicit drug users.	HHSA	By 11/30/2018: Continue to work with Behavioral Health and Substance Use Providers to schedule 200 HAV vaccination events at their sites and/or at common client serving locations throughout the County.
20	To keep pace with the scale and scope of the San Diego HAV outbreak, the County had to increase its capacity for diagnostic testing and identifying strains of HAV in the County Public Health Laboratory. Equipment purchased during the declaration of the HAV local health emergency has capabilities to be used for other communicable disease diagnostics.	Maintain and continue developing the capacity of the County Public Health Laboratory.	HHSA	By 6/30/2019: (1) Continue to work with CDC to use their testing module for hepatitis testing to determine relationships between specimens in an outbreak. (2) Formalize partnerships with external organizations to build capacity in bioinformatics, which would allow Public Health Laboratory to expand analysis of specimens.

#	Issue	Recommendation	Responsible Agency/ Department	Completion Date
21	Vulnerable populations will benefit from continued access to appropriate treatment services for their individual needs.	Pursue broader solutions to addressing homelessness and illicit drug use.	HHSA	By 7/31/2018: Initiate the implementation of Drug Medi-Cal Organized Delivery System. By 11/30/2018: Establish an organized approach to homeless outreach throughout the region in partnership with the Regional Task Force on the Homeless to help people access the most appropriate housing and services to meet their needs.

Appendices

APPENDIX A: DECLARATION OF LOCAL HEALTH EMERGENCY

APPENDIX B: FEDERAL AND STATE CORRESPONDENCE

APPENDIX C: INFORMATIONAL FLIERS/POSTERS

APPENDIX D: FEDERAL AND STATE GUIDELINES

APPENDIX E: CALIFORNIA HEALTH ALERT NETWORK BULLETINS

APPENDIX F: CORRESPONDENCE TO STAKEHOLDERS

APPENDIX G: DEPARTMENT OF ENVIRONMENTAL HEALTH GUIDELINES

APPENDIX H: CONFIDENTIALITY RESOURCES

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APPENDIX A
Local Health Emergency

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County of San Diego

NICK MACCHIONE, FACHE
DIRECTOR

HEALTH AND HUMAN SERVICES AGENCY
PUBLIC HEALTH SERVICES
TUBERCULOSIS CONTROL BRANCH
3851 ROSECRANS STREET, MAIL STOP P-576
SAN DIEGO, CA 92110-3134
(619) 692-5565 • FAX (619) 692-5650

WILMA J. WOOTEN, M.D., M.P.H.
PUBLIC HEALTH OFFICER

DECLARATION OF LOCAL HEALTH EMERGENCY

Whereas, the Hepatitis A infection is a highly contagious liver disease caused by the Hepatitis A virus that is usually transmitted by the fecal-oral route, either through person-to-person contact or consumption of contaminated food or water; and

Whereas, since November 22, 2016, to present, more than 378 confirmed or probable cases of Hepatitis A have been reported in San Diego County, primarily within the at-risk homeless and illicit drug using population; of these cases, approximately 70% of those cases have been hospitalized and there have been 15 confirmed deaths; and

Whereas, to combat the outbreak, the County of San Diego has initiated vaccination efforts by County staff and in collaboration with its community health, homeless, and behavorial health partners. To date, approximately 19,000 people have been vaccinated in response to this outbreak, of which over 7,100 vaccinations were given to the at-risk population. In addition, the County of San Diego has distributed over 1,400 hygiene kits to the at-risk population and placed handwashing stations on its own properties and partnered with the City of San Diego to place handwashing stations in impacted areas; and

Whereas, despite these aggressive efforts, local cases of Hepatitis A appear to be both increasing and spreading, necessitating that further steps be taken such as sanitizing areas where significant numbers of homeless persons are living by removing contaminants that could spread the virus.

Therefore, pursuant to Health and Safety Code section 101080, the Health Officer for the County of San Diego declares:

1) The spread of Hepatitis A in San Diego County is a threat to the public health.

2) A local health emergency is declared in San Diego County.

This declaration shall remain in effect for no longer than seven days unless ratified by the County of San Diego Board of Supervisors.

Date: September 1, 2017

Wilma J. Wooten, MD

WILMA J. WOOTEN, M.D., M.P.H.
Public Health Officer
Director, Public Health Services
County of San Diego

COUNTY OF SAN DIEGO

AGENDA ITEM

DATE: **September 6, 2017 and September 12, 2017** **01**

TO: Board of Supervisors

SUBJECT
RATIFY DECLARATION OF LOCAL HEALTH EMERGENCY: HEPATITIS A OUTBREAK (DISTRICTS: ALL)

OVERVIEW
On September 1, 2017, the Public Health Officer issued a Declaration of Local Health Emergency, pursuant to Health and Safety Code Section 101080, as a result of the outbreak of increasing numbers of Hepatitis A infections. Health and Safety Code Section 101080 requires that the Board of Supervisors ratify this Declaration of Local Health Emergency within seven days of being issued.

RECOMMENDATION(S)
CHIEF ADMINISTRATIVE OFFICER
On September 6, 2017:

1. Ratify the attached Declaration of Local Health Emergency made by the Public Health Officer on September 1, 2017.
2. Find that there is a continuing need for the local health emergency until no longer needed, subject to the Health and Safety Code Section 101080 requirements.

If on September 6, 2017, the Board takes action as recommended in Items 1 and 2 above, then on September 12, 2017:

1. Review authorization of the attached Declaration of Local Health Emergency made by the Public Health Officer on September 1, 2017.
2. Find that there is a continuing need for the local health emergency until no longer needed, subject to the Health and Safety Code Section 101080 requirements.

FISCAL IMPACT
There is no fiscal impact associated with this item.

BUSINESS IMPACT STATEMENT
N/A

SUBJECT: RATIFY DECLARATION OF LOCAL HEALTH EMERGENCY: HEPATITIS A OUTBREAK (DISTRICTS: ALL)

ADVISORY BOARD STATEMENT
N/A

BACKGROUND
Since November of 2016, almost 400 confirmed or probable cases of Hepatitis A have been reported in San Diego County, primarily in the at-risk homeless and illicit drug using populations. Cases are located throughout the County and are most pronounced in urban areas where homeless persons reside. Approximately 70% (279) of those cases have been hospitalized and there have been 15 confirmed deaths. The Hepatitis A infection is a liver disease caused by the Hepatitis A virus that is usually transmitted by the fecal-oral route, either through person-to-person contact or consumption of contaminated food or water, and is highly contagious.

County staff, in collaboration with its community health, homeless service providers, and behavioral health partners, vaccinated approximately 19,100 people in response to this outbreak, of which, at least 7,318 vaccinations were given to the at-risk population. In addition, to date, the County of San Diego has distributed over 2,400 hygiene kits to the at-risk population and placed handwashing stations on its own properties and partnered with the City of San Diego to place handwashing stations in impacted areas.

Since June of 2017, the County of San Diego has provided Hepatitis A cleaning and sanitizing procedures to over 13,000 permitted food facilities during inspection and sent three email notifications to all permitted food facilities reaching over 8,000 individuals each time. Presentations have been provided to the local chapter of the California Restaurant Association (CRA) Executive Committee, Full Board, and information has been distributed to more than 1,800 members of the CRA statewide. Additionally, the San Diego Food and Beverage Association emailed more than 10,000 permitted food handlers and members in the San Diego region.

Despite these efforts, local cases of Hepatitis A appear to be both increasing and spreading, necessitating that further steps be taken, such as sanitizing areas where significant numbers of homeless persons are living by removing contaminants that could spread the virus.

Therefore, on September 1, 2017, the Public Health Officer issued a Declaration of Local Health Emergency, pursuant to Health and Safety Code Section 101080. Health and Safety Code section 101080 requires the Board of Supervisors to ratify the Declaration of Local Health Emergency within 7 days and to review the declaration every 14 days thereafter.

LINKAGE TO THE COUNTY OF SAN DIEGO STRATEGIC PLAN
Today's proposed actions support the Healthy Families and Safe Communities initiatives in the County of San Diego's 2017-2022 Strategic Plan, as well as the County's *Live Well San Diego* vision, by ensuring that vulnerable populations are protected from the ongoing Hepatitis A outbreak.

Respectfully submitted,

SUBJECT: RATIFY DECLARATION OF LOCAL HEALTH EMERGENCY: HEPATITIS A OUTBREAK (DISTRICTS: ALL)

HELEN N. ROBBINS-MEYER
Chief Administrative Officer

ATTACHMENT(S)
Declaration of Local Health Emergency, September 1, 2017

COUNTY OF SAN DIEGO
BOARD OF SUPERVISORS
WEDNESDAY, SEPTEMBER 06, 2017

MINUTE ORDER NO. 1

SUBJECT: RATIFY DECLARATION OF LOCAL HEALTH EMERGENCY: HEPATITIS A OUTBREAK (DISTRICTS: ALL)

OVERVIEW
On September 1, 2017, the Public Health Officer issued a Declaration of Local Health Emergency, pursuant to Health and Safety Code Section 101080, as a result of the outbreak of increasing numbers of Hepatitis A infections. Health and Safety Code Section 101080 requires that the Board of Supervisors ratify this Declaration of Local Health Emergency within seven days of being issued.

RECOMMENDATION(S)
CHIEF ADMINISTRATIVE OFFICER
On September 6, 2017:

1. Ratify the attached Declaration of Local Health Emergency made by the Public Health Officer on September 1, 2017.

2. Find that there is a continuing need for the local health emergency until no longer needed, subject to the Health and Safety Code Section 101080 requirements.

If on September 6, 2017, the Board takes action as recommended in Items 1 and 2 above, then on September 12, 2017:

1. Review authorization of the attached Declaration of Local Health Emergency made by the Public Health Officer on September 1, 2017.

2. Find that there is a continuing need for the local health emergency until no longer needed, subject to the Health and Safety Code Section 101080 requirements.

FISCAL IMPACT
There is no fiscal impact associated with this item.

BUSINESS IMPACT STATEMENT
N/A

ACTION:
ON MOTION of Supervisor Cox, seconded by Supervisor Roberts, the Board of Supervisors took action as recommended.

AYES: Cox, Jacob, Gaspar, Roberts, Horn

State of California)
County of San Diego) §

I hereby certify that the foregoing is a full, true and correct copy of the Original entered in the Minutes of the Board of Supervisors.

DAVID HALL
Clerk of the Board of Supervisors

Signed by _____
Marvice Mazyck, Chief Deputy

APPENDIX B
Federal and State Correspondence

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U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

Public Health Service

Centers for Disease Control
and Prevention (CDC)
Atlanta GA 30329-4027

October 3, 2017

The Honorable Scott Peters
United States House of Representatives
1122 Longworth House Office Building
Washington, D.C. 20515

Dear Mr. Peters:

Thank you for your letter regarding the hepatitis A outbreak in San Diego. We, like you, are concerned about the outbreak—it has affected a large number of persons, has a high rate of hospitalization and death, and has spread to other cities in the nation. Given this, we have been impressed with the rapid action of the San Diego County Health and Human Services Agency and the California Department of Public Health. Several months ago, the Centers for Disease Control and Prevention (CDC) was requested to assist the state and local response to this outbreak. Since March 2017, CDC has provided the following assistance at the request of—and in coordination with—our California colleagues:

- CDC's viral hepatitis laboratory has performed hepatitis A genetic testing on specimens from persons diagnosed with hepatitis A virus infection in San Diego. As of September 18, CDC has tested 405 specimens.

- In May, CDC's Epidemic Intelligence Officers (the Agency's "disease detectives") were assigned to San Diego for five weeks to help local health authorities identify routes of hepatitis A virus transmission and appropriate prevention measures. The major mode of transmission for this outbreak was determined to be person-to-person contact. Following the field investigation, CDC recommended that local collaborations be established to provide hepatitis A vaccine to the following:

    - Homeless persons, persons who inject drugs (PWID), and other persons with risks who are unvaccinated; and

    - Persons having close contact with homeless persons and PWID in San Diego County, including those working in homeless shelters and local clinical-care facilities.

- CDC staff have provided consultations about infection-control measures for health-care personnel and others (e.g., volunteers) working in these settings.

- CDC has detected cases of hepatitis A among homeless persons infected with the same strain of hepatitis A virus in other cities in California and in three other states (Arizona, Utah, and Colorado). As a result, CDC has alerted other state health departments to the San Diego hepatitis A outbreak to raise awareness the potential for similar outbreaks among homeless persons and/or PWID.

- CDC epidemiologists and medical officers continue to provide consultations to health officials including convening weekly calls with the San Diego County Health and Human Services Agency, weekly calls with other California health departments, and regular calls with those health agencies responding to outbreaks in other states.

- CDC senior staff recently contacted the San Diego County Health and Human Services Agency's Public Health Officer, Dr. Wilma Wooten, to assess the effectiveness of CDC assistance and identify additional ways for CDC to provide outbreak support.

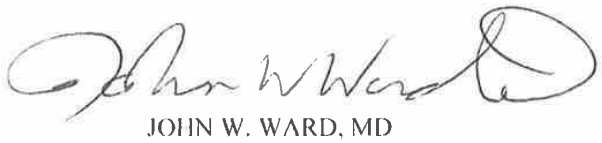
- To assure an adequate supply of hepatitis A vaccine, CDC has met with state health officials to discuss access to the supply of CDC purchased hepatitis A vaccine. CDC notified hepatitis A vaccine manufacturers of the outbreaks to ensure sufficient supply; manufacturers report no current shortages of hepatitis A vaccine in the United States.

Ultimately, control of the outbreak in San Diego will require high levels of vaccination among the susceptible population. This is the most important and effective public health action. At the same time, providing prophylaxis and vaccination of exposed persons and rapid diagnosis and care for persons ill with hepatitis A will reduce morbidity and mortality. CDC is committed to continuing to work alongside San Diego and State of California public health authorities.

To help educate the public and health officials about the outbreak and learn from the response, CDC staff are working with field investigation teams to finalize a report for publication in CDC's *Morbidity and Mortality Weekly Report* detailing the characteristics of the hepatitis A outbreaks and the public health actions undertaken in San Diego and other areas.

I appreciate your outreach to me. If you have additional questions or want to speak to CDC experts, please contact Sara Jamieson at hvh0@cdc.gov. CDC works hard every day to protect Americans and I know staff are working tirelessly in supporting California colleagues in addressing and working to stop this deadly outbreak.

Sincerely,



JOHN W. WARD, MD
Director, Division of Viral Hepatitis
NCHHSTP, Centers for Disease Control & Prevention

cc:
Jonathan Mermin, Director, National Center for HIV/AIDS, Viral Hepatitis, Sexually Transmitted Disease, and Tuberculosis Prevention

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

The Honorable Scott Peters
U.S. House of Representatives
2410 Rayburn House Office Building
Washington, DC 20515

Dear Congressman Peters:

Thank you for your letter of September 18, 2017 regarding the hepatitis A outbreak in San Diego County. You asked if local waterways are contributing to the spread of the hepatitis A virus. I reached out to the Southern California Coastal Water Research Project (SCCWRP), which has a superb understanding of water-quality monitoring underway in San Diego. They affirm that no-one we know of is presently monitoring surface water for any hepatitis viruses. Food, as the major route of hepatitis disease transmission, is monitored. SCCWRP has offered to adapt the food-measurement approach to a future water-quality monitoring protocol, if the Regional Water Quality Control Board, County and/or City would find that to be helpful.

In my discussions with David Gibson, Executive Officer of the San Diego Regional Water Quality Control Board, it is clear municipal efforts must be broadened to reduce the many different sources of human fecal matter from homeless individual and group encampments in roadside rights-of-way, storm drains, beach parking lots, and river bottoms. People living in recreational vehicles can also be a source of illegal human waste dumping, lacking access to low-cost pump-out options. These sources of human fecal matter are confirmed in water-quality data submitted to the Regional Water Quality Control Boards along the Southern California coast. For many years, we've supported the Water Boards in their development and adoption of stormwater permits, and the implementation thereof by local governments.

Through this and other mechanisms, we can provide technical support to the State, County and City, although solving this problem through a stormwater-only approach would not suffice. Together with the State, County and City agencies, we endorse the practical advice already given to remove trash, debris and human feces from urban areas, where it could enter storm drains and be carried to creeks, bays and coastal waters. While we have no public health expertise in addressing the optimal approaches to controlling the disease outbreak, given our mission and staffing, we stand ready and willing to assist the State, County and City as needed. I look forward to talking further with you in person on October 30th at the San Diego Industrial Environmental Association conference. If you would like to discuss how we may best support San Diego at this critical time, please call me at (415) 972-3572 or refer staff to our Congressional Liaison, Brent Maier, at (415) 947-4256.

Sincerely yours,

Alexis Strauss 6 October 2017
Alexis Strauss
Acting Regional Administrator

cc: D. Gibson, San Diego RWQCB
K. Schiff, SCCWRP

Printed on Recycled Paper

dpr Department of Pesticide Regulation

Brian R. Leahy
Director

Edmund G. Brown Jr.
Governor

October 9, 2017 PPD 17-02

TO: County Agricultural Commissioners

SUBJECT: PESTICIDE REGULATORY GUIDANCE ON CONTROL OF HEPATITIS A WITH SODIUM HYPOCHLORITE, APPLICATOR LICENSING, AND BUSINESS LICENSING REQUIREMENTS

Background

The current outbreak of hepatitis A has resulted in some local public health agencies declaring a Public Health Emergency.

Hepatitis A is a highly contagious virus that causes liver infections and can result in serious illness. Because the virus is transmitted via the "fecal-oral" route, contamination of food, water or the general environment can play an important role in spread of the disease. General information about this disease can be found at <https://www.cdc.gov/hepatitis/hav/pdfs/hepageneralfactsheet.pdf>

To fight the spread of hepatitis A, various public health guidance documents recommends the use of sodium hypochlorite at a dilution rate of 5000 ppm to reduce the risk of the virus from some environmental surfaces. Recommendations include both porous and non-porous use sites. Local environmental health and public health agencies have expressed an urgent need for sodium hypochlorite products that can be used at this dilution and for these sites in order to help control the current hepatitis A outbreak. The California Department of Pesticide Regulation (DPR) is coordinating with the California Department of Public Health (CDPH) and local health agencies in order to facilitate the needed disinfection measures. For more information, see

<https://www.cdph.ca.gov/Programs/CID/DCDC/CDPH%20Document%20Library/Immunization/EHHepAResource.pdf>.

Guidance on Labeling

Sodium Hypochlorite is a disinfectant and, therefore, falls within the definition of a pesticide. Pesticides must be registered by the U.S. Environmental Protection Agency and DPR, before they can be used in California. Although there are hundreds of sodium hypochlorite products registered by DPR, there are only a handful of products with labels containing directions for control of hepatitis A at the 5000 ppm dilution rate recommended by the public health agencies and for use sites broad enough to address the needs identified for the current situation.

DPR has identified the following list of sodium hypochlorite products that can be legally used as directed by the public health agencies. All the labeling precautions and instructions for use must be followed to comply with the law. This list is dynamic and can change as product labels may be amended and new products become registered. Please contact DPR for guidance on products you think may meet the requirements for use in these circumstances and we will determine if they can be added to this list.

AXIS ULTRA BLEACH (70271- 13-ZA- 74249)

BLEACH (70271- 13-AA- 43428)

BLEACH REGULAR (70271- 13-AA- 970)

BOARDWALK GERMICIDAL ULTRA BLEACH (70271- 13-AA- 84728)

DISINFECTANT BLEACH (70271- 13-AA- 87442)

FIRST MARK GERMICIDAL ULTRA BLEACH (70271- 13-AA- 73835)

FROSTY ACRES RESTAURANT'S PRIDE ADVANTAGE GERMICIDAL ULTRA BLEACH (70271- 13-AA- 55020)

GERMICIDAL ULTRA BLEACH (70271- 13-ZA- 14994)

GREAT VALUE CLEANING BLEACH (70271- 13-ZA- 41348)

ORIGINAL STRENGTH CLEANING BLEACH (70271- 13-ZA- 63546)

PRIME SOURCE GERMICIDAL ULTRA BLEACH (70271- 13-AA- 68613)

PROPOWER GERMICIDAL ULTRA BLEACH (70271- 13-AA- 75686)

PROPOWER ORIGINALS GERMICIDAL ULTRA BLEACH (70271- 13-ZA- 75686)

PURE BRIGHT GERMICIDAL ULTRA BLEACH (70271- 13-AA)

SUNNY SELECT DISINFECTANT BLEACH (70271- 13-ZA- 75667)

SYSCO CLASSIC GERMICIDAL ULTRA BLEACH (70271- 13-ZA- 29055)

Guidance on Licensing

In order to apply any pesticide for hire, including those associated with Public Health Emergencies such as hepatitis A, the company hired must possess a Pest Control Business (PCB) license and have a Qualified Applicator License (QAL) with Category K (health related) on staff to oversee the business operations. Both of these licenses are issued by DPR and information on how to obtain them can be found at <http://www.cdpr.ca.gov/docs/license/qal.htm>.

Local officials have asked DPR for assistance in meeting state licensing requirements for Pest Control Businesses and others to be able to make applications of pesticides for the emergency control of hepatitis A.

DPR is committed to working with local agencies to deal with this public health emergency situation. We remain committed to the safe and effective use of pesticides as well as the protection of human health and the environment, and therefore we have approved the following interim solution.

For the emergency health situation that currently exists where it is necessary to make immediate applications of registered pesticides to control the outbreak of hepatitis A, DPR will make the following exemption to these licensing requirements.

For the time period commencing October 6, 2017 and ending December 8, 2017, DPR will allow currently licensed and registered PCBs with a QAL in any Category, to apply, and supervise the application of pesticides registered for the control of hepatitis A, providing the QAL first attends a label compliance training administered by the local County Agricultural Commissioner or DPR. The QAL must also ensure that all applicators are properly trained and are in compliance with the label directions for all products to be applied for the control of hepatitis A. If a business is contracted to do this work, the business must have a pest control business license issued by

DPR and register with the local County Agricultural Commissioner. Information on obtaining a pest control business license can be found at <http://www.cdpr.ca.gov/docs/license/pcb.htm>.

This exemption applies only to pest control work done under an official government program for the management of hepatitis A.

Thank you for your assistance. If you have any questions or need further assistance please contact me.

Sincerely,

George Farnsworth
Assistant Director
916-445-3984

cc: Dr. Mark Starr, Deputy Director, California Department of Public Health
Ms. Teresa Marks, DPR Chief Deputy Director
Dr. Marylou Verder-Carlos, DPR Assistant Director
Ms. Polly Frenkel, DPR Chief Counsel
Ms. Donna Marciano, DPR Branch Chief
Ms. Ann Prichard, DPR Branch Chief
Mr. Joe Damiano, DPR Branch Chief
Mr. Joe Marade, DPR County/State Liaison

County of San Diego

NICK MACCHIONE, FACHE
AGENCY DIRECTOR

HEALTH AND HUMAN SERVICES AGENCY
PUBLIC HEALTH SERVICES
3851 ROSECRANS STREET, MAIL STOP P-578
SAN DIEGO, CA 92110-3134
(619) 531-5800 • FAX (619) 542-4186

WILMA J. WOOTEN, M.D., M.P.H.
PUBLIC HEALTH OFFICER

October 11, 2017

Rima Khabbaz, M.D.
Deputy Director, Office of Infectious Diseases

John Ward, M.D.
Director, Division of Viral Hepatitis

Centers for Disease Control and Prevention
1600 Clifton Road NE
Atlanta, GA 30333

RE: Waterborne Transmission of HAV

Dear Drs. Khabbaz and Ward:

The San Diego County Hepatitis A outbreak, resulting in the recent declaration of a local health emergency, is unprecedented. We are combatting the largest person-to-person hepatitis A virus (HAV) outbreak, since the vaccine was introduced in 1995, with 490 cases and 18 deaths, to date. I would like to thank you and all of the Centers for Disease Control and Prevention (CDC) teams that have been supporting and providing assistance to the San Diego region in this emergency response situation.

Locally, there have been repeated questions and concerns regarding the potential for waterborne transmission of HAV contributing to the current outbreak. CDC Division of Viral Hepatitis staff provided the County Epidemiology Program, with valuable insight on this subject related to 1) the history of waterborne HAV and 2) environmental sampling. I am writing to you to confirm our understanding of the guidance that CDC has provided.

History of Waterborne HAV

There has not been a documented waterborne outbreak of HAV in the United States, in well over 30 years. In the waterborne outbreaks from decades ago, no reported HAV cases have been associated with natural bodies of flowing water (e.g., rivers, beach water). Previous cases were linked to septic seepage into drinking water fountains, or, in one case, a swimming pool that was contaminated by sewage.

Environmental Sampling

Environmental sampling has not been recommended for the current HAV outbreak response in the San Diego region. This outbreak has been determined to be transmitted person-to-person via the fecal-oral route. The epidemiological data of San Diego's HAV outbreak indicates that waterbodies (such as rivers) have not been a source in the initial infection or continued transmission. Therefore, water sampling efforts would not provide any additional information for addressing the continued transmission of HAV. If the environment is ever thought to be contributing to San Diego's HAV outbreak transmission (i.e., a case cluster of common

environmental exposure), the most effective remediation measure would be to prevent human exposure to that environment and let HAV decay through natural processes, such as ultraviolet (UV) sunlight, which is typically a day or less of full sunlight exposure.

Based on your current public health knowledge, experience and expertise, please let us know if there is anything that would warrant a change in the above guidance that CDC has already provided, whereby you would now recommend the testing of waterways in order to combat the current San Diego region HAV outbreak.

In closing, please know that vaccination of the outbreak at-risk populations has been and will remain the top priority of the response to the San Diego region HAV outbreak. This response priority is followed by sanitation and hygiene activities (e.g., proper hand hygiene, access to restrooms, sanitation at encampments). To combat the local HAV outbreak, strategic approaches will continue to focus on vaccination, sanitation, and education.

Thank you in advance for your continued support.

Sincerely,

Wilma J. Wooten, M.D.

WILMA J. WOOTEN, M.D., M.P.H.
Public Health Officer
Director, Public Health Services

cc: Karen Smith, M.D., M.P.H.
Director and State Public Health Officer
California Department of Public Health

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES Public Health Service

Centers for Disease Control
and Prevention (CDC)
Atlanta GA 30329-4027

October 17, 2017

Wilma J. Wooten, M.D., M.P.H.
Public Health Officer
Director, Public Health Services
3851 Rosecrans Street, Mail Stop P-578
San Diego, CA 92110-3134

Dear Dr. Wooten:

In response to your letter and to address the questions and concerns regarding the potential for waterborne transmission of hepatitis A virus (HAV) during the current outbreak in San Diego, California, CDC staff has provided the County Epidemiology program with information and insight into the history of waterborne HAV in the United States and the futility of environmental sampling in outbreaks that are transmitted person-to-person.

There has not been a documented waterborne outbreak of HAV in the United States in well over 30 years, and the outbreaks that did occur in the past were related to untreated water sources located next to septic systems.[1-4] There is no indication that the current outbreak in San Diego has a water source; this would be unlikely as the water supply in the county is treated.
In regards to water in natural environments (i.e. rivers, lakes, oceans) that may be contaminated with human waste, CDC recommends following usual contamination mitigation practices in the form of restricting access or posting signage, as is done routinely through EPA standard monitoring of recreational waters for enterococci and *Escherichia coli*.

There is no evidence that either water or environmental sampling provides additional information for addressing person-to-person HAV transmission. Thus, investing in these activities could unnecessarily divert resources that are needed to contain the outbreak in proven and effective ways (vaccination, education, restrooms, and hand hygiene practices).

Based on current public health knowledge and accepted practices, there is no change CDC would recommend from the previous assistance given on this topic. CDC continues to recommend that at-risk populations be vaccinated, educated about the outbreak, and have access to clean restrooms and hand washing facilities.

Sincerely,

John W. Ward, M.D.
Director, Division of Viral Hepatitis
National Center for HIV, Viral Hepatitis, STD and TB

cc:
Rima Khabbaz, Director, National Center for Emerging and Zoonotic Infectious Diseases; Acting Deputy Director for Infectious Diseases; Acting Director, Office of Infectious Diseases
Jonathan Mermin, Director, National Center for HIV/AIDS, Viral Hepatitis, Sexually Transmitted Disease, and Tuberculosis Prevention

1. Bloch AB, Stramer SL, Smith JD, et al. Recovery of hepatitis A virus from a water supply responsible for a common source outbreak of hepatitis A. *Am J Public Health* 1990; **80**(4): 428-30.
2. De Serres G, Cromeans TL, Levesque B, et al. Molecular confirmation of hepatitis A virus from well water: epidemiology and public health implications. *J Infect Dis* 1999; **179**(1): 37-43.
3. Bowen GS, McCarthy MA. Hepatitis A associated with a hardware store water fountain and a contaminated well in Lancaster County, Pennsylvania, 1980. *Am J Epidemiol* 1983; **117**(6): 695-705.
4. Bergeisen GH, Hinds MW, Skaggs JW. A waterborne outbreak of hepatitis A in Meade County, Kentucky. *Am J Public Health* 1985; **75**(2): 161-4.

SOUTHERN CALIFORNIA COASTAL WATER RESEARCH PROJECT
A Public Agency for Environmental Research

October 19, 2017

Councilmember David Alvarez
Eighth District
202 C Street
San Diego, CA 92101

Re: Response to request for Hepatitis A monitoring of urban surface waters

Dear Councilmember Alvarez:

Thank you for contacting the Southern California Coastal Water Research Project (SCCWRP) regarding the Hepatitis A outbreak in the City of San Diego. SCCWRP is a water-quality research organization that develops scientific methods to improve management of aquatic systems in Southern California and beyond. In a letter dated October 12, 2017, you requested that SCCWRP undertake surface water monitoring of urban waterways in the City of San Diego that are impacted by homeless populations.

SCCWRP shares your concerns about the spread of Hepatitis A, and is committed to working with public health officials in any manner they determine could help solve this pressing public health issue. Our initial discussions with them suggest that testing for waterborne transmission is premature at this time. The U.S. Centers for Disease Control and Prevention, in an October 17, 2017 letter to the County of San Diego Public Health Officer, noted that waterborne transmission of Hepatitis A is unlikely and recommended against conducting any "water or environmental sampling" for Hepatitis A in the County, as doing so "could unnecessarily divert resources that are needed to contain the outbreak in proven and effective ways." Additionally, the U.S. Environmental Protection Agency Region 9, in a letter dated October 6, 2017, also does not recommend testing surface waters for Hepatitis A. The EPA letter instead endorsed removal of "trash, debris and human feces from urban areas where it could enter storm drains and be carried to creeks, bays, and coastal water." Based on discussions I have had with the City of San Diego's Hepatitis A Response Team, I understand that these types of clean-up and sanitation efforts are underway.

While studies of Hepatitis A waterborne transmission may be premature, waterborne transmission of other illnesses, such as gastroenteritis, have been documented and SCCWRP is committed to helping local agencies ensure their elimination from waterways. We are in discussions with the County of San Diego, the City of San Diego and the San Diego Regional Water Quality Control Board about a potential multi-year study to characterize and quantify three main potential sources of fecal contamination loading to waterways: publicly owned sanitary sewer collection systems, homeless encampments, and private sewer lateral lines and septic systems. The goal of this proposed study would be to provide the management community with a comprehensive understanding of the relative contributions, if any, of three major potential contamination sources, and to inform the development of targeted management responses.

3535 Harbor Blvd. Suite 110, Costa Mesa, CA 92626-1437
(714) 755-3200 *fax* (714) 755-3299

Thank you for inviting SCCWRP to participate in addressing this public health issue.

Sincerely,

Stephen B. Weisberg, Ph.D.
Executive Director

3535 Harbor Blvd. Suite 110, Costa Mesa, CA 92626-1437
(714) 755-3200 *fax* (714) 755-3299

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APPENDIX C
Informational Fliers/Posters

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HEPATITIS A VIRUS INFECTION

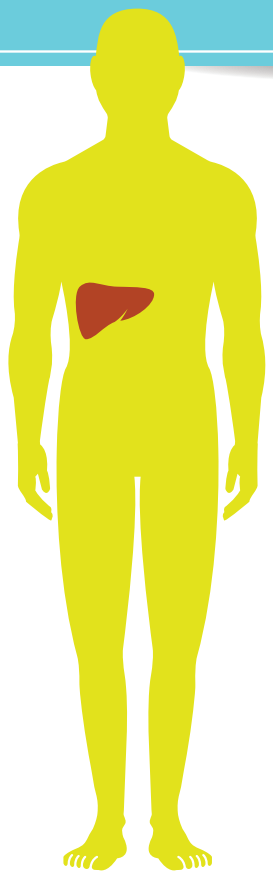
LIVE WELL SAN DIEGO

Why Should You Care About Hepatitis A?

If a person has an infection with the Hepatitis A virus, it can easily spread from person-to-person and cause liver disease lasting a few weeks to a serious illness lasting many months. In some cases, people can die because of Hepatitis A.

How Does Hepatitis A Spread?

- Touching objects or eating food that someone with Hepatitis A infection handled
- Having sex with someone who has a Hepatitis A infection



What Are the Symptoms of Hepatitis A?

Fever

Fatigue

Nausea

Loss of appetite

Jaundice (yellowing of the skin or eyes)

Stomach pain

Vomiting

Dark urine, pale stools, and diarrhea

If you think you have Hepatitis A because of these symptoms, see your doctor or visit the closest Emergency Room. Always wash your hands with soap and water after going to the bathroom and before preparing food.

How Can You Prevent Hepatitis A?

- Get two shots of the Hepatitis A vaccine
- Don't have sex with someone who has Hepatitis A infection
- Use your own towels, toothbrushes, and eating utensils
- Don't share food, drinks, or smokes with other people

For More Information

- Contact the Nurse's Line at 866-358-2966 option 5
- Dial 2-1-1 SAN DIEGO on your phone to learn where you can get Hepatitis A vaccine

ACUTE HEPATITIS A DIAGNOSIS

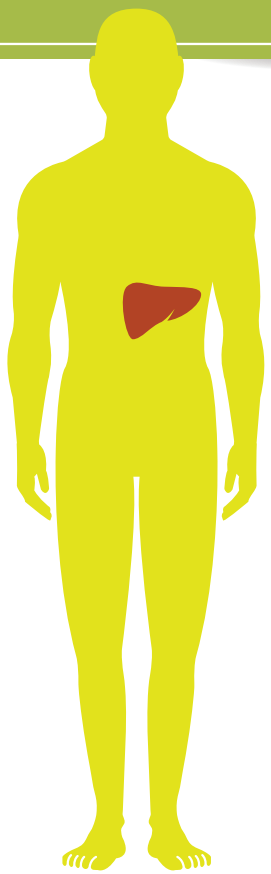
LIVE WELL SAN DIEGO

LIVEWELLSD.ORG

A health care provider told me that I have hepatitis A infection. Now what?

Hepatitis A infection is caused by a virus (a germ) that can easily spread from person-to-person. It can cause liver disease that can be severe and last several months. In some cases, people who already have other health conditions are at higher risk of dying from hepatitis A.

Keep yourself healthy by following your health care provider's advice. You can also avoid spreading hepatitis A to other people by following the tips below.



TO STAY HEALTHY WHILE INFECTED WITH HEPATITIS A:

- Get plenty of rest
- Eat healthy meals
- Drink fluids
- Avoid alcohol, since it will further damage your liver
- Avoid medications that may affect your liver, such as Tylenol (acetaminophen) - ask your health care provider if you are not sure

TO AVOID PASSING HEPATITIS A TO OTHER PEOPLE:

- WASH YOUR HANDS with soap and water for at least 20 seconds
  - BEFORE touching food
  - AFTER using the bathroom

What else can I do to protect myself and others?

- Don't share food, drinks, or smokes with other people
- Use your own towels, toothbrushes, and eating utensils
- Limit your contact, including sexual contact, until a health care provider tells you it's OK
- Tell family and friends who have regular, personal contact with you to get their hepatitis A vaccinations

For more information

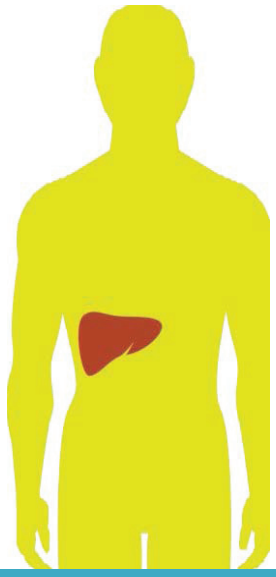
- Contact your health care provider
- Call 2-1-1 or visit 211sandiego.org

Do You Have Hepatitis B, C or Other Liver Diseases?

Then You Need a Hepatitis A Vaccine

LIVE WELL SAN DIEGO

LIVEWELLSD.ORG



Who should get vaccinated for hepatitis A?

Persons who already have damage to their liver from chronic hepatitis B or C, or cirrhosis, or any other chronic liver disease, are more likely to get very sick, and even die, if they get hepatitis A.

HOW CAN YOU PREVENT HEPATITIS A?

Wash your hands with soap and water after using the bathroom, and before you cook or eat! Wash for 20 seconds or as long as it takes to sing "happy birthday" twice.

Don't share food, drinks, or smokes with other people.

Don't have sex with someone who has hepatitis A infection.

Use your own towels, toothbrushes, and eating utensils.

Get 2 hepatitis A shots, at least 6 months apart. The first shot is 90-95% effective.

(Rev. 11/17)

Clean Hands Save Lives

Wash your hands to stop germs and stay healthy!

Scrub your hands with soap and water for at least 20 seconds:

- After you use the bathroom
- Before handling and eating food
- Frequently throughout the day

For more information visit:
cdc.gov/handwashing

LIVE WELL SAN DIEGO
LIVEWELLSD.ORG

Protect yourself from Hepatitis A

Get vaccinated

and wash your hands after using the restroom and before eating.

San Diego is in the midst of a Hepatitis A outbreak. Call 2-1-1 to find a vaccine clinic near you.

LIVE WELL SAN DIEGO
LIVEWELLSD.ORG

2-1-1 SAN DIEGO

Protect yourself from Hepatitis A

Get vaccinated and wash your hands after using the restroom and before eating.

San Diego is in the midst of a Hepatitis A outbreak. Call 2-1-1 to find a vaccine clinic near you.

LIVE WELL SAN DIEGO

LIVEWELLSD.ORG

2-1-1 SAN DIEGO

APPENDIX D
Federal and State Guidelines

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HEPATITIS A

General Information

What is hepatitis?

"Hepatitis" means inflammation of the liver. The liver is a vital organ that processes nutrients, filters the blood, and fights infections. When the liver is inflamed or damaged, its function can be affected.

Hepatitis is most often caused by a virus. In the United States, the most common types of viral hepatitis are Hepatitis A, Hepatitis B, and Hepatitis C. Heavy alcohol use, toxins, some medications, and certain medical conditions can also cause hepatitis.

What is Hepatitis A?

Hepatitis A is a highly contagious liver infection caused by the Hepatitis A virus. It can range in severity from a mild illness lasting a few weeks to a severe illness lasting several months.

Who is at risk?

Although anyone can get Hepatitis A, some people are at greater risk, such as those who:

- Travel to or live in countries where Hepatitis A is common
- Have sexual contact with someone who has Hepatitis A
- Are men who have sexual encounters with other men
- Use recreational drugs, whether injected or not
- Have clotting-factor disorders, such as hemophilia
- Are household members or caregivers of a person infected with Hepatitis A

How common is Hepatitis A?

Hepatitis A still occurs in the United States, although not as frequently as it once did. Over the last several decades, there has been more than a 90% decrease in Hepatitis A cases. New cases are now estimated to be around 3,000 each year. Many experts believe this decline is a result of the vaccination of children and people at risk for Hepatitis A. Many of the new cases, however, are from American travelers who got infected while traveling to parts of the world where Hepatitis A is common.

Hepatitis A can be prevented with a safe and effective vaccine.

How is Hepatitis A spread?

Hepatitis A is usually spread when a person ingests fecal matter—even in microscopic amounts—from contact with objects, food, or drinks contaminated by feces or stool from an infected person.

Hepatitis A can be spread when:

- An infected person does not wash his/her hands properly after going to the bathroom and then touches objects or food
- A caregiver does not properly wash his or her hands after changing diapers or cleaning up the stool of an infected person
- Someone engages in sexual activities with an infected person

Hepatitis A also can be spread through contaminated food or water. Contamination of food can happen at any point: growing, harvesting, processing, handling, and even after cooking. This most often occurs in countries where Hepatitis A is common.

Continued on next page

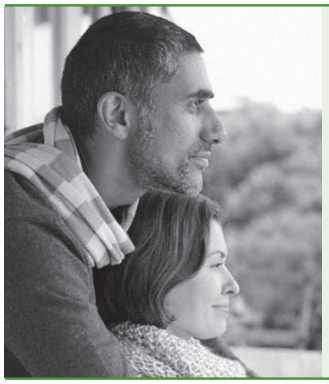
U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

What are the symptoms of Hepatitis A?

Not everyone has symptoms. If symptoms develop, they usually appear 2 to 6 weeks after infection and can include:

- Fever
- Fatigue
- Loss of appetite
- Nausea
- Vomiting
- Abdominal pain
- Dark urine
- Grey-colored stools
- Joint pain
- Jaundice

Symptoms are more likely to occur in adults than in children. They usually last less than 2 months, although some people can be ill for as long as 6 months.



People can spread Hepatitis A even if they don't look or feel sick. Many children and some adults have no symptoms.

How is Hepatitis A diagnosed and treated?

A doctor can determine if a person has Hepatitis A by discussing his or her symptoms and taking a blood sample. To treat Hepatitis A, doctors usually recommend rest, adequate nutrition, fluids, and medical monitoring. Some people will need to be hospitalized. It can take a few months before people begin to feel better.

How serious is Hepatitis A?

Most people who get Hepatitis A feel sick for several months, but they usually recover completely and do not have lasting liver damage. Sometimes Hepatitis A can cause liver failure and death, although this is rare and occurs more commonly in people older than 50 and people with other liver diseases.

Can Hepatitis A be prevented?

Yes. The best way to prevent Hepatitis A is by getting vaccinated. Experts recommend the vaccine for all children, and people with certain risk factors and medical conditions. The vaccine is also recommended for travelers to certain international countries, even if travel occurs for short times or on closed resorts. The Hepatitis A vaccine is safe and effective and given as 2 shots, 6 months apart. Both shots are needed for long-term protection. Ask if your health plan will cover travel related vaccines. You can get vaccinated at your doctor's office, as well as travel clinics and other locations. Lower cost vaccination may be available at certain pharmacies and your local health department.

Who should get vaccinated against Hepatitis A?

Vaccination is recommended for certain groups, including:

- All children at age 1 year
- Travelers to countries where Hepatitis A is common
- Family and caregivers of adoptees from countries where Hepatitis A is common
- Men who have sexual encounters with other men
- Users of recreational drugs, whether injected or not
- People with chronic or long-term liver disease, including Hepatitis B or Hepatitis C
- People with clotting-factor disorders

For more information

Talk to your health professional, call your health department, or visit www.cdc.gov/hepatitis or www.cdc.gov/travel.

Publication No. 21-1072

California Department of Public Health – July 2017

Hepatitis A Public Health Investigation Guidance

Hepatitis A (HAV) is an acute, self-limiting viral illness associated with abrupt onset of fever, malaise, jaundice, anorexia, nausea, abdominal discomfort, and dark urine.

Development of clinical symptoms is highly age dependent; among older children and adults, infection is typically symptomatic with 70% presenting with jaundice. In children less than six years of age, 70% of infections are asymptomatic. Older persons and persons with chronic liver disease are more likely to have severe disease and HAV prevention in these groups is particularly vital.

Definition of immunity
Persons are considered immune if they have:

- received two doses of HAV vaccine; or
- a history of IgM or total anti-HAV positivity during or up to four months after consistent clinical illness; or
- are IgG anti-HAV positive.

Post-vaccination testing is not indicated because of the vaccine's high efficacy. Most adults will be protected within two to four weeks after one dose of vaccine.

HAV vaccine was licensed in 1995 and has been routinely recommended for children in California and other high incidence states since 1999 and children in all states since 2005. Most pre-adolescents in California are immune.

Modes of transmission
HAV is primarily transmitted via the fecal-oral route (e.g., consuming fecally contaminated foods or liquids). HAV is present in the blood and feces 10-12 days after infection. HAV is rarely transmitted by blood (e.g., via transfusion) or saliva.

Incubation period
A range of 15-50 days with a mean of 28 days.

Period of communicability
Most immunocompetent adults shed virus in the stool and are infectious from two weeks before through one week after the onset of jaundice or elevation of liver enzymes, when concentration of virus in the stool is highest. In absence of jaundice, persons should be considered infectious for two weeks before through one week after the onset of hepatitis symptoms.

HAV can be detected in the stool for <10 weeks after illness onset, particularly in infants and young children.

Clinical Description

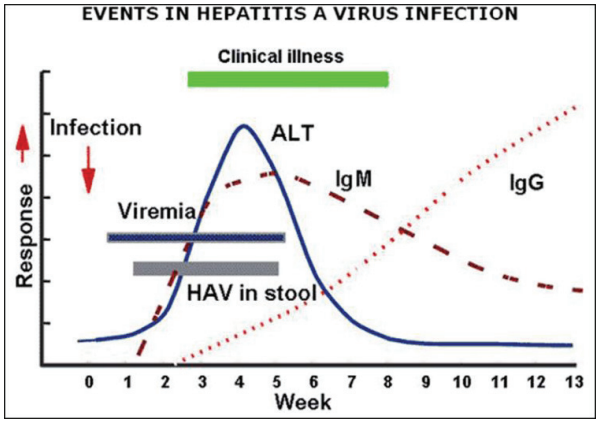
- Acute illness with a discrete onset of any sign or symptom consistent with acute viral hepatitis (e.g., fever, headache, malaise, anorexia, nausea, vomiting, diarrhea, and abdominal pain); **and**
- **either** jaundice, or elevated serum alanine aminotransferase (ALT) **or** aspartate aminotransferase (AST) levels.

Laboratory Criteria for Diagnosis
Immunoglobulin M (IgM) antibody to HAV (anti-HAV) positive.

Confirmed case definition
A case who meets the clinical case definition; **and**

- is laboratory confirmed; **or**
- has an epidemiologic link with a person who has laboratory-confirmed hepatitis A (i.e., household or sexual contact with an infected person during the 15-50 days before the onset of symptoms).

Laboratory testing
IgM anti-HAV is present at the onset of illness. It usually disappears <4 months, but may persist ≥6 months. IgM anti-HAV is also occasionally detectable in adults 2 weeks after receiving HAV vaccine. IgG anti-HAV is detectable shortly after the appearance of IgM and remains for the person's lifetime.



Immunization Branch/Division of Communicable Disease Control
850 Marina Bay Parkway, Building P, 2nd Floor, Richmond, CA 94804
(510) 620-3737 CDPH Internet Address: http://www.cdph.ca.gov

False positive IgM anti-HAV
A positive IgM anti-HAV test result in a person without typical symptoms of HAV may indicate:

- asymptomatic acute HAV infection; or
- previous HAV infection with persistent IgM; or
- a false-positive test result.

IgM anti-HAV testing should be limited to persons with evidence of clinical hepatitis and should not be used as a screening tool or as part of testing panels in the workup of nonacute liver function abnormalities because of the risk of false positive test results in such persons.

If a positive IgM anti-HAV report is received on a patient without HAV symptoms or a history of recent contact with an HAV infected person, repeat IgM anti-HAV testing and a review ALT or AST levels (often >500 units/L in acute hepatitis) should be considered before recommendations are made for postexposure prophylaxis.

Pre-exposure prophylaxis (general)
HAV vaccination, given in a two dose schedule, is routinely recommended for children 12 months through 18 years of age and for persons at increased risk of HAV infection. There is no recommendation for routine HAV vaccination of food handlers or healthcare workers.

Pre-exposure prophylaxis (international travel)
Susceptible persons traveling to countries with high or intermediate HAV endemicity should be vaccinated or receive immune globulin (IG) (0.02 mL/kg) before travel. A first dose of single-antigen HAV vaccine given up to the date of departure should protect most healthy persons.

For optimal protection, elderly adults, persons with chronic liver disease or other chronic medical conditions, or immunocompromised persons traveling to an endemic country <2 weeks should receive the initial dose of vaccine and IG (separate injections at different injection sites). Travelers <1 year of age should receive IG, which will provide protection for up to three months. A list of regions where hepatitis A is endemic is available at: https://wwwnc.cdc.gov/travel/yellowbook/2018/infectious-diseases-related-to-travel/hepatitis-a

Combined HAV/HBV vaccine "accelerated" schedule
The first **two doses** of the combined HAV/HBV vaccine (Twinrix®) accelerated schedule provide equivalent protection to the only the **first dose** in the standard, single-antigen adult HAV vaccine series and the first two doses in the standard adult HBV vaccine series. Therefore, this schedule offers no particular benefit and CDC recommends the regular schedule when possible.

Close contact definition
Household/sexual contacts, drug sharers, childcare center staff/attendees, and others with ongoing close contact.

Hepatitis A postexposure prophylaxis (PEP)
CDPH guidance on HAV PEP is available at: https://www.cdph.ca.gov/Programs/CID/DCDC/CDPH%20Document%20Library/Immunization/HepatitisA-PEPQuicksheet.pdf

Risk for HAV transmission in different settings
HAV transmission risk varies by setting. Secondary attack rates are 15-30% in households and higher rates of transmission are associated with infected children. In contrast, attack rates are low among restaurant patrons who have been exposed to infected food handlers.

Healthcare settings
PEP is not routinely indicated for staff who have provided care for an HAV-infected patient.

When providing care for HAV-infected patients, contact precautions are recommended (in addition to standard precautions) for diapered and incontinent patients for at least one week after symptom onset.

PEP is indicated for persons who have had close contact with cases if an epidemiological investigation indicates that HAV transmission has occurred among patients or between patients and staff.

Food service settings
HAV-infected food handlers should be excluded for one week after jaundice onset (or if no jaundice, during peak aminotransferase activity or symptom onset). Other potentially exposed food handlers in the same setting should be given PEP.

Because transmission to patrons is unlikely, PEP is not routinely indicated for patrons, but may be considered if, while infectious, the food handler:

- directly handled uncooked or cooked foods; **and**
- had diarrhea or poor hygienic practices at work (it should be ensured that handwashing facilities are available); **and**
- patrons can be identified and treated no later than two weeks after exposure (see algorithm, page3).

Note: If repeated exposures might have occurred (e.g., in an institutional cafeteria), stronger consideration of PEP may be warranted.

In a common source outbreak, PEP is not indicated for exposed persons after cases have begun to occur because the two week period during which PEP is known to be effective will have been exceeded.

If a common source is suspected in two or more cases, the CDC Hepatitis Reference Laboratory can perform molecular typing. Contact CDPH at 510-620-3737 for more information.

Childcare settings
Exclude HAV-infected staff and attendees for one week after onset of jaundice (or if no jaundice, onset of symptoms. If asymptomatic, use time of peak ALT/AST).

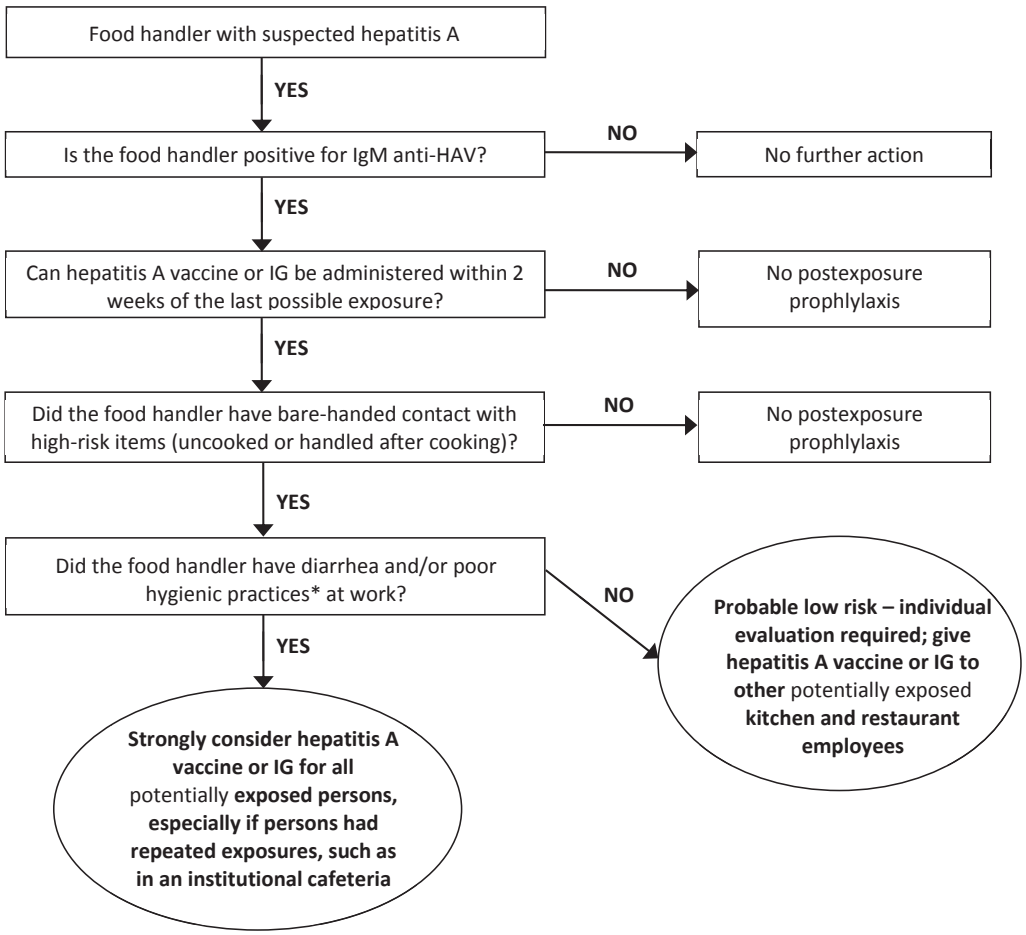
PEP is indicated for previously unvaccinated staff/attendees if a case of HAV is diagnosed in staff/attendees or if HAV cases are diagnosed in two or more households of attendees.

If the children are too old to need diapering, provide PEP to classroom contacts of the index patient. If HAV cases occur in ≥3 attendee households, PEP should be considered for members of households that have attendees in diapers.

Schools and other work settings
PEP is not routinely indicated when a single HAV case occurs in elementary or secondary schools or work settings other than those specified above.

PEP is indicated for persons who have close contact with cases if an epidemiological investigation indicates that transmission has occurred among students at a school.

Algorithm for determining the need for postexposure prophylaxis after exposure to food prepared by a food handler with hepatitis A infection



Algorithm adapted from: Fiore AE. Hepatitis A Transmitted by Food. Clinical Infectious Diseases 2004; 38:705-15.

*Hygiene assessments are subjective; a visit to the food handling area and interviews with the infected food handler, coworkers, and supervisors are often helpful. Additional factors include glove use, availability of functioning hand washing facilities, hygiene training, previous assessments of sanitation practices in the facility that employs the infected food handler, and presence of medical conditions in the infected food handler that might make hygiene more difficult to maintain.

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APPENDIX E
California Health Alert Network (CAHAN)

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To: CAHAN San Diego Participants
Date: March 10, 2017
From: Public Health Services, Epidemiology & Immunizations Services Branch

Hepatitis A Virus Outbreak Associated with Homelessness, Drug Use in San Diego County

This health advisory informs local healthcare providers about recent hepatitis A virus (HAV) infections disproportionately affecting homeless and illicit drug-using individuals in San Diego County. Recommendations and resources on HAV are provided.

Situation

Nineteen acute HAV infections have been confirmed in San Diego County residents with symptom onset between November 1, 2016 and March 4, 2017. Based on a prior three-year average, only seven to eight cases would have been expected during this time period. Fifteen of the 19 (79%) cases have been hospitalized and one patient (5%) died.

The age range of confirmed HAV cases was from 26 to 62 years (median = 38 years) and thirteen (68%) were male. Thirteen (68%) of the cases reported illicit drug use, and ten (53%) were homeless. Only two (11%) patients reported travel outside of the county. None of the cases were known to have been immunized against HAV. No direct close contacts have been established between any of the cases and no common food, beverage or drug sources have yet been identified. Investigations of the confirmed cases, as well as two additional suspected cases, are ongoing.

Background

The Centers for Disease Control and Prevention (CDC) notes that HAV infection rates in the United States have declined by 95% since HAV vaccine first became available in 1995. The most recent national data indicated that in 2014, a total of 1,239 cases were reported from the 50 states to CDC. In 2014, 142 HAV cases were reported in California, 15 of which were in San Diego. The California Department of Public Health (CDPH) reported that in 2015 there were 181 HAV cases in California (22 in San Diego). The preliminary data for 2016 are 222 HAV cases in California (25 in San Diego).

In the U.S., person-to-person transmission through the fecal-oral route is the primary means of HAV transmission. Most infections result from close personal contact with an infected household member or sexual partner. Common-source outbreaks and sporadic cases can also occur from exposure to fecally contaminated food or water.

Those at increased risk for HAV infection include: travelers to countries with high or intermediate endemicity of HAV infection; men who have sex with men; users of injection and non-injection illegal drugs, persons with clotting factor disorders; and persons working with nonhuman primates. HAV outbreaks have been reported among the homeless, who have an increased risk of infection due to living conditions when compared with the general population. This increased risk due to homelessness has been demonstrated to be independent of other known risk factors, such as injection of illicit drugs and sexual practices. Morbidity and mortality have been reported to be higher in HAV outbreaks involving the homeless and illicit drug users.

Recommendations for Providers

1. **Consider HAV infection** in individuals, especially the homeless and those who use illicit drugs, with discrete onset of symptoms (e.g., nausea, vomiting, diarrhea, anorexia, fever, malaise, dark urine, light-colored stool, or abdominal pain), and jaundice or elevated liver function tests.

2. **Promptly report all confirmed and suspect HAV cases** to the Epidemiology Program by faxing a Confidential Morbidity Report (CMRa), or by calling 619-692-8499 (Monday-Friday 8 AM-5 PM), or 858-565-5255 (after hours, during weekends, and on County-observed holidays). Since this outbreak involves homeless individuals, providers are urged to contact the Epidemiology Program, while suspected cases are still at the healthcare facility. This action will ensure that a public health investigator can interview the patient by phone for a risk history and will facilitate serum or stool specimen submission to the San Diego County Public Health Laboratory for possible genotyping.

3. **Provide post-exposure prophylaxis (PEP) for close contacts of confirmed HAV cases.** Susceptible people exposed to hepatitis A virus (HAV) should receive a dose of single-antigen HAV vaccine or intramuscular (IM) immune globulin (IG) (0.02 mL/kg), or both, as soon as possible within 2 weeks of last exposure. The efficacy of combined HAV/Hepatitis B virus (HBV) vaccine for PEP has not been evaluated, so it is not recommended for PEP. Detailed information on PEP may be found on the CDPH Hepatitis A Postexposure Prophylaxis Guidance Quicksheet (updated August 2016).

4. **Provide HAV vaccine to homeless individuals and illicit drug users who are not already immunized**. The combined HAV/HBV vaccine may be used in this group if the individual is not already immune to HBV. Providers who do not have available vaccine may direct patients to an immunization clinic at the nearest County Public Health Center. Providers who care for homeless individuals may contact the Immunization Program at 619-692-5607 (Monday-Friday 8 AM-5 PM) to arrange obtaining 317-funded HAV vaccine for use during this outbreak. Homeless individuals and illicit drug users are also at higher risk for other vaccine preventable diseases and should be brought up-to-date per the relevant CDC immunization schedule.

Resources

Centers for Disease Control and Prevention
- Hepatitis A for Health Professionals
- Hepatitis A General Fact Sheet
- Hepatitis A Q&A for the Public
- Hepatitis A Vaccine Information Statement (available in multiple languages)
- Viral Hepatitis Fact Sheet for Gay and Bisexual Men

California Department of Public Health
- Hepatitis A Website
- Quicksheet: Hepatitis A (updated August 2016)
- Sample Protocol Intramuscular Immune Globulin (Human) USP for Hepatitis A Postexposure Prophylaxis
- Viral Hepatitis Resources

Thank you for your participation.

CAHAN San Diego
County of San Diego, Health & Human Services Agency
Epidemiology and Immunization Services Branch
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Urgent Phone for pm/weekends/holidays: (858) 565-5255
E-mail: cahan@sdcounty.ca.gov Secure Website: http://cahan.ca.gov
Public-Access Website: http://www.cahansandiego.com

To: CAHAN San Diego Participants
Date: April 5, 2017
From: Public Health Services, Epidemiology & Immunizations Services Branch

Update: Hepatitis A Virus Outbreak in San Diego County

This health advisory updates local healthcare providers about recent hepatitis A virus (HAV) infections disproportionately affecting homeless and illicit drug-using individuals in San Diego County. Recommendations and resources on HAV are provided.

Situation

Thirty-nine acute HAV infections have been reported in San Diego County residents with symptom onset between November 1, 2016 and April 4, 2017. Thirty-three (85%) of the cases have been hospitalized and one patient (3%) died.

The age range of confirmed HAV cases was from 26 to 72 years (median = 39 years) and 20 (51%) were male with none self-identifying as men who have sex with men. Twenty-eight (72%) of the cases reported illicit drug use, and 27 (69%) were homeless. Only four (10%) patients reported travel outside of the county. None of the cases were known to have been immunized against HAV. No direct close contacts have been established between any of the cases and no common food, beverage or drug sources have yet been identified. Investigations of these cases are ongoing.

Background

In the U.S., person-to-person transmission through the fecal-oral route is the primary means of HAV transmission. Most infections result from close personal contact with an infected household member or sexual partner. Common-source outbreaks and sporadic cases can also occur from exposure to fecally contaminated food or water.

Those at increased risk for HAV infection include: travelers to countries with high or intermediate endemicity of HAV infection; men who have sex with men; users of injection and non-injection illegal drugs, persons with clotting factor disorders; and persons working with nonhuman primates. HAV outbreaks have been reported among the homeless, who have an increased risk of infection due to living conditions when compared with the general population. This increased risk due to homelessness has been demonstrated to be independent of other known risk factors, such as injection of illicit drugs and sexual practices. Morbidity and mortality have been reported to be higher in HAV outbreaks involving the homeless and illicit drug users.

Recommendations for Providers

1. **Consider HAV infection in individuals, especially the homeless and those who use illicit drugs, with discrete onset of symptoms, and jaundice or elevated liver function tests.** Symptoms of concern include nausea, vomiting, diarrhea, anorexia, fever, malaise, dark urine, light-colored stool, and abdominal pain.

2. **Promptly report all confirmed and suspect HAV cases to the Epidemiology Program**. Please fax a Confidential Morbidity Report (CMRa), or call 619-692-8499 (Monday-Friday 8 AM-5 PM), or 858-565-5255 (after hours, during weekends, and on County-observed holidays). Since this outbreak involves homeless individuals, **providers are urged to contact the Epidemiology Program, while suspected cases are still at the healthcare facility**. This action will ensure that a public health investigator can interview the patient by phone for a risk history and will facilitate serum or stool specimen submission to the San Diego County Public Health Laboratory for possible genotyping.

3. **Provide post-exposure prophylaxis (PEP) for close contacts of confirmed HAV cases.** Susceptible people exposed to HAV should receive a dose of single-antigen HAV vaccine or intramuscular (IM) immune globulin (IG) (0.02 mL/kg), or both, as soon as possible within 2 weeks of last exposure. The efficacy of combined HAV/Hepatitis B virus (HBV) vaccine for PEP has not been evaluated, so it is not recommended for PEP. Detailed information on PEP may be found on the CDPH Hepatitis A Postexposure Prophylaxis Guidance Quicksheet (updated August 2016).

4. **Provide HAV vaccine to homeless individuals and illicit drug users who are not already immunized**. The combined HAV/HBV vaccine may be used in this group if the individual is not already immune to HBV. Providers who do not have available vaccine may direct patients to an immunization clinic at the nearest County Public Health Center. Providers who care for homeless individuals may contact the Immunization Program at 619-692-5607 (Monday-Friday 8 AM-5 PM) to arrange obtaining 317-funded HAV vaccine for use during this outbreak. Homeless individuals and illicit drug users are also at higher risk for other vaccine preventable diseases and should be brought up-to-date per the relevant CDC immunization schedule.

5. **Encourage those who are planning an international trip to check the** CDC Travelers' Health website **and obtain recommended vaccinations before travel**. High risk areas for HAV include parts of Africa and Asia, and moderate risk areas include Central and South America, Eastern Europe, and parts of Asia.

Resources

Centers for Disease Control and Prevention

- Hepatitis A for Health Professionals
- Hepatitis A General Fact Sheet
- Hepatitis A Q&A for the Public
- Hepatitis A Vaccine Information Statement (available in multiple languages)
- Viral Hepatitis Fact Sheet for Gay and Bisexual Men

California Department of Public Health

- Hepatitis A Website
- Quicksheet: Hepatitis A (updated August 2016)
- Sample Protocol Intramuscular Immune Globulin (Human) USP for Hepatitis A Postexposure Prophylaxis
- Viral Hepatitis Resources

Thank you for your participation.

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Public-Access Website: http://www.cahansandiego.com

To: CAHAN San Diego Participants
Date: May 4, 2017
From: Public Health Services, Epidemiology & Immunizations Services Branch

Update #2: Hepatitis A Virus Outbreak in San Diego County

This health advisory updates local healthcare providers about recent hepatitis A virus (HAV) infections disproportionately affecting homeless and illicit drug-using individuals in San Diego County. Updated recommendations and resources on HAV are provided.

Situation

Eighty acute HAV infections have been reported in San Diego County residents with symptom onset between November 24, 2016 and April 26, 2017. Sixty-six (83%) of the cases have been hospitalized and three patients (4%) have died. The age range of confirmed HAV cases was from 26 to 72 years (median = 42 years) and 46 (58%) were male, with none self-identifying as men who have sex with men. Forty-nine (61%) of the cases were homeless and forty-six (58%) reported injection or non-injection illicit drug use; some cases have both risk factors. Only five (6%) patients reported travel outside of the county. None of the cases were known to have been immunized against HAV. Of the 51 cases with complete liver virus tests available, 12 (24%) had evidence of hepatitis C infection.

Genotype and viral sequence analysis by the Centers for Disease Control and Prevention of a selected cohort of cases indicate that two unique, closely related strains of HAV genotype 1b are involved in the San Diego County outbreak. Different strains of this genotype are associated with the ongoing HAV outbreak in Southeastern Michigan and the outbreaks associated with frozen strawberries in 2016 and pomegranate arils in 2013.

Several small clusters of epidemiologically linked cases have been identified. Fifteen cases (all clients) reported receiving services from a single homeless provider in downtown San Diego, although no common point source has been identified. Six cases (four clients, two volunteers) are associated with a homeless services provider in El Cajon, although no common point source has been identified. Five cases are individuals who became symptomatic while incarcerated in jail facilities, but most likely were exposed to the virus while homeless in the community. Two secondary cases in jails have occurred, though each had been offered post-exposure prophylaxis and declined. No specific common food, beverage, or drug sources have yet been identified. Investigations of these cases are ongoing.

Background

In the U.S., person-to-person transmission through the fecal-oral route is the primary means of HAV transmission. Most infections result from close personal contact with an infected household member or sexual partner, or their fecally contaminated environment. Common-source outbreaks and sporadic cases can also occur from exposure to fecally contaminated food or water. Those at increased risk for HAV infection include: travelers to countries with high or intermediate endemicity of HAV; men who have sex with men; users of injection and non-injection illegal drugs, persons with clotting factor disorders; and persons working with nonhuman primates. HAV outbreaks have been reported among the homeless, who have a higher morbidity and mortality when compared with the general population and an increased risk of infection due to living conditions.

Recommendations for Providers

1. **Consider HAV infection in individuals, especially the homeless and those who use illicit drugs, with discrete onset of symptoms, and jaundice or elevated liver function tests.** Symptoms of concern include nausea, vomiting, diarrhea, anorexia, fever, malaise, dark urine, light-colored stool, and abdominal pain. A complete viral hepatitis serology panel is recommended in symptomatic patients. Serologic testing for HAV infection is not recommended in asymptomatic individuals or as screening before vaccination.

2. **Promptly report all confirmed and suspect HAV cases to the Epidemiology Program**. Please fax a Confidential Morbidity Report (CMRa), or call 619-692-8499 (Monday-Friday 8 AM-5 PM), or 858-565-5255 (after hours, during weekends, and on County-observed holidays). Since this outbreak involves homeless individuals, **providers are urged to contact the Epidemiology Program, while suspected cases are still at the healthcare facility**. This action will ensure that a public health investigator can interview the patient by phone for a risk history and will facilitate serum or stool specimen submission to the San Diego County Public Health Laboratory for possible genotyping.

3. **Provide post-exposure prophylaxis (PEP) for close contacts of confirmed HAV cases.** Susceptible people exposed to HAV should receive a dose of single-antigen HAV vaccine or intramuscular (IM) immune globulin (IG) (0.02 mL/kg), or both, as soon as possible within 2 weeks of last exposure. The efficacy of combined HAV/Hepatitis B virus (HBV) vaccine for PEP has not been evaluated, so it is not recommended for PEP. Detailed information on PEP may be found on the CDPH Hepatitis A Postexposure Prophylaxis Guidance Quicksheet (updated August 2016).

4. **Provide HAV vaccine to homeless individuals and illicit drug users who are not already immunized**. The combined HAV/HBV (Twinrix®) vaccine may be used in this group if the individual is not already immune to HBV. Providers who do not have available vaccine may direct patients to an immunization clinic at the nearest County Public Health Center. Providers who care for homeless individuals may contact the Immunization Program at 619-692-5607 (Monday-Friday, 8 AM-5 PM) to arrange obtaining 317-funded HAV vaccine for use during this outbreak. Homeless individuals and illicit drug users are also at higher risk for other vaccine preventable diseases and should be brought up-to-date with recommended vaccines per the relevant CDC immunization schedule. Providers should check the San Diego Immunization Registry to see if patients are already vaccinated and note any vaccinations given.

5. **Offer HAV vaccination to individuals who have frequent, ongoing contact with homeless individuals and illicit drug users in non-healthcare environments.** Under usual (non-outbreak) circumstances, occupational exposure does not warrant a routine recommendation to provide HAV vaccination. However, given the current outbreak, the County Public Health Officer recommends HAV vaccination for individuals with ongoing, close contact with homeless and illicit drug using individuals in San Diego County. This includes persons working in public safety, homeless shelters, and homeless and behavioral service provider agencies. Providers in healthcare environments would be expected to be protected by utilizing standard precautions; however they may also consider HAV vaccination for long-term protection.

6. **Encourage those who are planning an international trip to check the** CDC Travelers' Health website **and obtain recommended vaccinations before travel**. High risk areas for HAV include parts of Africa and Asia, and moderate risk areas include Central and South America, Eastern Europe, and parts of Asia.

Resources

Centers for Disease Control and Prevention
- Hepatitis A for Health Professionals
- Hepatitis A General Fact Sheet
- Hepatitis A Q&A for the Public
- Hepatitis A Vaccine Information Statement
- Viral Hepatitis Fact Sheet for Gay and Bisexual Men

California Department of Public Health
- Hepatitis A Website
- Quicksheet: Hepatitis A
- Viral Hepatitis Resources

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CAHAN San Diego
California HEALTH ALERT NETWORK

To: CAHAN San Diego Participants
Date: May 31, 2017
From: Public Health Services, Epidemiology and Immunizations Services Branch

Update #3: Hepatitis A Virus Outbreak in San Diego County

This health advisory updates local healthcare providers about recent hepatitis A virus (HAV) infections disproportionately affecting homeless and illicit drug-using individuals in San Diego County. Updated recommendations and resources on HAV are provided.

Situation

As of May 30, 2017, 133 confirmed or probable HAV cases have been reported in an ongoing local outbreak in San Diego County. The cases had symptom onsets between November 24, 2016 and May 26, 2017. One hundred and six (80%) of the cases have been hospitalized and three patients (2%) have died. The cases range in age from 21 to 82 years (median = 42 years), and 85 (64%) are male, with one (1%) self-identifying as a man who has sex with men. Eighty-four (63%) of the cases are homeless, and 85 (64%) reported injection or non-injection illicit drug use; some cases have both risk factors. Of the cases with test results available for review, 28 of 106 (26%) have evidence of hepatitis C infection, and 7 of 107 (7%) have hepatitis B infection.

The Centers for Disease Control and Prevention (CDC) has confirmed HAV RNA in serum samples of 86 outbreak cases. Viral sequencing indicates that two unique, closely related strains of HAV genotype 1B are involved. These strains are different than those associated with the ongoing HAV outbreak in Southeastern Michigan and the outbreaks linked to frozen strawberries in 2016 and pomegranate arils in 2013.

There are several clusters of epidemiologically associated cases, although no specific common food, beverage, or drug sources have yet been identified.

- Twenty-seven cases reported receiving client services from a single homeless provider in downtown San Diego.
- Four cases (three clients, one volunteer) are associated with a homeless services provider in El Cajon.
- Six cases are residents of a board and care facility in El Cajon.
- Six cases are individuals who became symptomatic while incarcerated in a jail facility, but they were most likely exposed to the virus while homeless in the community. Two secondary cases in jails have occurred, though each declined post-exposure prophylaxis during their exposure periods.

Although most cases have been from the El Cajon/La Mesa area and downtown San Diego, cases have also been confirmed in individuals who were only in North County during their exposure periods. Recent HAV cases include a healthcare worker at a facility where many HAV cases were treated, and an employee of an agency that provides services to the homeless. These individuals have no identified risk factors for HAV other than their employment. The likelihood that these cases are occupationally related is a strong reminder of the importance of standard precautions in healthcare and the need to vaccinate individuals who work closely with the at-risk populations.

Investigations of the confirmed and probable cases, as well as two dozen suspect cases, are ongoing.

Background

Person-to-person transmission through the fecal-oral route is the primary means of HAV transmission in the U.S. Most infections result from close personal contact with an infected household member or sexual partner, or their fecally contaminated environment. Hands may play a significant role in the direct and indirect spread of HAV. Common-source outbreaks and sporadic cases can also occur from exposure to fecally contaminated food or water.

Individuals with increased risk for HAV infection include: travelers to countries with high or intermediate endemicity of HAV; men who have sex with men (MSM); users of injection and non-injection illicit drugs; persons with clotting factor disorders; and persons working with nonhuman primates. HAV outbreaks have been reported among the homeless, who have a higher morbidity and mortality when compared with the general population and an increased risk of infection due to living conditions. Individuals with chronic liver conditions, such as hepatitis B or C, are also recommended to get HAV vaccination because of their increased morbidity and mortality risks should they contract HAV.

Recommendations for Providers

1. **Consider HAV infection in individuals, especially the homeless and those who use illicit drugs, with discrete symptom onset and jaundice or elevated liver function tests.**
   - Symptoms of concern include nausea, vomiting, diarrhea, anorexia, fever, malaise, dark urine, light-colored stool, and abdominal pain.
   - A complete serology panel with testing for hepatitis A, B, and C is recommended in symptomatic patients. HIV testing is also recommended for those with an undocumented HIV-status.
   - Serologic testing for HAV infection is not recommended in asymptomatic individuals or as screening before vaccination.

2. **Promptly report all confirmed and suspect HAV cases to the Epidemiology Program**.
   - Please fax a Confidential Morbidity Report (CMRa), or call 619-692-8499 (Monday-Friday, 8 AM-5 PM), or 858-565-5255 (after hours, during weekends, and on County-observed holidays).
   - Since this outbreak involves homeless individuals, **providers are urged to contact the Epidemiology Program while suspected cases are still at the healthcare facility**. This action will ensure that a public health investigator can interview the patient by phone for a risk history and will facilitate serum specimen submission to the San Diego County Public Health Laboratory for possible genotyping.

3. **Provide post-exposure prophylaxis (PEP) for close contacts of confirmed HAV cases.**
   - Susceptible people exposed to HAV should receive a dose of single-antigen HAV vaccine or intramuscular (IM) immune globulin (IG) (0.02 mL/kg), or both, as soon as possible within 2 weeks of last exposure.
   - The efficacy of combined HAV/Hepatitis B virus (HBV) vaccine (Twinrix®) for PEP has not been evaluated, so it is not recommended for PEP.
   - Detailed information on PEP may be found on the CDPH Hepatitis A Postexposure Prophylaxis Guidance Quicksheet (updated August 2016).

4. **Provide HAV vaccine to homeless individuals, illicit drug users, patients with chronic liver diseases, MSM, and other at-risk people who are not already immunized**.
   - The combined HAV/HBV (Twinrix®) vaccine may be used in these groups if the individuals are not already immune to HBV. Providers who do not have available vaccine may direct patients to an immunization clinic at the nearest County Public Health Center.
   - Providers who care for homeless individuals may contact the Immunization Program at 619-692-5607 (Monday-Friday, 8 AM-5 PM) to learn how to obtain 317-funded HAV vaccine for use during this outbreak.
   - Homeless individuals and illicit drug users are also at higher risk for other vaccine preventable diseases and should be brought up-to-date with recommended vaccines per the relevant CDC immunization schedule.
   - Providers should check the San Diego Immunization Registry to see if patients are already vaccinated and note any vaccinations given.

5. **Offer HAV vaccination to individuals who have frequent, ongoing close contact with homeless individuals and illicit drug users in non-healthcare environments.**
   - The County Public Health Officer recommends HAV vaccination for individuals with ongoing, close contact with homeless and illicit drug using individuals in San Diego County.
   - This local recommendation is being made due to the current outbreak and includes persons working in public safety, homeless shelters, and homeless and behavioral service provider agencies.

6. **Ensure that all healthcare workers use standard precautions in patient care to protect themselves against HAV**. HAV, like norovirus, is a non-enveloped virus, and it may be similarly difficult to inactivate in the environment. Alcohol-based hand rubs and typically-used surface disinfectants may not be effective. Therefore, additional precautions to take include:
   - Wash hands with soap and running water for at least 20 seconds after providing care for an HAV patient.
   - Use contact precautions, in addition to standard precautions, in the care of diapered or incontinent HAV patients.
   - Wash hands with soap and running water for at least 20 seconds before eating and after using a restroom.
   - Use employee-designated restrooms when available, and do not touch the door handle directly when exiting a restroom.
   - Do not eat in patient care areas and never share food, drink or cigarettes with patients.
   - Do not handle a cell phone just before (or while) eating. Studies have shown that cell phones have high rates of surface contamination with enteric organisms (and for hospital employees, organisms associated with hospital acquired infections).
   - Perform environmental cleaning in areas housing HAV patients with bleach products or other products effective against norovirus.
   - HAV vaccine should be available and encouraged for unvaccinated healthcare workers caring for HAV patients or other unvaccinated healthcare personnel concerned about increased exposure to HAV.

7. **Encourage those who are planning an international trip to check the** CDC Travelers' Health website **and obtain recommended vaccinations before travel**. High-risk areas for HAV include parts of Africa and Asia, and moderate-risk areas include Central and South America, Eastern Europe, and parts of Asia.

Resources

Centers for Disease Control and Prevention
- Hepatitis A for Health Professionals
- Hepatitis A General Fact Sheet
- Hepatitis A Q&A for the Public
- Hepatitis A Vaccine Information Statement
- Viral Hepatitis Fact Sheet for Gay and Bisexual Men

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Thank you for your continued participation.

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CAHAN San Diego
California HEALTH ALERT NETWORK

To: CAHAN San Diego Participants
Date: July 13, 2017
From: Public Health Services, Epidemiology and Immunizations Services Branch

Update #4: Hepatitis A Virus Outbreak in San Diego County

This health advisory updates local healthcare providers about recent hepatitis A virus (HAV) infections disproportionately affecting homeless and illicit drug-using individuals in San Diego County. Updated recommendations and resources on HAV are provided.

Key messages:

- 228 cases, including 5 deaths, have been reported since November 2016.
- The outbreak is primarily transmitted person-to-person through close contact or through a fecally-contaminated environment.
- Vaccination and proper hand hygiene are the best prevention against HAV.
- High risk groups that should be vaccinated include: homeless people, illicit drug users, men who have sex with men, people with chronic liver disease, and travelers to countries with increased HAV rates.
- Anyone who works closely with persons who are homeless and/or are using illicit drugs should be vaccinated because of this outbreak.
- Suspect cases should be reported to public health while the patient is still at the treatment facility.
- Appropriate post-exposure prophylaxis should be given to close contacts of known cases.
- Healthcare workers should use standard precautions at all times and should use contact precautions with certain HAV patients.

Situation

As of July 10, 2017, 228 confirmed or probable HAV cases have been reported in an ongoing local outbreak in San Diego County. The cases had symptom onsets between November 24, 2016 and July 6, 2017. One hundred and sixty-one (71%) of the cases have been hospitalized, and five patients (2%) have died. The cases range in age from 20 to 87 years (median = 44 years), and 154 (68%) are male, with two (1%) self-identifying as men who has sex with men.

Ninety-eight (43%) of the HAV cases are homeless and reported injection or non-injection illicit drug use, 35 (15%) were homeless only, 24 (11%) were illicit drug users only, 46 (20%) were neither homeless nor drug users, and 25 (11%) had an unknown status for homelessness and drug use. Of the cases with test results available for review, 40 of 180 (22%) have evidence of hepatitis C infection, and 10 of 178 (6%) have hepatitis B infection.

Despite the fact that the majority of the cases in this outbreak had a known indication for HAV immunization, only one case (a 20-year-old who had routine childhood HAV immunizations) had been vaccinated prior to becoming ill.

Most of the outbreak cases have been from the El Cajon/La Mesa area and downtown San Diego. Some cases have been confirmed in individuals who were only in the southern or northern parts of the county during their exposure periods. There are several clusters of epidemiologically associated cases, although no specific common food, beverage, or drug sources have yet been identified. Case clusters have been reported in individuals who have used the same homeless services providers and in the following types of facilities with shared restrooms: jails, single room occupancy hotels, residential drug treatment facilities, and assisted living facilities.

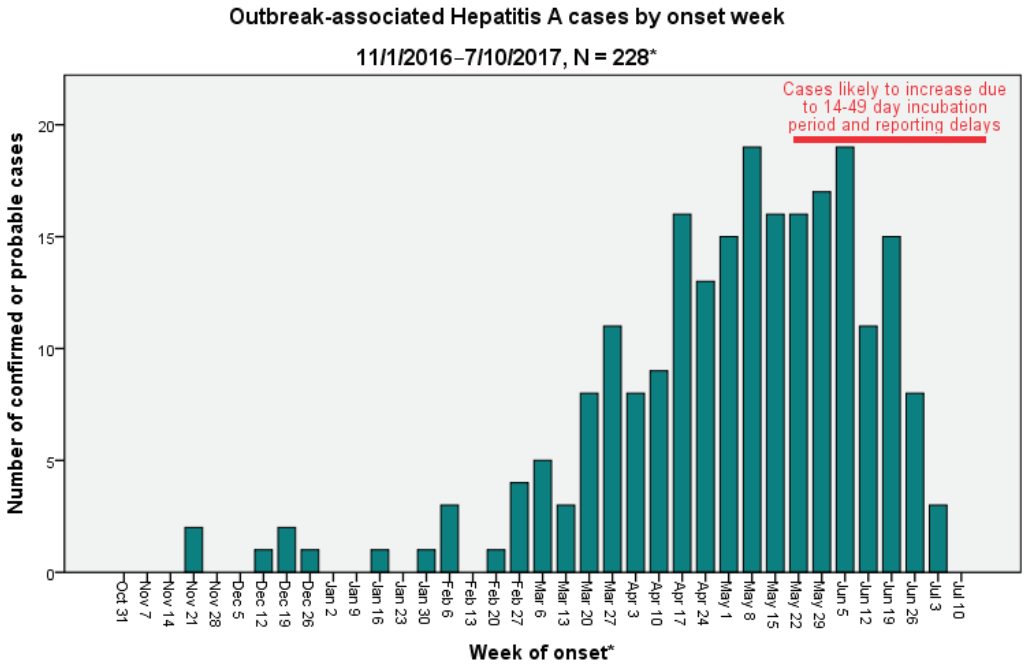
The Centers for Disease Control and Prevention (CDC) has confirmed HAV RNA in serum samples of 153 outbreak cases. Viral sequencing indicates that four unique, closely related strains of HAV genotype 1B are involved. These strains are different than those associated with an ongoing HAV outbreak in Southeastern Michigan and the outbreaks linked to frozen strawberries in 2016 and pomegranate arils in 2013.

Investigations of the confirmed and probable cases, as well as three dozen suspect cases, are ongoing. Fourteen HAV cases have been reported this year that are travel-related and are not part of the local outbreak totals. Of note, one MSM was diagnosed with symptomatic HAV infection four weeks after a trip to Paris, and viral sequence analysis indicated that the HAV strain causing his infection is identical to the one causing an outbreak among MSM in France.

Background

Person-to-person transmission through the fecal-oral route is the primary means of HAV transmission in the United States. Most infections result from close personal contact with an infected household member or sexual partner, or their fecally contaminated environment. Hands may play a significant role in the direct and indirect spread of HAV. Common-source outbreaks and sporadic cases can also occur from exposure to fecally contaminated food or water.

Individuals with increased risk for HAV infection include: travelers to countries with high or intermediate endemicity of HAV, men who have sex with men (MSM), users of injection and non-injection illicit drugs, persons with clotting factor disorders, and persons working with nonhuman primates. HAV outbreaks have been reported among the homeless, who have a higher morbidity and mortality when compared with the general population and an increased risk of infection due to living conditions. Individuals with chronic liver conditions, such as hepatitis B or C, are also recommended to get HAV vaccination because of their increased morbidity and mortality risks should they contract HAV.



*Date of specimen collection or report used if onset date unknown; dates may change as information becomes available

Recommendations for Providers

1. **Consider HAV infection in individuals, especially the homeless and those who use illicit drugs, with discrete symptom onset and jaundice or elevated liver function tests.**
   - Symptoms of concern include nausea, vomiting, diarrhea, anorexia, fever, malaise, dark urine, light-colored stool, and abdominal pain.
   - A complete serology panel with testing for hepatitis A, B, and C is recommended in symptomatic patients. HIV testing is also recommended for those with an undocumented HIV-status.
   - Serologic testing for HAV infection is not recommended in asymptomatic individuals or as screening before vaccination.

2. **Promptly report all confirmed and suspect HAV cases to the Epidemiology Program**.
   - Please fax a Confidential Morbidity Report (CMRa), or call 619-692-8499 (Monday-Friday, 8 AM-5 PM), or 858-565-5255 (after hours, during weekends, and on County-observed holidays).
   - Since this outbreak involves homeless individuals, **providers are urged to contact the Epidemiology Program while suspected cases are still at the healthcare facility**. This action will ensure that a public health investigator can interview the patient by phone for a risk history and will facilitate serum specimen submission to the San Diego County Public Health Laboratory for possible genotyping.

3. **Provide post-exposure prophylaxis (PEP) for close contacts of confirmed HAV cases.**
   - Susceptible people exposed to HAV should receive a dose of single-antigen HAV vaccine intramuscular (IM) immune globulin (IG) (0.02 mL/kg), or both, as soon as possible within 2 weeks of last exposure.
   - The efficacy of combined HAV/Hepatitis B virus (HBV) vaccine (Twinrix®) for PEP has not been evaluated, so it is not recommended for PEP.
   - Detailed information on PEP may be found on the CDPH Hepatitis A Postexposure Prophylaxis Guidance Quicksheet (updated August 2016).

4. **Provide HAV vaccine to homeless individuals, illicit drug users, patients with chronic liver diseases, MSM, and other at-risk people who are not already immunized**.
   - The first dose of single-antigen HAV vaccine (Havrix®, Vaqta®) appears to protect more persons than the first dose of the combined HAV/HBV (Twinrix®) vaccine (see table 3 package insert), but efficacy is comparable after completion of the respective series. Providers should consider short-term risks of exposure to HAV, the likelihood of follow-up to complete immunization, and the need for protection from HBV when selecting vaccines for those at risk. Immunization against HAV with existing supplies should not be delayed to obtain a different formulation of vaccine.
   - Providers who do not have available vaccine may direct patients to an immunization clinic at the nearest County Public Health Center.
   - Providers who care for homeless individuals may contact the Immunization Program at 619-692-5607 (Monday-Friday, 8 AM-5 PM) to learn how to obtain 317-funded HAV vaccine for use during this outbreak.
   - Homeless individuals and illicit drug users are also at higher risk for other vaccine preventable diseases and should be brought up-to-date with recommended vaccines per the relevant CDC immunization schedule.
   - Providers should check the San Diego Immunization Registry to see if patients are already vaccinated and note any vaccinations given.

5. **Offer HAV vaccination to individuals who have frequent, ongoing close contact with homeless individuals and illicit drug users in non-healthcare environments.**
   - The County Public Health Officer recommends HAV vaccination for individuals with ongoing, close contact with homeless and illicit drug using individuals in San Diego County.
   - This local recommendation is being made due to the current outbreak and includes persons working in public safety, sanitation, homeless shelters, and homeless and behavioral service provider agencies.

6. **Encourage those who are planning an international trip to check the** CDC Travelers' Health website **and obtain recommended vaccinations before travel**.
   - High-risk areas for HAV include parts of Africa and Asia, and moderate-risk areas include Central and South America, Eastern Europe, and parts of Asia.
   - There are currently HAV outbreaks associated with MSM occurring in New York City and in Western Europe, notably France, Portugal, and Spain. MSM should be vaccinated against HAV, especially prior to travel, and be instructed on prevention measures for HAV and other sexually transmitted illnesses.

7. **Ensure that all healthcare workers use standard precautions in patient care to protect themselves against HAV**. HAV, like norovirus, is a non-enveloped virus, and it may be similarly difficult to inactivate in the environment. Alcohol-based hand rubs and typically-used surface disinfectants may not be effective. Therefore, additional precautions to take include:
   - Wash hands with soap and running water for at least 20 seconds after providing care for an HAV patient.
   - Use contact precautions, in addition to standard precautions, in the care of diapered or incontinent HAV patients.
   - Wash hands with soap and running water for at least 20 seconds before eating and after using a restroom.
   - Use employee-designated restrooms when available, and do not touch the door handle directly when exiting a restroom.
   - Do not eat in patient care areas and never share food, drink or cigarettes with patients.
   - Do not handle a cell phone just before (or while) eating. Studies have shown that cell phones have high rates of surface contamination with enteric organisms (and for hospital employees, organisms associated with hospital acquired infections).
   - Perform environmental cleaning in areas housing HAV patients with bleach products or other products effective against norovirus.
   - HAV vaccine should be available and encouraged for unvaccinated healthcare workers caring for HAV patients or other unvaccinated healthcare personnel concerned about increased exposure to HAV.

Resources

Centers for Disease Control and Prevention
- Hepatitis A for Health Professionals
- Hepatitis A General Fact Sheet
- Hepatitis A Q&A for the Public
- Hepatitis A Vaccine Information Statement
- Viral Hepatitis Fact Sheet for Gay and Bisexual Men

California Department of Public Health
- Hepatitis A Website
- Quicksheet: Hepatitis A
- Viral Hepatitis Resources

Thank you for your continued participation.

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CAHAN San Diego
California HEALTH ALERT NETWORK

To: CAHAN San Diego Participants
Date: July 24, 2017
From: Public Health Services, Epidemiology and Immunizations Services Branch

Immune Globulin Dosage Increased for Hepatitis A Virus Prophylaxis

This health alert informs providers that Grifols Therapeutics, the manufacturer of GamaSTAN® S/D, the only formulation of human intramuscular (IM) immune globin (IG) in the United States, has increased the recommended dosage for their product for the pre- and post-exposure prophylaxis of hepatitis A virus (HAV).

Situation

On July 7, 2017, Grifols Therapeutics increased the recommended dosages of its product (GamaSTAN® S/D) for pre- and post-exposure prophylaxis of HAV infection.

The newly recommended IG dose for HAV post-exposure prophylaxis (PEP) is 0.1 mL/kg, which is 5 times greater than the previously recommended dose.

The IG doses for pre-exposure prophylaxis for travel were also increased: 0.1 mL/kg for stays up to one month, 0.2 mL/kg for stays up to two months, and repeated boosters of 0.1 mL/kg every two months for stays beyond two months. Of note, prior to travel to countries with high or intermediate endemic HAV transmission, active immunization with an available vaccine (Havrix ®, Vaqta®, or Twinrix®) is preferred over IG under most circumstances.

The IG dosages were changed based on reportedly lower concentrations of anti-HAV antibodies in the product due to decreased prevalence of previous HAV infection among plasma donors. The provider letter from Grifols Therapeutics that outlines these changes is available here.

California Department of Public Health (CDPH) guidance documents on the management of post-exposure prophylaxis (PEP) of HAV (CDPH HAV PEP Quicksheet and CDPH HAV PEP Administration) have been updated to reflect these changes.

San Diego County is currently experiencing a large HAV outbreak. As of July 20, 2017, 260 cases have been reported, including six deaths. Detailed recommendations for the outbreak may be found at the County Hepatitis A website, which has weekly updates on the case count and copies of all health alerts regarding HAV. Santa Cruz County is also experiencing an HAV outbreak with at least 27 cases. In both counties, most of the infected persons have been homeless and/or users of illicit drugs.

Recommendation

Providers should immediately use the increased IG dosage (0.1 mL/kg) when indicated for HAV post-exposure prophylaxis (PEP).

Susceptible people exposed to HAV should receive a dose of single-antigen HAV vaccine (Havrix® or Vaqta®) and/or intramuscular (IM) IG (0.1 mL/kg) as soon as possible within two weeks of last exposure. The combination HAV/hepatitis B vaccine (Twinrix®) should not be used for PEP.

This table, adapted from CDPH guidance, may be utilized to determine which products to use to prevent HAV in exposed persons.

Age/years	<1†	1-40	41-59	60-74†	75+
Healthy	IG Only	Vaccine preferred	Vaccine	IG + vaccine	IG + vaccine
Other‡	IG	IG	IG	IG	IG

†When IG is unavailable or in short supply, single-antigen HAV vaccine may be used for PEP in healthy people 60- 74 years of age and in infants >6 months of age.
‡Other medical conditions are defined at:
https://archive.cdph.ca.gov/programs/immunize/Documents/CDPH_HAV%20PEP%20Clinical%20Guidance.pdf

Persons administered IG for whom HAV vaccine is also recommended for other reasons (including ongoing exposure during the current outbreak) should receive a dose of HAV vaccine simultaneously with IG.

Persons who were exposed less than two weeks ago and who have recently received a dose of IM IG less than 0.1 mL/kg may receive an additional dose for a total of 0.1 mL/kg.

Questions about HAV reporting and prophylaxis (including IG dosage) may be directed to the County Epidemiology Program at 619-692-8499 (Monday-Friday, 8 AM-5 PM), or 858-565-5255 (after hours, during weekends, and on County-observed holidays).

Thank you for your continued participation.

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CAHAN San Diego
California HEALTH ALERT NETWORK

To: CAHAN San Diego Participants
Date: August 16, 2017
From: Public Health Services, Epidemiology and Immunizations Services Branch

Update #5: Hepatitis A Virus Outbreak in San Diego County

This health advisory updates local healthcare providers about recent hepatitis A virus (HAV) infections disproportionately affecting homeless and illicit drug-using individuals in San Diego County. Updated recommendations and resources on HAV are provided.

Key messages:

- 333 cases, including 11 deaths, have been reported since November 2016.
- The outbreak is primarily transmitted person-to-person through close contact or through a fecally-contaminated environment.
- Vaccination and proper hand hygiene are the best prevention against HAV.
- High-risk groups that should be vaccinated include: homeless people, illicit drug users, men who have sex with men, people with chronic liver disease, and travelers to countries with increased HAV rates.
- The San Diego County Public Health Officer recommends HAV vaccination for all food handlers in the county and anyone who works closely with persons who are homeless and/or are using illicit drugs.
- Suspect cases should be reported to public health while the patient is still at the treatment facility so individuals can be interviewed and are not lost to follow up.
- Appropriate post-exposure prophylaxis (PEP) should be given to close contacts of known cases. Immune globulin dosing for PEP has increased to 0.1 mL/kg.
- Healthcare workers should use standard precautions at all times and should use contact precautions with certain HAV patients.

Situation

As of August 14, 2017, 333 confirmed or probable HAV cases have been reported in an ongoing local outbreak in San Diego County. The cases had symptom onsets between November 22, 2016 and August 8, 2017. Two hundred and thirty-two (70%) of the cases have been hospitalized, and 11 patients (3%) have died. The cases range in age from 19 to 87 years (median = 44 years), and 227 (68%) are male, with two (1%) self-identifying as men who have sex with men (MSM).

One hundred and thirty-one (39%) of the HAV cases are homeless and reported injection or non-injection illicit drug use, 53 (16%) were homeless only, 36 (11%) were illicit drug users only, 76 (23%) were neither homeless nor drug users, and 37 (11%) had an unknown status for homelessness and drug use. Of the cases with test results available for review, 58 of 262 (22%) have chronic hepatitis C infection, and 15 of 261 (6%) have chronic hepatitis B infection.

Despite the fact that the majority of the cases in this outbreak had a known indication for HAV immunization, only one case had been vaccinated prior to becoming infected: a 20-year-old who had routine HAV immunizations as a child.

Most of the outbreak cases have been from the El Cajon/La Mesa area and downtown San Diego. Some cases have been confirmed in individuals who were only in the southern or northern parts of the county during their exposure periods. There are several clusters of epidemiologically associated cases, although no specific common food, beverage, or drug sources have been identified. Case clusters have been reported in individuals who have used the same homeless services providers and in the following types of facilities with shared restrooms: jails, single room occupancy hotels, residential drug treatment facilities, and assisted living facilities. Three healthcare workers contracted HAV infection in this outbreak, as have four food handlers, although no secondary cases have resulted from the individuals working in these sensitive occupations.

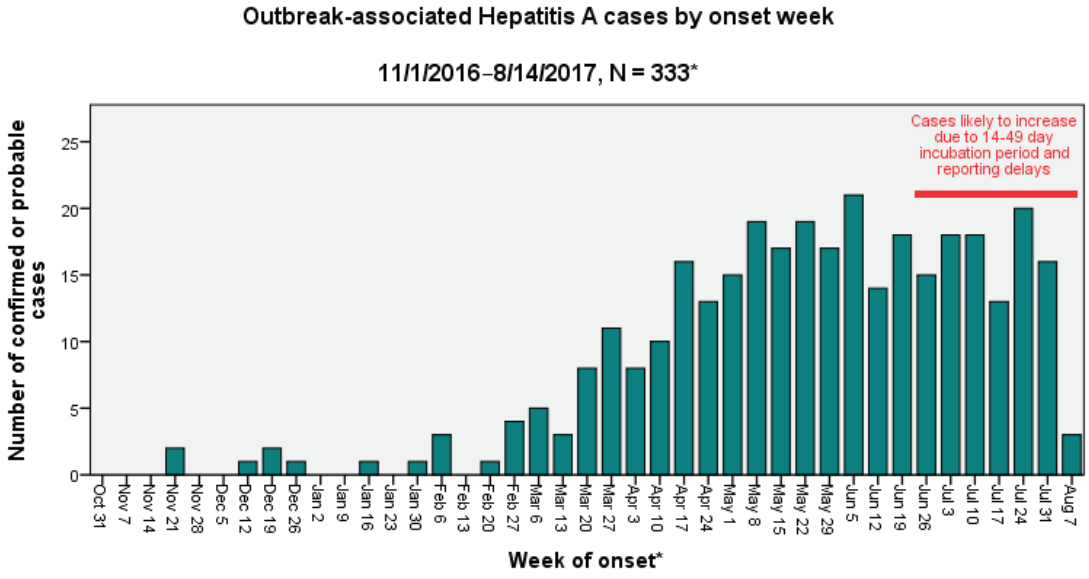
The Centers for Disease Control and Prevention (CDC) has confirmed HAV RNA in serum samples of 199 outbreak cases. Viral sequencing indicates that eight unique, closely related strains of HAV genotype 1B are involved. These strains are different than those associated with an ongoing HAV outbreak in Southeastern Michigan and the outbreaks linked to frozen strawberries in 2016 and pomegranate arils in 2013. The main outbreak strain in San Diego is identical to one of the strains causing an ongoing HAV outbreak in Santa Cruz County.

Investigations of the confirmed and probable cases, as well as 37 suspect cases, are ongoing. Nineteen HAV cases have been reported this year that are travel-related and are not part of the local outbreak totals. Of note, one case was diagnosed with symptomatic HAV infection four weeks after a trip to Paris, and viral sequence analysis indicated that the HAV strain causing his infection is identical to the one causing an outbreak among MSM in France.

Background

Person-to-person transmission through the fecal-oral route is the primary means of HAV transmission in the United States. Most infections result from close personal contact with an infected household member or sexual partner, or their fecally contaminated environment. Hands may play a significant role in the direct and indirect spread of HAV. Common-source outbreaks and sporadic cases can also occur from exposure to fecally contaminated food or water.

Individuals with increased risk for HAV infection include: travelers to countries with high or intermediate endemicity of HAV, MSM, users of injection and non-injection illicit drugs, persons with clotting factor disorders, and persons working with nonhuman primates. HAV outbreaks have been reported among the homeless, who have a higher morbidity and mortality when compared with the general population and an increased risk of infection due to living conditions. Individuals with chronic liver conditions, such as hepatitis B or C, are also recommended to get HAV vaccination because of their increased morbidity and mortality risks should they contract HAV.



*Date of specimen collection or report used if onset date unknown; dates may change as information becomes available

Recommendations for Providers

1. **Consider HAV infection in individuals, especially the homeless and those who use illicit drugs, with discrete symptom onset and jaundice or elevated liver function tests.**
   - Symptoms of concern include nausea, vomiting, diarrhea, anorexia, fever, malaise, dark urine, light-colored stool, and abdominal pain.
   - A complete serology panel with testing for hepatitis A, B, and C is recommended in symptomatic patients. HIV testing is also recommended for those with an undocumented HIV-status.
   - Serologic testing for HAV infection is not recommended in asymptomatic individuals or as screening before vaccination.

2. **Promptly report all confirmed and suspect HAV cases to the Epidemiology Program**.
   - Please fax Confidential Morbidity Report (CMRa), or call 619-692-8499 (Monday-Friday, 8 AM-5 PM), or 858-565-5255 (after hours, during weekends, and on County-observed holidays).
   - Since this outbreak involves homeless individuals, **providers are urged to contact the Epidemiology Program while suspected cases are still at the healthcare facility**. This action will ensure that a public health investigator can interview the patient by phone for a risk history and will facilitate serum specimen submission to the San Diego County Public Health Laboratory for possible genotyping.

3. **Provide post-exposure prophylaxis (PEP) for close contacts of confirmed HAV cases.**
   - Susceptible people exposed to HAV should receive a dose of single-antigen HAV vaccine intramuscular (IM) immune globulin (IG) (0.1 mL/kg), or both, as soon as possible within 2 weeks of last exposure. The PEP dosage of IG was recently increased and is higher than that noted in the package insert.
   - The efficacy of combined HAV/Hepatitis B virus (HBV) vaccine (Twinrix®) for PEP has not been evaluated, so it is not recommended for PEP.
   - Detailed information on PEP may be found on the CDPH Hepatitis A PEP Guidance Quicksheet (updated July 2017) and the CDPH Hepatitis A PEP IG Administration Quicksheet (updated August 2017).

4. **Provide HAV vaccine to homeless individuals, illicit drug users, patients with chronic liver diseases, MSM, and other at-risk people who are not already immunized, and to any individual who desires immunity to HAV.**
   - The first dose of single-antigen HAV vaccine (Havrix®, Vaqta®) appears to protect more persons than the first dose of the combined HAV/HBV (Twinrix®) vaccine (see table 3 package insert), but efficacy is comparable after completion of the respective series. Providers should consider short-term risks of exposure to HAV, the likelihood of follow-up to complete immunization, and the need for protection from HBV when selecting vaccines for those at risk. Immunization against HAV with existing supplies should not be delayed to obtain a different formulation of vaccine.
   - Providers who do not have available vaccine may direct patients to an immunization clinic at the nearest County Public Health Center.
   - Providers who care for homeless individuals may contact the Immunization Program at 619-692-5607 (Monday-Friday, 8 AM-5 PM) to learn how to obtain 317-funded HAV vaccine for use during this outbreak.
   - Homeless individuals and illicit drug users are also at higher risk for other vaccine preventable diseases and should be brought up-to-date with recommended vaccines per the relevant CDC immunization schedule.
   - Providers should check the San Diego Immunization Registry to see if patients are already vaccinated and note any vaccinations given.
   - Some individuals who are at risk for HAV may be uncomfortable disclosing the reasons that they are at risk to a provider, so the Advisory Committee on Immunization Practices routinely recommends HAV vaccination "for any person wishing to obtain immunity."
   - Adult HAV vaccination is covered by Medi-Cal without prior authorization. Billing information is available here (see page 3).

5. **Provide HAV vaccination to individuals who have frequent, ongoing close contact with homeless individuals and illicit drug users, and to all food handlers in San Diego County.**
   - The County Public Health Officer recommends HAV vaccination for individuals with ongoing, close contact with homeless and illicit drug using individuals in San Diego County. This local recommendation is being made due to the current outbreak and includes persons working in health care, public safety, sanitation, homeless shelters, and homeless and behavioral service provider agencies.
   - The County Public Health Officer recommends HAV vaccination for all food handlers in San Diego County. This local recommendation is being made to reduce the potential risk of an ill food handler transmitting HAV to others.

6. **Encourage those who are planning an international trip to check the** CDC Travelers' Health website **and to obtain recommended vaccinations before travel**.
   - High-risk areas for HAV include parts of Africa and Asia, and moderate-risk areas include Central and South America, Eastern Europe, and parts of Asia.
   - There are currently HAV outbreaks associated with MSM occurring in New York City and in Western Europe, notably France, Portugal, and Spain. MSM should be vaccinated against HAV, especially prior to travel, and be instructed on prevention measures for HAV and other sexually transmitted illnesses.

7. **Ensure that all healthcare workers use standard precautions in patient care to protect themselves against HAV**. HAV, like norovirus, is a non-enveloped virus, and it may be similarly difficult to inactivate in the environment. Alcohol-based hand rubs and typically-used surface disinfectants may not be effective. Therefore, additional precautions to take include:
   - Wash hands with soap and running water for at least 20 seconds after providing care for an HAV patient.
   - Use contact precautions, in addition to standard precautions, in the care of diapered or incontinent HAV patients.
   - Wash hands with soap and running water for at least 20 seconds before eating and after using a restroom.
   - Use employee-designated restrooms when available, and do not touch the door handle directly when exiting a restroom.
   - Do not eat in patient care areas and never share food, drink or cigarettes with patients.
   - Do not handle a cell phone just before (or while) eating. Studies have shown that cell phones have high rates of surface contamination with enteric organisms (and for hospital employees, organisms associated with hospital acquired infections).
   - Perform environmental cleaning in areas housing HAV patients with bleach products or other products effective against norovirus.
   - HAV vaccine is recommended for unvaccinated healthcare workers caring for HAV patients or individuals at risk for HAV. The vaccine should be available and encouraged for other unvaccinated healthcare personnel concerned about increased exposure to HAV.

Resources

Centers for Disease Control and Prevention
- Hepatitis A for Health Professionals
- Hepatitis A General Fact Sheet
- Hepatitis A Q&A for the Public
- Hepatitis A Vaccine Information Statement
- Viral Hepatitis Fact Sheet for Gay and Bisexual Men

California Department of Public Health
- Hepatitis A Website
- Quicksheet: Hepatitis A
- Viral Hepatitis Resources

Thank you for your continued participation.

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CAHAN San Diego
California HEALTH ALERT NETWORK

To: CAHAN San Diego Participants
Date: September 12, 2017
From: Public Health Services, Epidemiology and Immunizations Services Branch

Update #6: Hepatitis A Virus Outbreak in San Diego County

On September 1, 2017, the San Diego County Public Health Officer declared a local public health emergency due to the ongoing hepatitis A virus (HAV) outbreak in the county. The County Board of Supervisors ratified this declaration on September 6, 2017. This health advisory updates local healthcare providers about the outbreak and provides updated recommendations and resources on HAV.

Key messages:

- 421 cases, including 16 deaths, have been reported since November 2016.
- The outbreak is being transmitted person-to-person through close contact or through a fecally-contaminated environment, and is primarily affecting homeless people, injection and non-injection illicit drug users, and individuals in dense living conditions with shared restrooms.
- Vaccination and soap and water hand hygiene are the best prevention against HAV.
- HAV vaccine should be provided immediately to homeless individuals, illicit drug users, patients with chronic liver diseases, men who have sex with men (MSM), and other at-risk people who are not already immunized, and **to any individual who desires immunity to HAV**.
- The San Diego County Public Health Officer strongly recommends HAV vaccination for all food handlers in the county and anyone having close contact with persons who are homeless and/or are using illicit drugs.
- Suspect cases should be reported to public health while the patient is still at the treatment facility so individuals can be interviewed and are not lost to follow up.
- Any patient who is potentially contagious with HAV should be instructed on preventing the spread of the disease and should not be discharged to the street.
- Appropriate post-exposure prophylaxis (PEP) should be given to close contacts of known cases. Immune globulin dosing for PEP has increased to 0.1 mL/kg.

Situation

As of September 11, 2017, 421 confirmed or probable HAV cases have been reported in an ongoing local outbreak in San Diego County. The cases had symptom onsets between November 22, 2016 and September 8, 2017. Two hundred and ninety-two (69%) of the cases have been hospitalized, and 16 patients (4%) have died. The cases range in age from 5 to 87 years (median = 44 years), and 286 (68%) are male, with two (0.5%) self-identifying as MSM. The only pediatric case is an unimmunized 5-year-old who was exposed by an ill family member.

One hundred and forty-eight (36%) of the HAV cases are homeless and reported injection or non-injection illicit drug use, 71 (17%) were homeless only, 52 (12%) were illicit drug users only, 96 (23%) were neither homeless nor drug users, and 54 (13%) had an unknown status for homelessness and drug use. Of the 325 cases with test results available for review, 64 (20%) have chronic hepatitis C infection, and 17 (5%) have chronic hepatitis B infection.

Despite the fact that the majority of the cases in this outbreak had a known indication for HAV immunization, none had been fully vaccinated prior to becoming ill. A small minority of patients had potentially prolonged exposure periods to individuals with HAV and became ill after receiving HAV vaccination as post-exposure prophylaxis.

Most outbreak cases have been from downtown San Diego and from El Cajon, Santee, La Mesa, and the adjacent unincorporated areas, however cases have been confirmed in all parts of the county. There are several clusters of epidemiologically associated cases, although no specific common food, beverage, or drug sources have been identified. Case clusters have been reported in individuals who have used the same homeless services providers and in the following locations with shared restrooms: jails, single room occupancy hotels, residential drug treatment facilities, group homes, and assisted living facilities. Four healthcare workers have contracted HAV in this outbreak, as have six food handlers, although no secondary cases have resulted from the individuals working in these sensitive occupations.

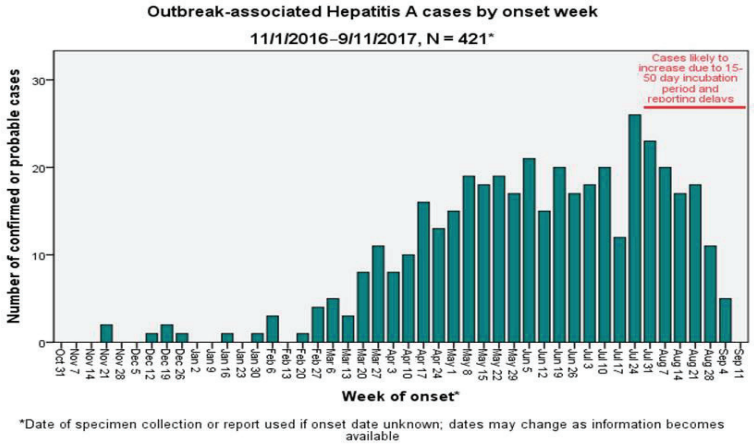
The Centers for Disease Control and Prevention (CDC) has confirmed HAV RNA in serum samples of 265 outbreak cases. Viral sequencing indicates that 13 unique, closely related strains of HAV genotype 1B are involved. These strains are different than those associated with the 1B strains in an ongoing HAV outbreak in Southeastern Michigan and the multi-state outbreaks, including California, linked to frozen strawberries in 2016 and pomegranate arils in 2013. The main outbreak strain in San Diego is identical to one of the strains causing an ongoing HAV outbreak in Santa Cruz County.

Investigations of the confirmed and probable cases, as well as 35 suspect cases, are ongoing. Not included in the local outbreak totals are 24 HAV cases reported this year that are travel-related or have non-outbreak genotypes. Of note, one case was diagnosed with symptomatic HAV infection four weeks after a trip to Paris, and viral sequence analysis indicated that the HAV strain causing his infection is identical to the one causing an outbreak among MSM in France.

Background

Person-to-person transmission through the fecal-oral route is the primary means of HAV transmission in the United States. Most infections result from close personal contact with an infected household member or sexual partner, or their fecally contaminated environment. Contaminated hands may play a significant role in the direct and indirect spread of HAV. Common-source outbreaks and sporadic cases can also occur from exposure to fecally contaminated food or water. According to CDC, individuals are infectious from up to two weeks before symptom onset to 1 week after. However some data suggest that individuals may be infectious for longer.

Individuals with increased risk for HAV infection include: travelers to countries with high or intermediate endemicity of HAV, MSM, users of injection and non-injection illicit drugs, persons with clotting factor disorders, and persons working with nonhuman primates. HAV outbreaks have been reported among drug users and the homeless, who have a higher morbidity and mortality, when compared with the general population, and an increased risk of infection due to poor living conditions. Individuals with chronic liver conditions, such as hepatitis B or C, are also recommended to get HAV vaccination because of their increased morbidity and mortality risks should they contract HAV.



*Date of specimen collection or report used if onset date unknown; dates may change as information becomes available

Recommendations for Providers

1. **Consider HAV infection in individuals, especially homeless individuals and those who use illicit drugs, with discrete symptom onset and jaundice or elevated liver function tests.**
   - Symptoms of concern include nausea, vomiting, diarrhea, anorexia, fever, malaise, dark urine, light-colored stool, and abdominal pain.
   - Relapsing hepatitis can occur after apparent recovery from initial illness in up to 20% of cases. Patients experiencing relapsing hepatitis can be contagious and multiple relapses can occur up to six months after initial infection. Cholestatic hepatitis mimicking gallbladder disease can also occur up to 5% of cases.
   - A complete serology panel with testing for hepatitis A, B, and C is recommended in symptomatic patients. HIV testing is also recommended for those with an undocumented HIV-status.
   - Serologic testing for HAV infection is not recommended in asymptomatic individuals or as screening before vaccination.

2. **Promptly report all suspected and confirmed HAV cases to the Epidemiology Program**.
   - Please fax Confidential Morbidity Report (CMRa), or call 619-692-8499 (Monday-Friday, 8 AM-5 PM), or 858-565-5255 (after hours, during weekends, and on County-observed holidays).
   - Since this outbreak involves homeless individuals, **providers are urged to contact the Epidemiology Program while suspected cases are still at the healthcare facility**. This action will ensure that a public health investigator can interview the patient by phone for a risk history and will facilitate serum specimen submission to the San Diego County Public Health Laboratory for possible genotyping.
   - Patients who are potentially contagious should be discharged from a facility only after being given clear instructions on how to prevent the spread of the disease. People who are homeless should be provided temporary shelter with a restroom that is either private or shared with individuals known to be HAV immune.

3. **Provide post-exposure prophylaxis (PEP) for close contacts of confirmed HAV cases.**
   - Susceptible people exposed to HAV should receive a dose of single-antigen HAV vaccine intramuscular (IM) immune globulin (IG) (0.1 mL/kg), or both, as soon as possible within 2 weeks of last exposure. The PEP dosage of IG was recently increased and is higher than that noted in the package insert.
   - The efficacy of combined HAV/Hepatitis B virus (HBV) vaccine (Twinrix®) for PEP has not been evaluated, so it is not recommended for PEP.
   - Detailed information on PEP may be found on the CDPH Hepatitis A PEP Guidance Quicksheet (updated July 2017) and the CDPH Hepatitis A PEP IG Administration Quicksheet (updated August 2017).

4. **Provide HAV vaccine to homeless individuals, illicit drug users, patients with chronic liver diseases, MSM, and other at-risk people who are not already immunized, and to any individual who desires immunity to HAV.**
   - The first dose of single-antigen HAV vaccine (Havrix®, Vaqta®) appears to protect more persons than the first dose of the combined HAV/HBV (Twinrix®) vaccine (see table 3 package insert), but efficacy is comparable after completion of the respective series. Providers should consider short-term risks of exposure to HAV, the likelihood of follow-up to complete immunization, and the need for protection from HBV when selecting vaccines for those at risk. Immunization against HAV with existing supplies should not be delayed to obtain a different formulation of vaccine.
   - Providers who do not have available vaccine may direct patients to call 2-1-1 San Diego to locate the nearest County Public Health Center, clinic, or pharmacy that can provide the vaccine.
   - Providers who care for homeless and/or drug-using individuals may contact the Immunization Program at 619-692-5607 (Monday-Friday, 8 AM-5 PM) to learn how to obtain 317-funded HAV vaccine for use during this outbreak.
   - Homeless individuals and illicit drug users are also at higher risk for other vaccine preventable diseases and should be brought up-to-date with recommended vaccines per the relevant CDC immunization schedule.
   - The Advisory Committee on Immunization Practices routinely recommends HAV vaccination for various at-risk groups and "**for any person wishing to obtain immunity**."
   - Under the Affordable Care Act, HAV vaccines are covered as preventive care without a deductible or copay.

- Adult HAV vaccination is covered by Medi-Cal without prior authorization. Billing information is available here (see page 3).
- Providers should check the San Diego Immunization Registry to see if patients are already vaccinated and note any vaccinations given.

5. **Provide HAV vaccination to individuals who have frequent, ongoing close contact with homeless individuals and illicit drug users, and to all food handlers in San Diego County.**
   - The County Public Health Officer strongly recommends HAV vaccination for individuals with ongoing, close contact with homeless and illicit drug using individuals in San Diego County. This local recommendation is being made due to the current outbreak and includes persons working in health care, public safety, sanitation, homeless shelters, and homeless and behavioral service provider agencies.
   - The County Public Health Officer strongly recommends HAV vaccination for all food handlers in San Diego County. This local recommendation is being made to reduce the potential risk of an ill food handler transmitting HAV to others.

6. **Encourage those who are planning an international trip to check the CDC Travelers' Health website and to obtain recommended vaccinations before travel**.
   - High-risk areas for HAV include parts of Africa and Asia, and moderate-risk areas include Central and South America, Eastern Europe, and parts of Asia.
   - There are currently HAV outbreaks associated with MSM occurring in New York City, Colorado, and Western Europe, notably France, Portugal, and Spain. MSM should be vaccinated against HAV, especially prior to travel, and be instructed on prevention measures for HAV and other sexually transmitted illnesses.

7. **Ensure that all healthcare workers use standard precautions in patient care to protect themselves against HAV**. HAV, like norovirus, is a non-enveloped virus, and it may be similarly difficult to inactivate in the environment. Alcohol-based hand rubs and typically-used surface disinfectants may not be effective. Therefore, additional precautions to take include:
   - Wash hands with soap and running water for at least 20 seconds after providing care for an HAV patient.
   - Use contact precautions in the care of diapered or incontinent HAV patients.
   - Wash hands with soap and running water for at least 20 seconds before eating and after using a restroom.
   - Use employee-designated restrooms when available, and do not touch the door handle directly when exiting a restroom.
   - Do not eat in patient care areas and never share food, drink or cigarettes with patients.
   - Perform environmental cleaning in areas housing HAV patients with bleach products or other products effective against norovirus.
   - HAV vaccine is strongly recommended for unvaccinated healthcare workers caring for HAV patients or individuals at risk for HAV. The vaccine should be available and encouraged for other unvaccinated healthcare personnel concerned about increased exposure to HAV.

Additional Resources

Centers for Disease Control and Prevention
- Hepatitis A for Health Professionals
- Hepatitis A General Fact Sheet
- Hepatitis A Q&A for the Public
- Hepatitis A Vaccine Information Statement
- Viral Hepatitis Fact Sheet for Gay and Bisexual Men

California Department of Public Health
- All Facilities Notification 17-13 on Hepatitis A
- Hepatitis A Website
- Quicksheet: Hepatitis A
- Viral Hepatitis Resources

Thank you for your continued participation.

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Hepatitis A Vaccination Recommendations during the Current San Diego County Outbreak

This document is intended to assist providers in making vaccination decisions to control an ongoing hepatitis A virus (HAV) outbreak that is primarily affecting homeless people and illicit drug users in San Diego County. National supplies of adult single-antigen HAV vaccine may be constrained until early 2018, although supply in San Diego is expected to meet the anticipated demand.

Due to the current outbreak, the San Diego County Public Health Officer strongly recommends the following groups be vaccinated with the hepatitis A vaccine:

- Homeless individuals, including those who are transiently housed in shelters, those in single-room occupancy facilities with shared restrooms, and any person living without shelter;
- Users of illicit drugs.
- Men who have sex with men.
- People with chronic liver disease, such as cirrhosis, hepatitis B or hepatitis C. They may not be at increased risk of getting hepatitis A but are at increased risk of poor outcomes if infected.
- Individuals who have close contact with homeless and illicit drug users or their environment via employment, volunteer activities, etc. This includes, but is not limited to:
    - Staff at homeless service providers and substance use treatment agencies,
    - Public safety and emergency medical services workers,
    - Healthcare personnel, and
    - Sanitation and janitorial workers; and
- Food handlers in San Diego County catering to adult populations. Food handlers are not at increased risk, but if infected can impact large number of people. Children get routine vaccinations for hepatitis A, so vaccination is not recommended for food handlers in schools unless they are in an **at-risk populations** group.

The Centers for Disease Control and Prevention (CDC) routinely recommends HAV vaccination for all children and for persons who are at increased risk for infection. According to CDC, the following persons are either at increased risk for infection or are more likely to suffer morbidity or mortality and should be vaccinated:

- Users of illicit injection and non-injection drugs;
- Men who have sex with men;
- Persons who have chronic liver disease (i.e., cirrhosis, hepatitis B or C);
- Persons traveling to or working in countries that have high or intermediate rates of HAV;
- Persons who have clotting-factor disorders; and
- Household members, and other close personal contacts, of adopted children newly arriving from countries with high or intermediate rates of endemic HAV.

CDC also recommends HAV vaccination "for any person wishing to obtain immunity." This recommendation is intended to facilitate vaccination of at-risk individuals who may not wish to disclose their at-risk behaviors, **not** to encourage vaccination of the general public.

Adult single-antigen HAV vaccine supplies may be constrained, until early 2018. However, supply in San Diego County should be adequate to immunize all of the groups recommended above. **Homeless individuals, illicit drug users, and those who work on a close and ongoing basis with these at-risk groups are the highest priority for HAV vaccination**, and others should be immunized as vaccine is available. Many individuals who are at risk for HAV are also at risk for hepatitis B, and should be immunized with the combination vaccine if not immune to both. There are no supply concerns for either the combination vaccination or the pediatric single-antigen vaccine.

The single-antigen HAV vaccines are recommended as a two-dose series, with the second shot given at least six months after the first. The second shot of the series may be delayed until increased supply is available.

Providers should check the San Diego Immunization Registry to see if patients are already vaccinated and note any vaccinations given.

Providers who do not have available vaccine may direct insured patients to call 2-1-1 San Diego to locate the nearest pharmacy that can provide the vaccine. Providers may direct uninsured patients to call 2-1-1 San Diego to locate the nearest community health clinic or County Public Health Center.

Providers who care for homeless and/or drug-using individuals may contact the County Immunization Program at 619-692-5607 (Monday-Friday, 8 AM-5 PM) to learn how to obtain HAV vaccine for use during this outbreak.

Under the Affordable Care Act, HAV vaccines are covered as preventive care without a deductible or copay.

Adult HAV vaccination is covered by Medi-Cal without prior authorization. Billing information is available here (see page 3).

CAHAN San Diego
California HEALTH ALERT NETWORK

To: CAHAN San Diego Participants
Date: October 31, 2017
From: Public Health Services, Epidemiology and Immunizations Services Branch

Update #7: Hepatitis A Virus Outbreak in San Diego County

On September 1, 2017, the San Diego County Public Health Officer declared a local public health emergency due to the ongoing hepatitis A virus (HAV) outbreak in the county. The County Board of Supervisors ratified and extended this declaration three times, most recently on October 24, 2017. This health advisory updates local healthcare providers about the outbreak and provides updated recommendations and resources on HAV.

Key messages:

- 536 cases, including 20 deaths, have been reported since November 2016.
- The outbreak is being transmitted person-to-person and is primarily affecting homeless people, injection and non-injection illicit drug users, and individuals in dense living conditions with shared restrooms.
- Vaccination and soap and water hand hygiene are the best prevention against HAV.
- Suspect cases should be reported to public health, while the patient is still at the treatment facility so individuals can be interviewed and are not lost to follow-up.
- Any patient who is potentially contagious with HAV should be instructed on preventing the spread of the disease and should not be discharged to the street.
- Providers should send serum specimens on any patients suspected of having HAV to the San Diego Public Health Laboratory for genotype testing.
- Single antigen HAV vaccine supply may be constrained until early 2018; however, supplies are expected to meet the anticipated demand in San Diego County. Vaccinations may need to be prioritized to at-risk groups.
- Appropriate post-exposure prophylaxis (PEP) should be given to close contacts of known cases. Immune globulin dosing for PEP has increased to 0.1 mL/kg.
- Providers should check the San Diego Immunization Registry to see if patients are already vaccinated and note any vaccinations given.

Situation

As of October 26, 2017, 536 confirmed or probable HAV cases have been reported in an ongoing local outbreak in San Diego County. The cases had symptom onsets between November 22, 2016 and October 14, 2017. Three hundred and sixty-nine (69%) of the cases have been hospitalized, and 20 patients (3.7%) have died. The cases range in age from 5 to 96 years (median = 43 years), and 363 (68%) are male, with ten (2.9%) self-identifying as MSM. The only pediatric case is an unimmunized 5-year-old who was exposed by an ill family member.

One hundred and seventy-two (32%) of the HAV cases are homeless and reported injection or non-injection illicit drug use, 87 (16%) were homeless only, 64 (12%) were illicit drug users only, 152 (28%) were neither homeless nor drug users, and 61 (11%) had an unknown status for homelessness and drug use. Of the 418 cases with test results available for review, 74 (18%) have chronic hepatitis C infection, and 22 (5%) have chronic hepatitis B infection.

Despite the fact that the majority of the cases in this outbreak had a known indication for HAV immunization, none had been fully vaccinated prior to becoming ill. Most outbreak cases have been from downtown San Diego and from El Cajon, Santee, La Mesa, and the adjacent unincorporated areas; however, cases have been confirmed in all parts of the county. There are several clusters of epidemiologically associated cases, although no specific common food, beverage, or drug sources have been identified. Case clusters have been reported in individuals who have used the same homeless services providers and in the following locations with shared restrooms: jails, single room occupancy hotels, residential drug treatment facilities, group homes, and assisted living facilities. Six healthcare workers have contracted HAV in this outbreak, as have 17 food handlers, although only two secondary cases have resulted to date from the individuals working in these sensitive occupations.

The Centers for Disease Control and Prevention (CDC) has confirmed HAV RNA in serum samples of 369 outbreak cases. Viral sequencing indicates that 16 unique, closely related strains of HAV genotype 1B are involved. These strains are different than those associated with the 1B strains in an ongoing HAV outbreak in Southeastern Michigan and the multi-state outbreaks, including California, linked to frozen strawberries in 2016 and pomegranate arils in 2013. The main outbreak strain in San Diego is identical to those causing ongoing HAV outbreaks in Santa Cruz County and Utah.

Investigations of the confirmed and probable cases, as well as 32 suspect cases, are ongoing. Not included in the local outbreak totals are 24 HAV cases reported this year that are travel-related or have non-outbreak genotypes. Of note, three cases with symptomatic HAV infection has been diagnosed in MSM with travel histories within the United States and to Europe, and viral sequence analysis indicated that the HAV strain causing these infections match those causing outbreaks among MSM in France and New York City.

Background

Person-to-person transmission through the fecal-oral route is the primary means of HAV transmission in the United States. Most infections result from close personal contact with an infected household member or sexual partner, or their fecally contaminated environment. Contaminated hands may play a significant role in the direct and indirect spread of HAV. Common-source outbreaks and sporadic cases can also occur from exposure to fecally contaminated food or water. According to CDC, individuals are infectious from up to two weeks before symptom onset to one week after. However, some data suggest that individuals may be infectious for longer.

Individuals with increased risk for HAV infection include: travelers to countries with high or intermediate endemic rates of HAV, MSM, users of injection and non-injection illicit drugs, persons with clotting factor disorders, and persons working with nonhuman primates. HAV outbreaks have been reported among drug users and the homeless, who have a higher morbidity and mortality, when compared with the general population, and an increased risk of infection due to poor living conditions. Individuals with chronic liver conditions, such as hepatitis B or C, are also recommended to get HAV vaccination because of their increased morbidity and mortality risks should they contract HAV.

Recommendations for Providers

1. **Consider HAV infection in individuals, especially homeless individuals and those who use illicit drugs, with discrete symptom onset and jaundice or elevated liver function tests.**
    - Symptoms of concern include nausea, vomiting, diarrhea, anorexia, fever, malaise, dark urine, light-colored stool, and abdominal pain.
    - Relapsing hepatitis can occur after apparent recovery from initial illness in up to 20% of cases. Patients experiencing relapsing hepatitis can be contagious and multiple relapses can occur up to six months after initial infection. Cholestatic hepatitis mimicking gallbladder disease can also occur up to 5% of cases, and they should be considered potentially contagious throughout their symptomatic period.
    - A complete serology panel with testing for hepatitis A, B, and C is recommended in symptomatic patients. HIV testing is also recommended for those with an undocumented HIV-status.
    - Serologic testing for HAV infection is not recommended in asymptomatic individuals or as screening before vaccination.

2. **Promptly report all suspected and confirmed HAV cases to the Epidemiology Program**.
   - Please fax Confidential Morbidity Report (CMRa), or call 619-692-8499 (Monday-Friday, 8 AM-5 PM), or 858-565-5255 (after hours, during weekends, and on County-observed holidays).
   - Since this outbreak involves homeless individuals, **providers are urged to contact the Epidemiology Program while suspected cases are still at the healthcare facility**. This action will ensure that a public health investigator can interview the patient by phone for a risk history.
   - Patients who are potentially contagious should be discharged from a facility only after being given clear instructions on how to prevent the spread of the disease. Infectious people who are homeless may be provided temporary shelter with a private restroom by contacting the Epidemiology Program at the above numbers.

3. **Submit serum specimens on all suspected HAV cases to the San Diego County Public Health Laboratory (SDPHL) for genotyping and viral sequence analysis.**
   - Two 5 cc serum specimens, stored and transported at 4°C, are needed for HAV nucleic acid amplification testing and viral sequencing. Serum should be sent within one day. Contact the SDPHL for longer storage or transport advice.
   - The test may be ordered using the SDPHL form found here. Contact SDPHL at 619-692-8500, option #1 for questions, assistance or instructions.

4. **Provide post-exposure prophylaxis (PEP) for close contacts of confirmed HAV cases.**
   - Susceptible people exposed to HAV should receive a dose of single-antigen HAV vaccine intramuscular (IM), immune globulin (IG) (0.1 mL/kg), or both, as soon as possible within 2 weeks of last exposure. The PEP dosage of IG was recently increased and is higher than that noted in the package insert.
   - The efficacy of combined HAV/Hepatitis B virus (HBV) vaccine (Twinrix®) for PEP has not been evaluated, so it is not recommended for PEP.
   - Detailed information on PEP may be found on the California Department of Public Health (CDPH) Hepatitis A PEP Guidance Quicksheet (updated July 2017) and the CDPH Hepatitis A PEP IG Administration Quicksheet (updated August 2017).

5. **Prioritize HAV vaccine to homeless individuals and illicit drug users, and to people who have frequent, ongoing close contact with these two groups. Based on available supply, vaccinate patients with chronic liver diseases, MSM, other at-risk people, and food handlers who are not already immunized.**
   - Due to increased national demand for HAV vaccine, supply of adult single-antigen HAV vaccine (Havrix®, Vaqta®) may be constrained until early 2018. It is anticipated that there will be adequate supply in San Diego County; however, providers may need to prioritize vaccination to the groups at greatest risk in this outbreak.
   - The highest priority groups for HAV vaccination are homeless and transiently housed individuals and injection and non-injection illicit drug users. People with ongoing, close contact with homeless and illicit drug using individuals due to employment or volunteer work should also be immunized.
   - Based on available supply, all groups recommended to get HAV vaccine by the Advisory Committee on Immunization Practices (ACIP) should also be immunized. This includes patients with chronic liver disease, MSM, and other at-risk individuals. The ACIP recommendations may be found here.
   - ACIP recommends HAV vaccination "for any person wishing to obtain immunity." This recommendation is intended to facilitate vaccination of at-risk individuals who may not wish to disclose their at-risk behaviors, not to encourage vaccination of the general public.
   - The County Public Health Officer recommends HAV vaccination for local food handlers catering to adults. Food handlers are not at higher risk for contracting HAV, so this recommendation is intended to reduce the risk of potential exposure of the general public during this outbreak. Food handlers in schools do not need vaccination since children are well immunized in San Diego County. It is expected that vaccine supply will be available to immunize food handlers, but at-risk groups should be given priority if local supply is constrained.
   - The first dose of single-antigen HAV vaccine appears to protect more persons than the first dose of the combined HAV/HBV (Twinrix®) vaccine (see table 3 package insert), but efficacy is comparable after completion of the respective series. Providers should consider supply, short-term risks of exposure to HAV, the

likelihood of follow-up to complete immunization, and the need for protection from HBV when selecting vaccines for those at risk.

- The single-antigen HAV vaccines are recommended as a two-dose series, with the second shot given at least six months after the first. The second shot of the series may be delayed until increased supply is available.
- Providers with insured patients who do not have available vaccine may direct patients to call 2-1-1 San Diego to locate the nearest pharmacy that can provide the vaccine. Providers with uninsured patients who do not have available vaccine may also direct patients to call 2-1-1 San Diego to locate the nearest County Public Health Center or community clinic.
- Providers who care for homeless and/or drug-using individuals may contact the Immunization Program at 619-692-5607 (Monday-Friday, 8 AM-5 PM) to learn how to obtain HAV vaccine for use during this outbreak.
- Homeless individuals and illicit drug users are also at higher risk for other vaccine preventable diseases and should be brought up-to-date with recommended vaccines per the relevant CDC immunization schedule.
- Providers should check the San Diego Immunization Registry to see if patients are already vaccinated and note any vaccinations given.
- Under the Affordable Care Act, HAV vaccines are covered as preventive care without a deductible or copay.
- Adult HAV vaccination is covered by Medi-Cal without prior authorization. Billing information is available here (see page 3).

6. **Encourage those who are planning an international trip to check the CDC Travelers' Health website and to obtain recommended vaccinations before travel**.
   - High-risk areas for HAV include parts of Africa and Asia, and moderate-risk areas include Central and South America, Eastern Europe, and parts of Asia.
   - There are currently HAV outbreaks associated with MSM occurring in New York City, Colorado, and Western Europe, notably France, Portugal, and Spain. MSM should be vaccinated against HAV, especially prior to travel, and be instructed on prevention measures for HAV and other sexually transmitted illnesses.

7. **Ensure that all healthcare workers use standard precautions in patient care to protect themselves against HAV**. HAV, like norovirus, is a non-enveloped virus, and it may be similarly difficult to inactivate in the environment. Alcohol-based hand rubs and typically-used surface disinfectants may not be effective. Therefore, additional precautions to take include:
   - Wash hands with soap and running water for at least 20 seconds after providing care for an HAV patient.
   - Use contact precautions in the care of diapered or incontinent HAV patients.
   - Wash hands with soap and running water for at least 20 seconds before eating and after using a restroom.
   - Use employee-designated restrooms when available; do not touch door handles when exiting restrooms.
   - Do not eat in patient care areas and never share food, drink or cigarettes with patients.
   - Perform environmental cleaning in areas housing HAV patients with bleach products or other products effective against norovirus.

Additional Resources

Centers for Disease Control and Prevention
- Multi-Jurisdictional Hepatitis A Outbreak
- Hepatitis A for Health Professionals
- Hepatitis A General Fact Sheet
- Hepatitis A Q&A for the Public
- Hepatitis A Vaccine Information Statement
- Viral Hepatitis Fact Sheet for Gay and Bisexual Men

California Department of Public Health
- Hepatitis A Outbreak
- All Facilities Notification 17-13 on Hepatitis A
- All Facilities Notification 17-21 on Hepatitis A
- Hepatitis A Website
- Quicksheet: Hepatitis A
- Viral Hepatitis Resources

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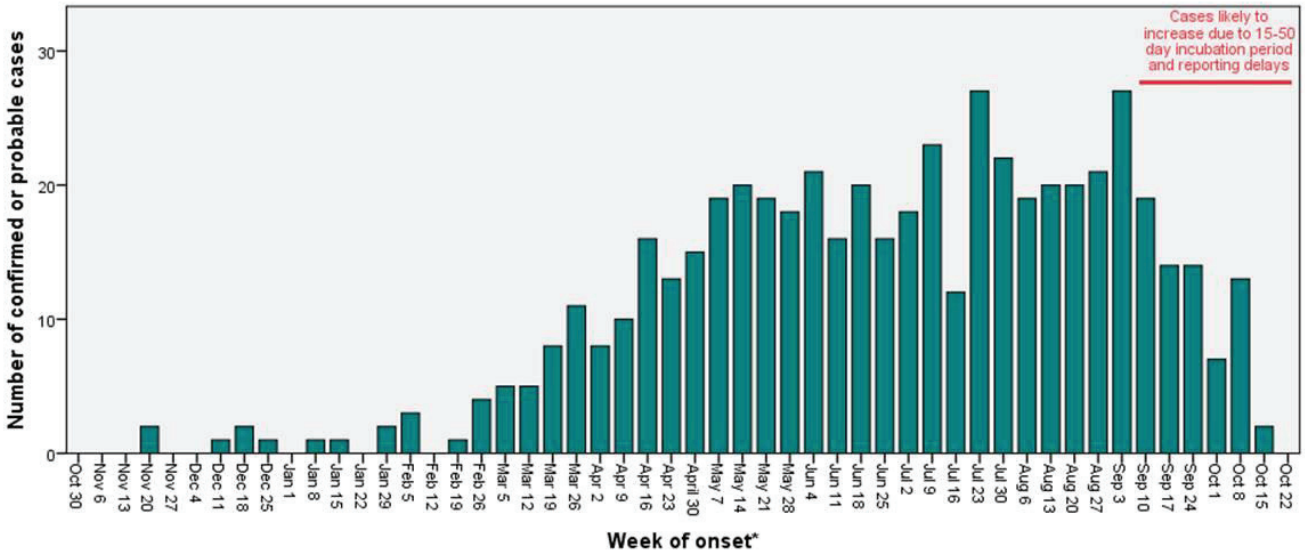
Outbreak-associated Hepatitis A cases by onset week

11/1/2016–10/26/2017, N = 536*



*Date of specimen collection or report used if onset date unknown; dates may change as information becomes available

CAHAN San Diego
California HEALTH ALERT NETWORK

To: CAHAN San Diego Participants
Date: February 15, 2018
From: Public Health Services, Epidemiology and Immunizations Services Branch

Update #8: Hepatitis A Virus Outbreak in San Diego County

On January 23, 2018, the County Board of Supervisors ended the local health emergency due to the hepatitis A virus (HAV) outbreak in the county. The outbreak continues with occasional cases being reported. This health advisory updates local healthcare providers about the outbreak and provides updated recommendations and resources on HAV.

Key messages:

- 580 HAV cases, including 20 deaths, have been reported since November 2016.
- The outbreak is being transmitted person-to-person and is primarily affecting homeless people and injection and non-injection illicit drug users.
- Vaccination and soap and water hand hygiene are the best prevention against HAV.
- In addition to illicit drug users and other individuals who are recommended by the Centers for Disease Control and Prevention (CDC) Advisory Committee on Immunization Practices (ACIP) to get HAV vaccine, the County Public Health Officer recommends HAV vaccination of homeless individuals, food handlers, and anyone who works on a frequent, ongoing basis with those at-risk for HAV.
- Single-antigen HAV vaccine supply should meet the anticipated local demand in 2018.
- Suspect cases should be reported to public health while the patient is still at the treatment facility so individuals can be interviewed and are not lost to follow-up.
- Any patient who is potentially contagious with HAV should be instructed on preventing the spread of the disease and should not be discharged to the street.
- Providers should send serum specimens to the San Diego Public Health Laboratory for genotype testing on any patient suspected of having HAV.
- Appropriate post-exposure prophylaxis (PEP) should be given to close contacts of known cases. Immune globulin dosing for PEP is 0.1 mL/kg.

Situation

As of February 8, 2018, 580 confirmed or probable HAV cases have been reported in an ongoing local outbreak in San Diego County. The cases had symptom onsets between November 22, 2016 and January 18, 2018. Three hundred and ninety-eight (69%) of the cases have been hospitalized, and 20 patients (3.4%) have died. The cases range in age from 5 to 96 years (median = 43 years), and 396 (68%) are male, with 14 (3.6% of male cases) self-identifying as men who have sex with men (MSM). Two pediatric cases have been reported, and both were unimmunized.

One hundred ninety-six (34%) of the HAV cases are homeless and reported injection or non-injection illicit drug use, 89 (15%) were homeless only, 73 (13%) were illicit drug users only, 165 (28%) were neither homeless nor drug users, and 57 (10%) had an unknown status for homelessness and drug use. Of the cases with test results available for review, 81 of 468 (17.3%) had chronic hepatitis C infection, and 24 of 482 (5.0%) had chronic hepatitis B infection. Despite the fact that 53% of the cases in this outbreak had a known indication for HAV immunization, none had been fully vaccinated prior to becoming ill.

Most outbreak cases have been from downtown San Diego and from El Cajon, Santee, La Mesa, and the adjacent unincorporated areas; however, cases have been confirmed in all parts of the county. More recent cases have been noted in the North Coastal and North Inland regions of the county. Seven healthcare workers have contracted HAV in this outbreak, as have 21 food handlers, although to date, only two secondary cases have resulted from the individuals working in these sensitive occupations.

HAV RNA has been confirmed in serum samples of 500 outbreak cases. Viral sequencing indicates that 16 unique, closely related strains of HAV genotype 1B are involved. These strains are different than those associated with the 1B strains in an ongoing HAV outbreak in Southeastern Michigan, however the main outbreak strains in San Diego are identical to those causing ongoing HAV outbreaks in Kentucky and Utah.

Investigations of the confirmed and probable cases, as well as three suspect cases, are ongoing. Not included in the local outbreak totals are 44 HAV cases reported in 2017 that were travel-related or have non-outbreak genotypes. Of note, four HAV genotype 1A infections have been diagnosed in MSM with travel histories within the United States and to Europe. Viral sequence analysis in these cases indicated that the HAV strains match those causing outbreaks among MSM in France and New York City.

Background

Person-to-person transmission through the fecal-oral route is the primary means of HAV transmission in the United States. Most infections result from close personal contact with an infected household member or sexual partner, or their fecally contaminated environment. Contaminated hands may play a significant role in the direct and indirect spread of HAV. Common-source outbreaks and sporadic cases can also occur from exposure to fecally contaminated food or water. According to CDC, individuals are infectious from up to two weeks before symptom onset to one week after. However, some data suggest that individuals may be infectious for longer, especially those with relapsing or cholestatic hepatitis.

Individuals with increased risk for HAV infection include: travelers to countries with high or intermediate endemic rates of HAV, MSM, users of injection and non-injection illicit drugs, persons with clotting factor disorders, and persons working with nonhuman primates. HAV outbreaks have been reported among drug users and the homeless, who have a higher morbidity and mortality, when compared with the general population, and an increased risk of infection due to poor living conditions. Individuals with chronic liver conditions, such as hepatitis B or C, are also recommended to get HAV vaccination because of their increased morbidity and mortality risks should they contract HAV.

Recommendations for Providers

1. **Consider HAV infection in individuals, especially homeless individuals and those who use illicit drugs, with discrete symptom onset and jaundice or elevated liver function tests.**
    - Symptoms of concern include nausea, vomiting, diarrhea, anorexia, fever, malaise, dark urine, light-colored stool, and abdominal pain.
    - A complete serology panel with testing for hepatitis A, B, and C is recommended in symptomatic patients. HIV testing is also recommended for those with an undocumented HIV status.
    - Serologic testing for HAV infection is not recommended in asymptomatic individuals or as screening before vaccination.

2. **Promptly report all suspected and confirmed HAV cases to the Epidemiology Program**.
    - Please fax Confidential Morbidity Report, or call 619-692-8499 (Monday-Friday, 8 AM-5 PM), or 858-565-5255 (after hours, during weekends, and on County-observed holidays).
    - Providers are urged to contact the Epidemiology Program while suspected cases are still at the healthcare facility. This will ensure that a public health investigator can interview the patient by phone for a risk history.
    - Patients who are potentially contagious should be discharged from a facility only after being given clear instructions on how to prevent the spread of the disease. Infectious people who are homeless may be provided temporary shelter by contacting the Epidemiology Program at the above numbers.

3. **Submit serum specimens on all suspected HAV cases to the San Diego County Public Health Laboratory (SDPHL) for genotyping and viral sequence analysis.**
   - Two 5 cc serum specimens, stored and transported at 4°C, are needed for HAV nucleic acid amplification testing and viral sequencing.
   - The test may be ordered using the SDPHL form found here. Contact SDPHL at 619-692-8500, option #1 for questions, assistance or instructions.

4. **Provide post-exposure prophylaxis (PEP) for close contacts of confirmed HAV cases.**
   - Susceptible people exposed to HAV should receive a dose of single-antigen HAV vaccine intramuscular (IM), immune globulin (IG) (0.1 mL/kg), or both, as soon as possible within 2 weeks of last exposure. The PEP dosage of IG was increased in 2017 and is higher than that noted in the package insert.
   - The efficacy of combined HAV/Hepatitis B virus (HBV) vaccine (Twinrix®) for PEP has not been evaluated, so it is not recommended for PEP.
   - Detailed information on PEP may be found on the California Department of Public Health (CDPH) Hepatitis A PEP Guidance Quicksheet (updated July 2017) and the CDPH Hepatitis A PEP IG Administration Quicksheet (updated August 2017).

5. **Vaccinate homeless individuals and illicit drug users, and people who have frequent, ongoing close contact with these two groups. Vaccinate patients with chronic liver diseases, MSM, other at-risk people, and food handlers who are not already immunized.**
   - The County Public Health Officer recommends HAV vaccination for all homeless and transiently housed individuals. People with ongoing, close contact with homeless and illicit drug using individuals due to employment or volunteer work should also be immunized. Vaccination is also recommended for local food handlers catering to adults. Food handlers are not at higher risk for contracting HAV, so this recommendation is intended to reduce the risk of potential exposure of the general public during this outbreak. Food handlers in schools do not need vaccination since children are well immunized in San Diego County.
   - All groups recommended to get HAV vaccine by ACIP should also be immunized. This includes illicit drug users, patients with chronic liver disease, MSM, and other at-risk individuals. The ACIP recommendations may be found here.
   - ACIP recommends HAV vaccination "for any person wishing to obtain immunity." This recommendation is intended to facilitate vaccination of at-risk individuals who may not wish to disclose their at-risk behaviors, not to encourage vaccination of the general public.
   - Although there has been an increased national demand for HAV vaccine, supply of adult single-antigen HAV vaccine (Havrix®, Vaqta®) is adequate in San Diego County.
   - The first dose of single-antigen HAV vaccine appears to protect more persons than the first dose of the combined HAV/HBV (Twinrix®) vaccine (see table 3 package insert), but efficacy is comparable after completion of the respective series. When selecting vaccines for those at risk, providers should consider supply, short-term risks of exposure to HAV, the likelihood of follow-up to complete immunization, and the need for protection from HBV.
   - Providers who do not have available vaccine may direct patients to call 2-1-1 San Diego to locate the nearest County Public Health Center, clinic, or pharmacy that can provide the vaccine.
   - Homeless individuals and illicit drug users are at higher risk for other vaccine preventable diseases and should be brought up-to-date with recommended vaccines per the relevant CDC immunization schedule.
   - Providers should check the San Diego Immunization Registry to see if patients are already vaccinated and note any vaccinations given.
   - Under the Affordable Care Act, HAV vaccines are covered as preventive care without a deductible or copay.
   - Adult HAV vaccination is covered by Medi-Cal without prior authorization. Billing information is available here (see page 3).

6. **Encourage those who are planning an international trip to check the** CDC Travelers' Health website **and to obtain recommended vaccinations before travel**.
   - High-risk areas for HAV include parts of Africa and Asia, and moderate-risk areas include Central and South America, Eastern Europe, and parts of Asia.
   - HAV outbreaks associated with MSM are currently occurring in New York City, Colorado, and Western Europe, notably France, Portugal, and Spain. MSM should be vaccinated against HAV, especially prior to travel, and be instructed on prevention measures for HAV and other sexually transmitted illnesses.

7. **Ensure that all healthcare workers use standard precautions in patient care to protect themselves against HAV**. HAV, like norovirus, is a non-enveloped virus, and it may be similarly difficult to inactivate in the environment. Alcohol-based hand rubs and typically-used surface disinfectants may not be effective. Therefore, additional precautions to take include: handwashing with soap and running water for at least 20 seconds after providing care for an HAV patient, before eating, and after using a restroom; using employee-designated restrooms when available; not eating in patient care areas; and cleaning with bleach products or other products effective against norovirus.

Additional Resources

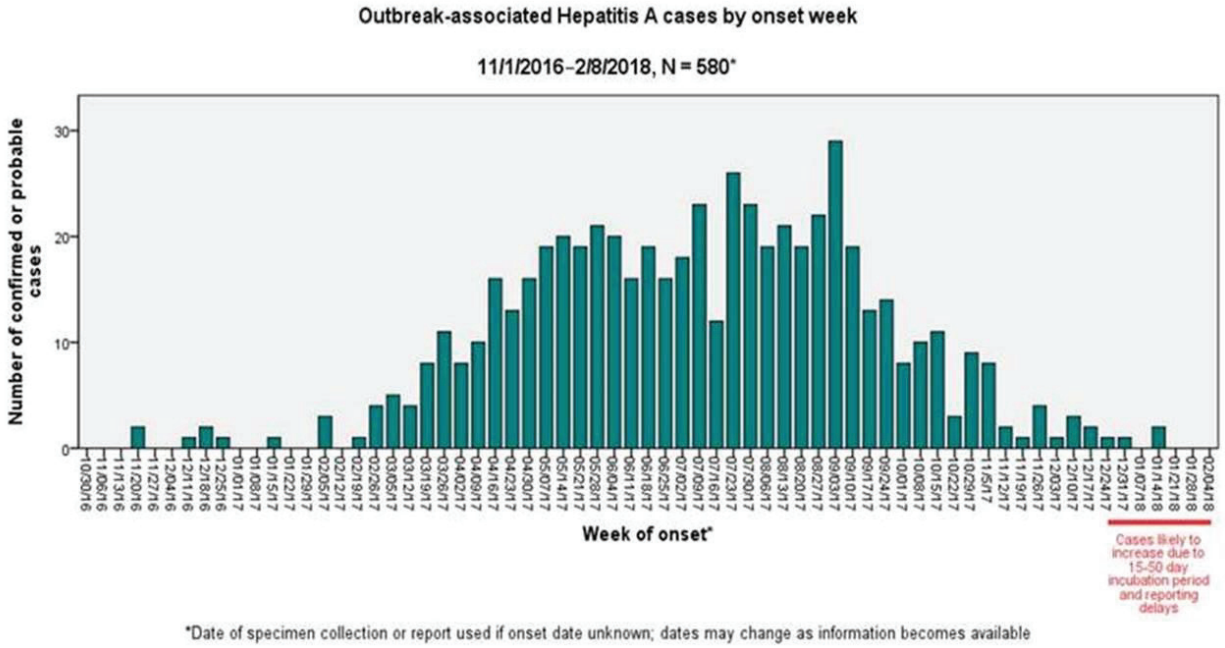
Centers for Disease Control and Prevention
- Multi-Jurisdictional Hepatitis A Outbreak
- Hepatitis A for Health Professionals
- Hepatitis A General Fact Sheet
- Hepatitis A Q&A for the Public
- Hepatitis A Vaccine Information Statement
- Viral Hepatitis Fact Sheet for Gay and Bisexual Men

California Department of Public Health
- Hepatitis A Outbreak
- All Facilities Notification 17-13 on Hepatitis A
- All Facilities Notification 17-21 on Hepatitis A
- Hepatitis A Website
- Quicksheet: Hepatitis A
- Viral Hepatitis Resources

Thank you for your participation.

CAHAN San Diego
County of San Diego Health & Human Services Agency
Epidemiology and Immunization Services Branch
Phone: (619) 692-8499
Fax: (858) 715-6458

E-mail: cahan@sdcounty.ca.gov
Secure Website: http://cahan.ca.gov
Public-Access Website: http://www.cahansandiego.com
Urgent Phone for pm/weekends/holidays: (858) 565-5255



APPENDIX F
Correspondence

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County of San Diego

NICK MACCHIONE, FACHE
AGENCY DIRECTOR

HEALTH AND HUMAN SERVICES AGENCY
PUBLIC HEALTH SERVICES
3851 ROSECRANS STREET, MAIL STOP P-578
SAN DIEGO, CA 92110-3134
(619) 531-5800 • FAX (619) 542-4186

WILMA J. WOOTEN, M.D., M.P.H.
PUBLIC HEALTH OFFICER

May 24, 2017

TO: Fire and Emergency Medical Services Agencies
Homeless Providers
Law Enforcement Agencies
Local Businesses
Substance Use Treatment Providers

FROM: Wilma J. Wooten, M.D., M.P.H.,
Public Health Officer &Director,
Public Health Services

INFORMATION ABOUT THE ONGOING HEPATITIS A OUTBREAK IN DOWNTOWN SAN DIEGO AND EL CAJON AREAS

Public Health Services Division, in the County of San Diego Health and Human Services Agency, is currently investigating a large outbreak of Hepatitis A. This disease is a highly contagious liver infection that is spread when a person ingests food or water that has been contaminated by the feces of an infected person (i.e., touching objects or eating food that someone with Hepatitis A handled). As of May 19, 2017, 94 cases have been reported over the past six months, with most cases occurring in March and April. This is significantly higher than the one or two cases per month typically reported.

The majority of persons impacted in this outbreak have been homeless and/or persons using illicit drugs. Hepatitis A is usually transmitted when an infected person has not washed her/his hands after using the bathroom or before preparing and eating food.

Hepatitis A vaccination is the the best way to prevent the disease. Public Health Services is working to increase access to the vaccine for homeless persons and illicit drug users through large vaccination clinics and small outreach teams. Most employees have a low risk of contracting Hepatitis A if they comply with hand-washing and other hygiene requirements associated with their jobs.

What can local agencies and businesses do to prevent the spread of Hepatitis A?

- Remind employees of the importance of hand-washing with soap and warm water after using the bathroom, and before preparing, serving, or eating food.
- Maintain routine and consistent cleaning of bathrooms using a chlorine-based disinfectant (bleach) with a ratio of ¾ cup of bleach to one gallon of water. Include bathrooms that are for employees only and those that are open to the public.
- For employees in physical contact with others, especially those at risk for Hepatitis A, wear disposable gloves and wash hands after each encounter.
- Coordinate with your occupational health provider to determine if Hepatitis A vaccine should be offered to employees.

Everyone can play a role in addressing this significant public health threat. Thank you for your help in containing the spread of this Hepatitis A outbreak. Attached are several documents to share with employees or others. These include a Hepatitis A flyer and a Frequently Asked Questions document.

For additional information, please go to the County of San Diego Hepatitis A webpage. If you have any questions, please contact the Epidemiology Program at 619-692-8499 or send an email to Epi.HHSA@sdcounty.ca.gov.

County of San Diego

NICK MACCHIONE, FACHE
AGENCY DIRECTOR

HEALTH AND HUMAN SERVICES AGENCY
PUBLIC HEALTH SERVICES
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WILMA J. WOOTEN, M.D., M.P.H.
PUBLIC HEALTH OFFICER

July 25, 2017

TO: Fire and Emergency Medical Services Agencies
Homeless Providers
Law Enforcement Agencies
Local Businesses
Substance Use Treatment Providers

FROM: Wilma J. Wooten, M.D., M.P.H.,
Public Health Officer &Director,
Public Health Services

INFORMATION ABOUT THE ONGOING HEPATITIS A OUTBREAK ACROSS THE COUNTY OF SAN DIEGO

Public Health Services Division, in the County of San Diego Health and Human Services Agency, is currently investigating a large outbreak of Hepatitis A. This disease is a highly contagious liver infection that is spread when a person ingests food or water that has been contaminated by the feces of an infected person (i.e., touching objects or eating food that someone with Hepatitis A handled). As of July 25, 2017, 275 cases have been reported since late November 2016, with most cases occurring since March 2017. This is significantly higher than the one or two cases per month typically reported.

The majority of persons impacted in this outbreak have been homeless and/or persons using illicit drugs. Hepatitis A is usually transmitted when an infected person has not washed her/his hands after using the bathroom or before preparing and eating food.

Hepatitis A vaccination is the the best way to prevent the disease. Public Health Services is working to increase access to the vaccine for homeless persons and illicit drug users through large vaccination clinics and small outreach teams. Most employees have a low risk of contracting Hepatitis A if they comply with hand-washing and other hygiene requirements associated with their jobs.

What can local agencies and businesses do to prevent the spread of Hepatitis A?

- Remind employees of the importance of hand-washing with soap and warm water after using the bathroom, and before preparing, serving, or eating food.

- Maintain routine and consistent cleaning of bathrooms for employees and the public, using a chlorine-based disinfectant (bleach) with a ratio of 1 and 2/3 cup of bleach to one gallon of water. Due to the high bleach concentration of this mix, rinse surfaces with water after 1 minute of contact time and wear gloves while cleaning.
- For employees in physical contact with others, especially those at risk for Hepatitis A, wear disposable gloves and wash hands after each encounter.
- Coordinate with your occupational health provider to determine if Hepatitis A vaccine should be offered to employees.

Everyone can play a role in addressing this significant public health threat. Thank you for your help in containing the spread of this Hepatitis A outbreak. Attached are several documents to share with employees or others. These include a *Hepatitis A flyer* and a *Frequently Asked Questions* document.

For additional information, please go to the County of San Diego Hepatitis A webpage where you will find Hep A Fact Sheets in five different languages: English, Spanish, Chinese, Arabic, and Vietnamese. Also, here you will find the most recent Hepatitis A case counts, Hepatitis A press releases, Hep A FAQs, and other resources. If you are interested in having someone from the county give an educational presentation on Hepatitis A to your staff and/or other organizations or ordering Hepatitis A Prevention Kits, please let us know. If you have any questions, please contact the Epidemiology Program at 619-692-8499 or send an email to Epi.HHSA@sdcounty.ca.gov.

Sincerely,

Wilma J. Wooten, M.D.

WILMA J. WOOTEN, M.D., M.P.H.
Public Health Officer
Director, Public Health Officer

WJW

County of San Diego

NICK MACCHIONE, FACHE
AGENCY DIRECTOR

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WILMA J. WOOTEN, M.D., M.P.H.
PUBLIC HEALTH OFFICER

August 21, 2017

TO: Fire and Emergency Medical Services Agencies
Food Handlers
Healthcare Personnel
Homeless Providers
Law Enforcement Agencies
Local Businesses
Substance Use Treatment Providers

FROM: Wilma J. Wooten, M.D., M.P.H.,
Public Health Officer &Director,
Public Health Services

ONGOING HEPATITIS A OUTBREAK IN SAN DIEGO COUNTY

Public Health Services Division, in the County of San Diego Health and Human Services Agency, continues to investigate a large, **ongoing outbreak of Hepatitis A**. This disease is a highly contagious liver infection that is spread when a person ingests food or water that has been contaminated by the feces of an infected person (i.e., touching objects or eating food that someone with Hepatitis A handled). As of **August 21, 2017, 352 cases** have been reported since late November 2016, with most cases occurring since March 2017. This is significantly higher than the one or two cases per month typically reported.

The majority of persons impacted in this outbreak have been homeless and/or persons using illicit drugs. Hepatitis A is usually transmitted when an infected person has not washed her/his hands after using the bathroom or before preparing and eating food.

Hepatitis A vaccination is the best way to prevent the disease. Public Health Services is working to increase access to the vaccine for homeless persons and illicit drug users through large vaccination clinics and small outreach teams. Most employees have a low risk of contracting Hepatitis A if they comply with hand-washing and other hygiene requirements associated with their jobs. The following categories of people are routinely recommended to get the Hepatitis A vaccine by the Centers for Disease Control and Prevention Advisory Committee on Immunization Practices:

- Users of injection and non-injection illegal drugs;
- People with chronic liver conditions, such as cirrhosis, Hepatitis C, & Hepatitis B;
- Men who have sex with men;

- Travelers to countries with high or medium rates of HAV;
- Persons with clotting factor disorders; and
- Any person who wishes to be immune to Hepatitis A.

As Public Health Officer, I am recommending that the following categories of people in San Diego County get the vaccine because of this outbreak:

- Homeless and housing unstable individuals;
- Individuals with ongoing, close contact with homeless and illicit drug using individuals, including health care, public safety and sanitation workers, and those who work in homeless shelters and service agencies; and
- Food handlers.

As local agencies and businesses, you can do a lot to prevent the spread of Hepatitis A. Such strategies include the following:

- Remind employees of the importance of hand-washing with soap and warm water after using the bathroom, and before preparing, serving, or eating food.
- Maintain routine and consistent cleaning of bathrooms for employees and the public, using a chlorine-based disinfectant (bleach) with a ratio of 1 and 2/3 cup of bleach to one gallon of water. Due to the high bleach concentration of this mix, rinse surfaces with water after 1 minute of contact time and wear gloves while cleaning.
- For employees in physical contact with others, especially those at risk for Hepatitis A, wear disposable gloves and wash hands after each encounter.
- Coordinate with your occupational health provider to determine if the Hepatitis A vaccine should be offered to employees.

Everyone can play a role in addressing this significant public health threat. Thank you for your help to contain the spread of this Hepatitis A outbreak. Attached are several documents to share with employees and others. These include a *Hepatitis A flyer* and a *Frequently Asked Questions* document.

For additional information, please go to the County of San Diego Hepatitis A webpage where you will find Hep A Fact Sheets in five different languages: English, Spanish, Chinese, Arabic, and Vietnamese. Also, here you will find the most recent Hepatitis A case counts, Hepatitis A press releases, Hep A FAQs, Hepatitis A Infection Prevention & Control handout (Spanish), and other resources. If you are interested in having someone from the county give an educational presentation on Hepatitis A to your staff and/or other organizations or ordering Hepatitis A "Hygiene Kits," please let us know. If you have any questions, please contact the Epidemiology Program at 619-692-8499 or send an email to Epi.HHSA@sdcounty.ca.gov.

Sincerely,

Wilma J. Wooten, M.D.

WILMA J. WOOTEN, M.D., M.P.H.
Public Health Officer
Director, Public Health Officer

County of San Diego

HELEN N. ROBBINS-MEYER
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FAX (619) 557-4060

CHIEF ADMINISTRATIVE OFFICE
1600 PACIFIC HIGHWAY, SUITE 209 SAN DIEGO, CA 92101-2422

DONALD F. STEUER
ASST CHIEF ADMINISTRATIVE OFFICER/
CHIEF OPERATING OFFICER
(619) 531-4940
FAX (619) 557-4060

August 31, 2017

Scott Chadwick
Chief Operating Officer
City of San Diego
202 "C" Street, MS 9-A
San Diego, CA 92101

Re: **Health Officer Directive to Combat Hepatitis A**

Dear Mr. Chadwick:

As you know, the Public Health Services Division, in the County of San Diego Health and Human Services Agency, is currently combating a large Hepatitis A outbreak. As of today, at least 379 cases have been reported since late November 2016, with 15 deaths. The majority of people who have contracted Hepatitis A are homeless and/or illicit drug users. The outbreak is being spread person-to-person and through contact with a fecally contaminated environment.

One of the areas most impacted by the Hepatitis A outbreak in the County is the downtown area of the City of San Diego, where many homeless reside in unsanitary conditions. Since the Hepatitis A virus is resilient and not diminishing, enhanced sanitation will help minimize chances of transmission and help contain the outbreak when coupled with ongoing immunization and education efforts.

Attached is a Health Officer Directive to Combat Hepatitis A ("Directive") for the City to take immediate action to address the unsanitary living conditions of the at-risk population. The County Health Officer is directing the City to: 1) immediately implement the cleaning and sanitation protocol contained in the attached SANITATION PROCEDURES FOR PUBLIC RIGHT-OF-WAYS; and 2) immediately expand access to public restrooms and wash stations within the City limits that are adjacent to at-risk populations. Also, attached is a listing and GIS map of locations where placement of handwashing stations should occur.

In addition, the City should immediately begin placing handwashing stations throughout the impacted areas. Please also direct City staff to eliminate restrictions as to where County staff can park the County mobile van to vaccinate the at-risk population.

Action by the City to immediately comply with this Directive is essential to prevent the further spread of Hepatitis A within the City.

You are directed to respond within five (5) business days from the date of this letter stating the date by which you will fully comply.

Sincerely,

Helen Robbins-Meyer
Chief Administrative Officer
County of San Diego

Attachments:
1) Directive to the City of San Diego to Combat Hepatitis A
2) SANITATION PROCEDURES FOR PUBLIC RIGHT-OF-WAYS
3) Listing of locations for placement of wash stations and GIS map

cc: Nick Macchione, FACHE, HHSA Director
Wilma J. Wooten, M.D. M.P.H.

County of San Diego

NICK MACCHIONE, FACHE
DIRECTOR

HEALTH AND HUMAN SERVICES AGENCY
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TUBERCULOSIS CONTROL BRANCH
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(619) 692-5565 • FAX (619) 692-5650

WILMA J. WOOTEN, M.D., M.P.H.
PUBLIC HEALTH OFFICER

DATE: August 31, 2017

TO: The City of San Diego

FROM: Wilma J. Wooten, M.D., M.P.H., San Diego County Health Officer

SUBJECT: Health Officer Directive to Combat Hepatitis A

The Public Health Services Division, in the County of San Diego Health and Human Services Agency, has been investigating a local Hepatitis A outbreak. The majority of people who have contracted Hepatitis A are homeless individuals and/or illicit drug users, who are considered the at-risk population. The Centers for Disease Control and Prevention states that person-to-person transmission and close contact is the primary way people contract Hepatitis A in the United States. Hepatitis A is also being spread through contact with a fecally contaminated environment.

To combat the outbreak, the County of San Diego has initiated vaccination efforts in targeted locations by County staff and in collaboration with community health care partners. To date, approximately 18,929 have been vaccinated in direct response to this outbreak, of which, 7,145 were given to the at-risk population. In addition, the County of San Diego has distributed over 1,400 hygiene kits to the at-risk population. Furthermore, the County placed handwashing stations on its own properties that are in reasonably close proximity to places where the at-risk population congregates.

Immediate action by the City of San Diego is critical to address the unsanitary living conditions of the at-risk population. Specifically, action is necessary to combat the continued exposure to human fecal matter that contains Hepatitis A.

DIRECTIVE

As the Public Health Officer for the County of San Diego, and as the City of San Diego's designated Public Health Officer, and pursuant to my authority under California Health and Safety Code section 120175, I am issuing a directive to the City of San Diego to take immediate action to prevent the spread of Hepatitis A, which shall include:

1) Immediately implementing the cleaning and sanitation protocol contained in the attached document: *SANITATION PROCEDURES FOR PUBLIC RIGHT-OF-WAYS*; and
2) Immediately expanding access to public restrooms and wash stations within the City limits that are adjacent to at-risk populations.

The actions in this directive are essential to prevent the further spread of Hepatitis A within the City of San Diego. Failure to immediately follow this directive will endanger public health and safety.

SANITATION PROCEDURES FOR PUBLIC RIGHT-OF-WAYS

UPDATED AUGUST 31, 2017

OBJECTIVE

The purpose of this document is to provide operating procedures and recommendations for the sanitation of public right-of-ways (e.g., sidewalks, streets, and gutters).

PUBLIC NOTIFICATION

Public notification must adhere to the respective City regulations prior to the cleanup, removal, and storage of personal property found on city streets and property.

HAZARD ASSESSMENT

For the safety of everyone working in the area to be sanitized, it is recommended that a hazard assessment be conducted to identify any hazardous or otherwise unsafe items prior to conducting any sanitation activities. These items can include, but are not limited to hazardous chemicals, infectious waste (e.g., hypodermic needles/sharps), drug paraphernalia, firearms, live ammunition, explosives, or weapons. All employees or contractors should be properly trained prior to conducting a hazard assessment or any activities included in this sanitation procedure. Training should include, but is not limited to:

- 40 hour HazWoper training with current refresher training
- Occupational Safety and Health Administration (OSHA) Universal and Standard Precautions for Bloodborne pathogens and other Potentially Infectious Materials

Other training may be required for the safe handling of hazardous and biohazardous wastes

SANITATION PROCEDURE

High concentration chlorine (sodium hypochlorite) solutions are effective and universally available products for the disinfection of a wide range of surfaces. For the purposes of sanitizing public right-of-ways, the following procedures must be followed after conducting the hazard assessment:

1. While wearing appropriate personal protective equipment (PPE), prepare a 5,000 ppm solution of bleach and water (Solution A). Use 5.25% chlorine (household bleach) and mix a 1:10 dilution (1 part bleach, 9 parts water).
2. Use a chlorine test strip to ensure you have reached the desired concentration (5,000 ppm). There are several test strips that are commercially available.
3. Fill Hudson sprayers or similar distribution equipment.
4. Cover all storm drains to prevent run off.
5. Carefully spray all feces, blood, bodily fluids or contaminated surfaces with Solution A and wait for a minimum of 10 minutes.
6. After 10 or more minutes, carefully containerize feces or any other contaminated solid materials for disposal to landfill.
7. Respray any newly exposed surfaces with Solution A and wait for a minimum of 10 minutes.
8. Pressure-wash the sidewalks, streets, gutters, and inlet of storm drain catch basins with water.
9. Recover the generated waste water with a Vactor Truck for disposal to the sanitary sewer.
10. Mix 1 part of Solution A with 9 parts water to make Solution B (500 ppm) for final disinfection.
11. Use a chlorine test strip to ensure you have reached the desired concentration (500 ppm).

12. Carefully spray all washed areas with Solution B and wait for a minimum of 30 minutes to allow for adequate disinfection and degradation of residual chlorine.
13. Use a test strip on treated surfaces to determine the chlorine has adequately degraded prior to reoccupation.

It is important to note that higher concentrations and elevated temperatures can cause chlorine to degrade quickly over time. It is recommended that a fresh solution be made each day to ensure the most effective solution is used.

RECOMMENDED FREQUENCY

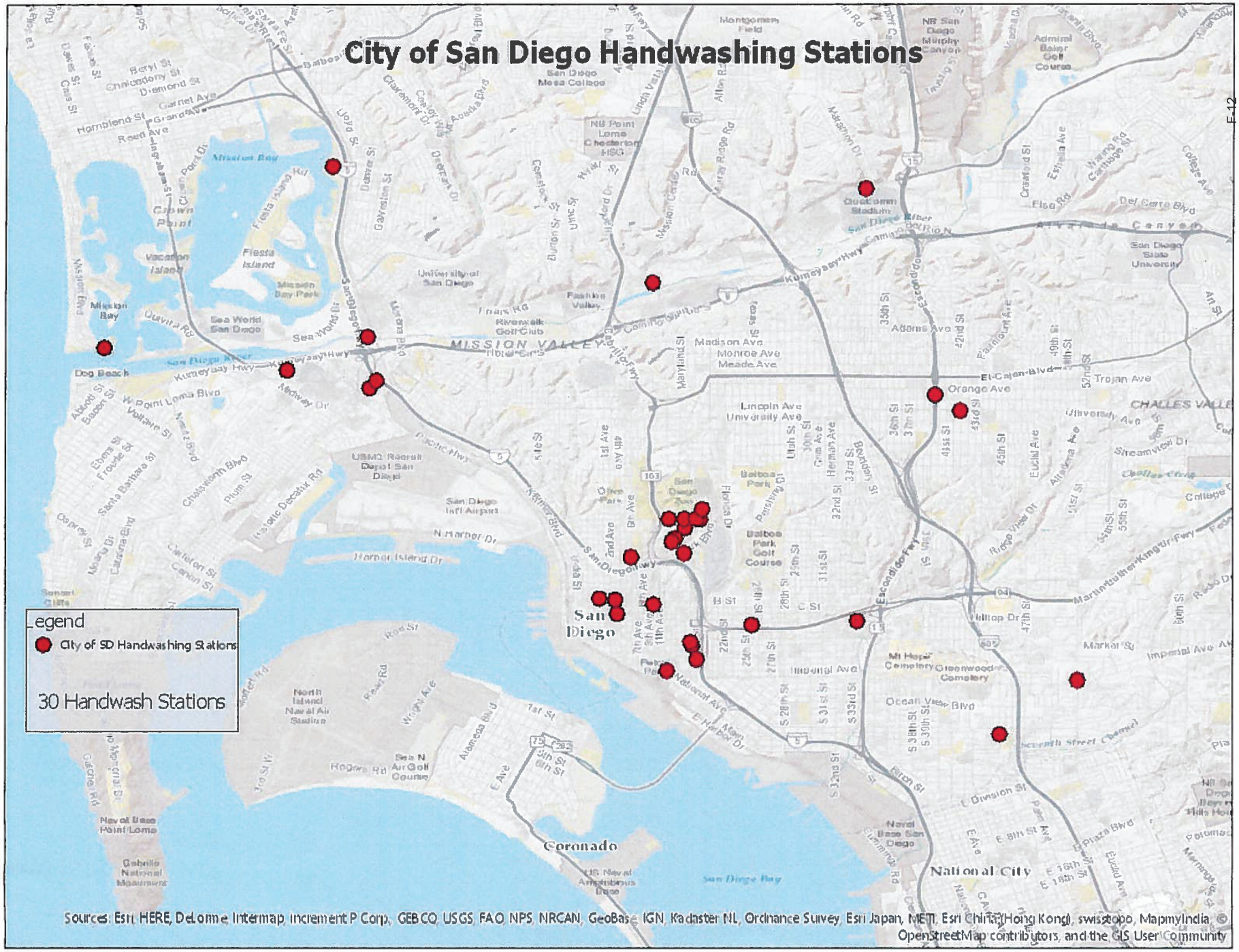
In concentrated areas of homeless and drug using individuals, after the complete sanitation process (above), weekly spot maintenance should occur with additional rounds of the complete sanitation process at least every two weeks.

REFERENCES

1. City of Los Angeles. *Operation Healthy Streets Protocol*. 2012.
2. U.S. Occupational Safety & health Administration. *Healthcare Wide Hazards*. 2017. Retrieved from: https://www.osha.gov/SLTC/etools/hospital/hazards/univprec/univ.html
3. Center for Disease Control and Prevention. *Chemical Disinfectants - Guideline for Disinfection and Sterilization in Healthcare Facilities*. 2008. Retrieved from: https://www.cdc.gov/infectioncontrol/guidelines/disinfection/disinfection-methods/chemical.html
4. U.S. Army Public Health Command. *Preparing and Measuring High Chlorine Concentration Solution for Disinfection*. 2014. Retrieved from: https://phc.amedd.army.mil/PHC%20Resource%20Library/TIP_No_13-034-1114_Prepare_Measure_High_Chlorine_Solutions.pdf

Developed by County of San Diego Department of Environmental Health

City of San Diego Handwashing Stations



HEPATITIS A - HAND WASHING STATION (HWS)

No.	Site	Address	Jurisdiction
1	Balboa Park - Musemum of Man	1350 El Prado, San Diego, CA 92101	City of San Diego
2	Balboa Park - San Diego Museum of Art	1450 El Prado, San Diego, CA 92102	City of San Diego
3	Balboa Park - Fleet Science Center	1875 El Prado, San Diego, CA 92101	City of San Diego
4	Balboa Park - Spreckels Organ Pavilion	2125 Pan American Rd E, San Diego, CA 92101	City of San Diego
5	Balboa Park - San Diego Natural History Museum	1788 El Prado, San Diego, CA 92101	City of San Diego
6	Balboa Park - Spanish Village Art Center	1770 Village Pl, San Diego, CA 92101	City of San Diego
7	Balboa Park - Hall of Champions	2131 Pan American Plaza, San Diego, CA 92101	City of San Diego
8	Balboa Park - Centro Cultural de la Raza	2004 Park Blvd, San Diego, CA 92101	City of San Diego
9	Balboa Park - Civic Center Plaza	1200 Third Ave, San Diego, CA 92101	City of San Diego
10	Euclid Ave. Station	San Diego, CA 92102	City of San Diego
11	Father Joes Villages	3350 E St, San Diego, CA 92102	City of San Diego
12	Front Street South of A Street	Front Street South of A Street	City of San Diego
13	God's Etended Hand	1625 Island Ave, San Diego, CA 92101	City of San Diego
14	Ingraham & Morena		City of San Diego
15	Legal Aid Society (Euclid)	110 Euclid Ave, San Diego, CA 92114	City of San Diego
16	Mariner's Point La Jolla Shores Beach (North Grassy Area)		City of San Diego
17	Mission Bay Park	2688 East Mission Bay Drive, San Diego, CA 92109	City of San Diego
18	Neil Good Day Center	299 17th St, San Diego, CA 92101	City of SD/CalTrans
19	Public Storage (Self-Storage at 16th & Market St)	560 16th St, San Diego, CA 92101	City of San Diego
20	Red Lobster/Phil's BBQ Strip Mall (Cross Street is Sports Arena Blvd.)	4040 Hancock Street, San Diego 92110	City of San Diego
21	Rosecrans & PCH, Under the 5	3899 Rosecrans St, San Diego, CA 92110 (Secure Self Storage)	City of San Diego
22	Rosecrans & PCH, Under the 8 Transition	4800 Pacific Hwy, San Diego, CA 92110 (Stor'em Self Storage)	City of San Diego
23	San Diego Mission Road at the San Diego River Qualcomm Stadium bike path	9449 Friars Rd, San Diego, CA 92108	City of San Diego
24	San Diego River Bike Path under Sunset Cliffs	San Diego River, San Diego, CA 92109	City of San Diego
25	Sixth Avenue & Fir Street	Sixth Ave & Fir St, San Diego, CA 92101	City of San Diego
26	St. Vincent de Paul's Courtyard	3350 E St, San Diego, CA 92102	City of San Diego
27	Teralta Park	San Diego, CA 92105	City of San Diego
28	The Civic Center (3rd & B)	1200 Third Ave, San Diego, CA 92101	City of San Diego
29	The Parking Lot at Hazard Center Dr. & Mission Center Rd.	Hazard Center Dr, San Diego, CA 92108 and Mission Center Rd, San Diego, CA	City of San Diego
30	Willie Henderson Sports Complex	1035 S 45th St, San Diego, CA 92113	City of San Diego

County of San Diego

NICK MACCHIONE, FACHE
AGENCY DIRECTOR

HEALTH AND HUMAN SERVICES AGENCY
PUBLIC HEALTH SERVICES
3851 ROSECRANS STREET, MAIL STOP P-578
SAN DIEGO, CA 92110-3134
(619) 531-5800 • FAX (619) 542-4186

WILMA J. WOOTEN, M.D., M.P.H.
PUBLIC HEALTH OFFICER

September 15, 2017

TO: Restaurant Association

FROM: Wilma J. Wooten, M.D., M.P.H.,
Public Health Officer &Director,
Public Health Services

RE: VACCINATION OF FOOD HANDLERS

On August 21, 2017, in an open letter addressed to various stakeholders, including Food Handlers, I recommended that all food handlers be vaccinated against the Hepatitis A virus. I address you now as a food facility operator, and ask that you do all you can to encourage and assist the food handlers in your facility to get vaccinated. Food handlers can become infected with Hepatitis A through causes unrelated to their food facility work, and can be handling food and potentially spreading the virus before an infection is recognized. The best way to prevent food service from contributing to this outbreak is for all food handlers to get vaccinated. I have attached my August 21 letter that provides information on vaccination options.

In addition, it remains critically important that all food handlers consistently and frequently apply recommended procedures for cleaning and sanitizing utensils and food contact surfaces, and conduct proper hand washing procedures. I have also attached prior guidance on those subjects. Finally, employees should not come to work when ill, and I encourage you to be diligent in monitoring your employees for any signs of illness.

Thank you for your assistance in doing your part to mitigate the potential spread of this outbreak. You and your food handlers can help to ensure that residents and visitors to San Diego remain confident that they can dine out safely.

Sincerely,

Wilma J. Wooten, M.D.

WILMA J. WOOTEN, M.D., M.P.H.
Public Health Officer
Director, Public Health Officer

Attachment: August 21, 2017 Letter; Disinfection Guidelines

County of San Diego

NICK MACCHIONE, FACHE
AGENCY DIRECTOR

HEALTH AND HUMAN SERVICES AGENCY
PUBLIC HEALTH SERVICES
3851 ROSECRANS STREET, MAIL STOP P-578
SAN DIEGO, CA 92110-3134
(619) 531-5800 • FAX (619) 542-4186

WILMA J. WOOTEN, M.D., M.P.H.
PUBLIC HEALTH OFFICER

August 21, 2017

TO: Fire and Emergency Medical Services Agencies
Food Handlers
Healthcare Personnel
Homeless Providers
Law Enforcement Agencies
Local Businesses
Substance Use Treatment Providers

FROM: Wilma J. Wooten, M.D., M.P.H.,
Public Health Officer &Director,
Public Health Services

ONGOING HEPATITIS A OUTBREAK IN SAN DIEGO COUNTY

Public Health Services Division, in the County of San Diego Health and Human Services Agency, continues to investigate a large, **ongoing outbreak of Hepatitis A**. This disease is a highly contagious liver infection that is spread when a person ingests food or water that has been contaminated by the feces of an infected person (i.e., touching objects or eating food that someone with Hepatitis A handled). As of **August 21, 2017, 352 cases** have been reported since late November 2016, with most cases occurring since March 2017. This is significantly higher than the one or two cases per month typically reported.

The majority of persons impacted in this outbreak have been homeless and/or persons using illicit drugs. Hepatitis A is usually transmitted when an infected person has not washed her/his hands after using the bathroom or before preparing and eating food.

Hepatitis A vaccination is the best way to prevent the disease. Public Health Services is working to increase access to the vaccine for homeless persons and illicit drug users through large vaccination clinics and small outreach teams. Most employees have a low risk of contracting Hepatitis A if they comply with hand-washing and other hygiene requirements associated with their jobs. The following categories of people are routinely recommended to get the Hepatitis A vaccine by the Centers for Disease Control and Prevention Advisory Committee on Immunization Practices:

- Users of injection and non-injection illegal drugs;
- People with chronic liver conditions, such as cirrhosis, Hepatitis C, & Hepatitis B;
- Men who have sex with men;

- Travelers to countries with high or medium rates of HAV;
- Persons with clotting factor disorders; and
- Any person who wishes to be immune to Hepatitis A.

As Public Health Officer, I am recommending that the following categories of people in San Diego County get the vaccine because of this outbreak:

- Homeless and housing unstable individuals;
- Individuals with ongoing, close contact with homeless and illicit drug using individuals, including health care, public safety and sanitation workers, and those who work in homeless shelters and service agencies; and
- Food handlers.

As local agencies and businesses, you can do a lot to prevent the spread of Hepatitis A. Such strategies include the following:

- Remind employees of the importance of hand-washing with soap and warm water after using the bathroom, and before preparing, serving, or eating food.
- Maintain routine and consistent cleaning of bathrooms for employees and the public, using a chlorine-based disinfectant (bleach) with a ratio of 1 and 2/3 cup of bleach to one gallon of water. Due to the high bleach concentration of this mix, rinse surfaces with water after 1 minute of contact time and wear gloves while cleaning.
- For employees in physical contact with others, especially those at risk for Hepatitis A, wear disposable gloves and wash hands after each encounter.
- Coordinate with your occupational health provider to determine if the Hepatitis A vaccine should be offered to employees.

Everyone can play a role in addressing this significant public health threat. Thank you for your help to contain the spread of this Hepatitis A outbreak. Attached are several documents to share with employees and others. These include a *Hepatitis A flyer* and a *Frequently Asked Questions* document.

For additional information, please go to the County of San Diego Hepatitis A webpage where you will find Hep A Fact Sheets in five different languages: English, Spanish, Chinese, Arabic, and Vietnamese. Also, here you will find the most recent Hepatitis A case counts, Hepatitis A press releases, Hep A FAQs, Hepatitis A Infection Prevention & Control handout (Spanish), and other resources. If you are interested in having someone from the county give an educational presentation on Hepatitis A to your staff and/or other organizations or ordering Hepatitis A "Hygiene Kits," please let us know. If you have any questions, please contact the Epidemiology Program at 619-692-8499 or send an email to Epi.HHSA@sdcounty.ca.gov.

Sincerely,

Wilma J. Wooten, M.D.

WILMA J. WOOTEN, M.D., M.P.H.
Public Health Officer
Director, Public Health Officer

County of San Diego Department of Environmental Health 5500 Overland Ave. #170 San Diego, CA 92123 858-505-6814

For more information on Hepatitis A or to report individuals with vomiting, diarrhea or fever associated with food consumption, contact:
Email: epidemiology.fhd@sdcounty.ca.gov
Phone: (858) 505-6814
Website: www.sdcdeh.org

HEPATITIS A DISINFECTION GUIDELINES

Hepatitis A is a liver infection caused by the Hepatitis A virus. Highly contagious, the Hepatitis A virus is usually transmitted by the fecal-oral route, either through person-to-person contact or consumption of contaminated food or water. Contamination can occur when infected persons do not wash their hands properly after going to the bathroom and then touch other objects or food items. Surfaces that are frequently touched should be cleaned and sanitized often.

- Toilet Room Surfaces
- Light Switch Plates
- High Chairs
- Kitchen Surfaces
- Phones
- Tables and Chairs
- Doorknobs
- Computer Keyboards
- Wheelchairs and Walkers
- Recreation Equipment
- Railings
- Remote Controls

Effective Disinfectants

Chlorine Bleach: Mix and use the chlorine solution promptly. Allow 1 minute of contact time and then rinse with water.

- **5000 ppm:** 1 and 2/3 cups bleach in 1 gallon water. Use for stainless steel, food/mouth contact items, tile floors, nonporous surfaces, counters, sinks and toilets.

Other Disinfectants:

To determine if a product is effective against Hepatitis A, review the product label or product specification sheet and ensure it states "**effective against Hepatitis A"** or "**effective against Feline Calicivirus**". You many also search the product name in the Environmental Protection Agency's registered product database at:

https://iaspub.epa.gov/apex/pesticides/f?p=PPLS:1

Specific Cleaning Methods

Wear Gloves and Protect Your Clothing

Hard Surfaces

Disinfect surface with bleach, or other approved disinfectant, ensuring the correct contact time is being met. If the surface is in a food preparation area, make sure to rinse with water after. For surfaces that are corroded or damaged by bleach, use another product that is effective against Hepatitis A.

Steps to Clean Spills of Vomit or Feces

- Put on personal protective equipment, including two sets of gloves, masks and gowns.
- Block-off area immediately.
- Clean up visible debris using disposable absorbent material (paper towels or other type of disposable cloths) and minimize aerosols.
- Discard soiled items carefully in an impervious plastic bag.
- Thoroughly clean affected area
- Disinfect area and objects surrounding the contamination with an appropriate disinfectant effective against Hepatitis A. See box to the left "Effective Disinfectants" for 5000 ppm sanitizing solution.
- Take off outer set of gloves, gown and mask, in that order, and discard before exiting contaminated clean-up area.
- Place discarded PPE in an impervious plastic bag.
- Wearing the inner set of gloves, transport bag to a secure trash container; do not allow the bag to come into contact with clothing.
- Always wash your hands after handling any contaminated material, trash or waste.

Proper Handling

- Use chemicals in well-ventilated areas.
- Avoid contact between incompatible chemicals.
- Prevent chemical contact with food during cleaning.
- Handle contaminated material as little as possible and with minimal agitation to reduce aerosols.
- Manage waste safely and dispose in a secure trash container.

Preventing the Spread of Illness

- ✓ **All food employees must practice diligent handwashing and good personal hygiene (see below for handwashing procedures).**
- ✓ **Use utensils or gloves to eliminate bare hand contact with ready- to-eat food.**
- ✓ **Thoroughly and continuously disinfect the facility and food areas using the guidelines at the reverse of this document.**

Handwashing

- ✓ **Food employees shall thoroughly wash their hands and arms with soap and water for at least 20 seconds; thoroughly rinse with clean running water and properly dry their hands and arms.**
- ✓ **Ensure handwashing signs are posted in the appropriate locations.**

Employees shall wash their hands in all of the following instances:

- Immediately before engaging in food preparations, including working with non-prepackaged food, clean equipment and utensils, and unwrapped single-use food containers and utensils.
- After touching bare human body parts other than clean hands and clean, exposed portions of arms.
- After using the toilet room.
- After caring for, or handling any animal allowed in a food facility.
- After coughing, sneezing, using a handkerchief or disposable tissue, using tobacco, eating or drinking.
- After handling soiled equipment or utensils.
- Before putting on disposable gloves to start working with food.
- During food preparation, as often as necessary to remove dirt and contamination; and when changing tasks to prevent cross-contamination.
- When switching between working with raw food and working with ready-to-eat food.
- Before dispensing or serving food, or handling clean tableware and serving utensils in the food service area.
- After engaging in other activities that contaminate hands.

Employee Health Guidelines

All food employees must be knowledgeable of the relationship between personal health, hygiene and food safety. Information on this topic can be found in the California Retail Food Code, Chapter 3 Article 3 – Employee Health.

The Employees are Responsible for Notifying the Person in Charge

- Notify the Person in Charge if you have been diagnosed with a Hepatitis A infection. Be advised that employees are also required to report the following: Salmonella, Shigella, Enterohemorrhagic or shiga toxin-producing E. coli, Norovirus, and Entamoeba histolytica.
- Remember, you should not work with food or utensils if you are sick with acute gastrointestinal illnesses. **Acute gastrointestinal illness is diarrhea, either alone or with vomiting, fever or abdominal cramps.**

The Person in Charge is Responsible for Meeting the Following Requirements

- **REPORT** to the County of San Diego - Department of Environmental Health (DEH) when a food employee is diagnosed with Hepatitis A. **Call (858) 505-6814**. Remember that the following illnesses must also be reported: Salmonella, Shigella, Enterohemorrhagic or shiga toxin-producing E. coli, Norovirus, and Entamoeba histolytica.
- **REPORT** to the DEH if **two or more people** are sick with acute gastrointestinal illness; **call (858) 505-6814. Acute gastrointestinal illness is diarrhea, either alone or with vomiting, fever or abdominal cramps.**
- **EXCLUDE** a food employee from the food facility if diagnosed with Salmonella, Hepatitis A, Norovirus, Shigella, Enterohemorrhagic or shiga toxin producing E. coli, or Entamoeba histolytica. Only the County of San Diego DEH or the Health and Human Services Agency can clear an excluded employee to return to work.
- **RESTRICT** a food employee from working with exposed food, clean equipment, clean linens, clean utensils and unwrapped single-service articles if food employee is suffering from symptoms of acute gastrointestinal illness or experiencing persistent coughing, sneezing or nasal discharges. Restrictions can be removed by the Person in Charge when the food employee states they no longer have symptoms of illness.

County of San Diego

NICK MACCHIONE, FACHE
AGENCY DIRECTOR

HEALTH AND HUMAN SERVICES AGENCY
PUBLIC HEALTH SERVICES
3851 ROSECRANS STREET, MAIL STOP P-578
SAN DIEGO, CA 92110-3134
(619) 531-5800 • FAX (619) 542-4186

WILMA J. WOOTEN, M.D., M.P.H.
PUBLIC HEALTH OFFICER

November 3, 2017

TO: Homeless Providers
Independent Living Facilities
Single Room Occupancy Housing Providers
Behavioral Health Treatment Providers

FROM: Wilma J. Wooten, M.D., M.P.H.,
Public Health Officer & Director,
Public Health Services

REQUEST TO PROVIDE HEPATITIS A VACCINATIONS AT YOUR FACILITIES

Your assistance is needed! As you may be aware, the County is currently investigating a large outbreak of hepatitis A. As Public Health Officer and Director for Public Health Services (PHS), in the County of San Diego Health and Human Services Agency (HHSA), I am sending you this letter because we would like to work with your organization to reach your customers to offer hepatitis A vaccinations. Several County partners, such as hospitals, paramedics, and other nursing agencies, have been engaged and are actively participating in vaccination efforts across the County, specifically at the organizations listed in the "to" line above. **When your organization is contacted by these partners, I urge you to collaborate with them, so that together we can stop the local spread of hepatitis A infections.**

Hepatitis A is a contagious liver infection that is spread when a person ingests food or water that has been contaminated by the feces of an infected person (i.e., touching objects or eating food that someone with hepatitis A handled). On September 1, 2017, a countywide local health emergency was declared to further raise awareness of the outbreak and allow the County to potentially ask for mutual aid, if necessary. As of October 26, 2017, 536 cases have been reported since late November 2016, which disproportionately affects homeless and illicit drug-using individuals.

Vaccination and proper hand hygiene are the best prevention against hepatitis A. For additional information about the outbreak and associated resources, please go to the County of San Diego Hepatitis A Outbreak webpage where you will find *Hepatitis A Fact Sheets* in five different languages: English, Spanish, Chinese, Arabic, and Vietnamese. Also, here you will find the most recent *Hepatitis A* case counts, press releases, FAQs, and other resources.

If you are interested in having someone from the County provide an educational presentation on hepatitis A to your staff and/or clients, please direct any requests or questions, please call 2-1-1 or visit www.211sandiego.org.

Sincerely,

Wilma J. Wooten, M.D.

WILMA J. WOOTEN, M.D., M.P.H.
Public Health Officer
Director, Public Health Services

County of San Diego

NICK MACCHIONE, FACHE
AGENCY DIRECTOR

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(619) 531-5800 • FAX (619) 542-4186

WILMA J. WOOTEN, M.D., M.P.H.
PUBLIC HEALTH OFFICER

November 17, 2017

TO: Faith Based Organizations
Volunteer Service Organizations

FROM: Wilma J. Wooten, M.D., M.P.H., Public Health Officer
Director, Public Health Services

PREPARING FOR THE HOLIDAYS: SERVING THE COMMUNITY AND PREVENTING HEPATITIS A

As many organizations prepare to share holiday meals with homeless and low-income families, the County of San Diego wants to assure that you have your questions answered about how to best protect your membership, volunteers, and guests from potentially spreading the hepatitis A virus, while maintaining your traditions of hospitality and generosity.

San Diego is fortunate to have a diversity of many churches, mosques, and synagogues, as well as other faith-based and volunteer service organizations, to share good will with our neighbors through the November and December holidays. As you may be aware, the County is currently investigating a large outbreak of hepatitis A. The disease is a contagious liver infection that is spread when a person ingests food or water that has been contaminated by the feces of an infected person (i.e., touching objects or eating food that someone with hepatitis A handled).

Volunteers who are not usually in frequent and close contact with homeless individuals, and who participate only for special events and holidays, do not need to be vaccinated, unless they have other risk factors. Please see the Volunteer Frequently Asked Questions (FAQ) on our website located at sandiegocounty.gov/HepA. In addition, along with this letter, we are providing a list of resources about hepatitis A. Please call 2-1-1 or visit 211sandiego.org for more information.

Who is recommended for the hepatitis A vaccine?

The current outbreak has primarily affected homeless people and illicit drug users. Volunteers who participate only for special events and holidays do not need to be vaccinated for these few occasions. Volunteers who work frequently and closely with homeless persons, especially volunteers who clean kitchens and bathrooms, are recommended to get the hepatitis A vaccine. **We recommend vaccine for these at-risk individuals.** A full list of the groups recommended for vaccine can be found on the enclosed document, as well as on the County of San Diego website: http://www.sandiegocounty.gov/content/sdc/hhsa/programs/phs/community_epidemiology/dc/Hepatitis_A/vaccine.html.

The Public Health Services department, in the County of San Diego Health and Human Services Agency, strongly recommends your organization and volunteers follow the steps below to help prevent the spread of hepatitis A:

- **Practice safe food handling practices.**
  - All volunteers should follow safe food handling practices, including washing hands with soap and water before preparing, serving, or eating food and after using the bathroom or changing diapers.
  - Wearing disposable gloves, while preparing and serving food, is highly recommended. Wash your hands before putting on the gloves.
  - Volunteers who have cuts or rashes on their hands should cover all open wounds with appropriate bandages and should wear disposable gloves on top. Wearing gloves does not replace proper hand washing.
  - Volunteers should not prepare or serve food if they are ill.
- **Remind staff and volunteers of the importance of handwashing.**
  - Wash your hands with soap and water before preparing, serving, or eating food and after using the bathroom or changing diapers.
  - Wash for 20 seconds or as long as it takes to sing "happy birthday" twice.
  - Waterless hand sanitizers are not effective against hepatitis A virus.

For additional information about the outbreak and associated resources, please go to sandiegocounty.gov/HepA where you will find the most recent hepatitis A case counts, press releases, FAQs, and other resources.

Thank you for your continued presence and contributions to our community. We wish you and yours a very safe, happy and healthy holiday season.

Wilma J. Wooten, M.D.
WILMA J. WOOTEN, M.D., M.P.H.
Public Health Officer
Director, Public Health Services

Attachment

APPENDIX G
Department of Environmental Health
Guidelines and Procedures

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County of San Diego Department of Environmental Health 5500 Overland Ave. #170 San Diego, CA 92123 858-505-6814

For more information on Hepatitis A or to report individuals with vomiting, diarrhea or fever associated with food consumption, contact:
Email: epidemiology.fhd@sdcounty.ca.gov
Phone: (858) 505-6814
Website: www.sdcdeh.org

HEPATITIS A DISINFECTION GUIDELINES

Hepatitis A is a liver infection caused by the Hepatitis A virus. Highly contagious, the Hepatitis A virus is usually transmitted by the fecal-oral route, either through person-to-person contact or consumption of contaminated food or water. Contamination can occur when infected persons do not wash their hands properly after going to the bathroom and then touch other objects or food items. Surfaces that are frequently touched should be cleaned and sanitized often.

- Toilet Room Surfaces
- Light Switch Plates
- High Chairs
- Kitchen Surfaces
- Phones
- Tables and Chairs
- Doorknobs
- Computer Keyboards
- Wheelchairs and Walkers
- Recreation Equipment
- Railings
- Remote Controls

Effective Disinfectants

Chlorine Bleach: Mix and use the chlorine solution promptly. Allow 1 minute of contact time and then rinse with water.

- **5000 ppm:** 1 and 2/3 cups bleach in 1 gallon water. Use for stainless steel, food/mouth contact items, tile floors, nonporous surfaces, counters, sinks and toilets.

Other Disinfectants:

To determine if a product is effective against Hepatitis A, review the product label or product specification sheet and ensure it states "**effective against Hepatitis A"** or "**effective against Feline Calicivirus**". You many also search the product name in the Environmental Protection Agency's registered product database at:

https://iaspub.epa.gov/apex/pesticides/f?p=PPLS:1

Specific Cleaning Methods

Wear Gloves and Protect Your Clothing

Hard Surfaces

Disinfect surface with bleach, or other approved disinfectant, ensuring the correct contact time is being met. If the surface is in a food preparation area, make sure to rinse with water after. For surfaces that are corroded or damaged by bleach, use another product that is effective against Hepatitis A.

Steps to Clean Spills of Vomit or Feces

- Put on personal protective equipment, including two sets of gloves, masks and gowns.
- Block-off area immediately.
- Clean up visible debris using disposable absorbent material (paper towels or other type of disposable cloths) and minimize aerosols.
- Discard soiled items carefully in an impervious plastic bag.
- Thoroughly clean affected area
- Disinfect area and objects surrounding the contamination with an appropriate disinfectant effective against Hepatitis A. See box to the left "Effective Disinfectants" for 5000 ppm sanitizing solution.
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- Place discarded PPE in an impervious plastic bag.
- Wearing the inner set of gloves, transport bag to a secure trash container; do not allow the bag to come into contact with clothing.
- Always wash your hands after handling any contaminated material, trash or waste.

Proper Handling

- Use chemicals in well-ventilated areas.
- Avoid contact between incompatible chemicals.
- Prevent chemical contact with food during cleaning.
- Handle contaminated material as little as possible and with minimal agitation to reduce aerosols.
- Manage waste safely and dispose in a secure trash container.

Preventing the Spread of Illness

- ✓ **All food employees must practice diligent handwashing and good personal hygiene (see below for handwashing procedures).**
- ✓ **Use utensils or gloves to eliminate bare hand contact with ready- to-eat food.**
- ✓ **Thoroughly and continuously disinfect the facility and food areas using the guidelines at the reverse of this document.**

Handwashing

- ✓ **Food employees shall thoroughly wash their hands and arms with soap and water for at least 20 seconds; thoroughly rinse with clean running water and properly dry their hands and arms.**
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- Remember, you should not work with food or utensils if you are sick with acute gastrointestinal illnesses. **Acute gastrointestinal illness is diarrhea, either alone or with vomiting, fever or abdominal cramps.**

The Person in Charge is Responsible for Meeting the Following Requirements

- **REPORT** to the County of San Diego - Department of Environmental Health (DEH) when a food employee is diagnosed with Hepatitis A. **Call (858) 505-6814**. Remember that the following illnesses must also be reported: Salmonella, Shigella, Enterohemorrhagic or shiga toxin-producing E. coli, Norovirus, and Entamoeba histolytica.
- **REPORT** to the DEH if **two or more people** are sick with acute gastrointestinal illness; **call (858) 505-6814. Acute gastrointestinal illness is diarrhea, either alone or with vomiting, fever or abdominal cramps.**
- **EXCLUDE** a food employee from the food facility if diagnosed with Salmonella, Hepatitis A, Norovirus, Shigella, Enterohemorrhagic or shiga toxin producing E. coli, or Entamoeba histolytica. Only the County of San Diego DEH or the Health and Human Services Agency can clear an excluded employee to return to work.
- **RESTRICT** a food employee from working with exposed food, clean equipment, clean linens, clean utensils and unwrapped single-service articles if food employee is suffering from symptoms of acute gastrointestinal illness or experiencing persistent coughing, sneezing or nasal discharges. Restrictions can be removed by the Person in Charge when the food employee states they no longer have symptoms of illness.

County of San Diego Department of Environmental Health 5500 Overland Ave. #170 San Diego, CA 92123 858-505-6814

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Email: epidemiology.fhd@sdcounty.ca.gov
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HEPATITIS A VACCINATIONS FOR FOOD HANDLERS

Hepatitis A is a liver infection caused by the Hepatitis A virus. Highly contagious, the Hepatitis A virus is usually transmitted by the fecal-oral route, either through person-to-person contact or consumption of contaminated food or water. Contamination can occur when infected persons do not wash their hands properly after going to the bathroom and then touch other objects or food items. Surfaces that are frequently touched should be cleaned and sanitized often.

On August 21, 2017,the County Public Health Officer recommended that all food handlers in the region be vaccinated against the Hepatitis A virus. Food handlers can become infected with Hepatitis A through causes unrelated to their food facility work and can be handling food, and potentially spreading the virus before the infection is recognized.

No common sources of food, beverage or drugs have been identified that have contributed to his outbreak, although the investigation continues. **The best way to prevent food service from contributing to the Hepatitis A outbreak in San Diego County is for all food handlers to get vaccinated and practice proper handwashing.**

Where can I get vaccinated?

1. Ask your employer if they have an **Occupational Health Program** that you can visit to obtain a vaccination.
2. If you have health insurance, you can visit your **Medical Provider.**
3. **Local Pharmacies** may also offer vaccinations. Call before you visit.
4. If you do not have health insurance or are underinsured, you can visit a **County Public Health Immunization Clinic**. You may also visit a **local Community Health Center**. For a list of locations, call 2-1-1 or visit sdiz.org.
5. The County of San Diego is hosting **Vaccination Events** in certain areas. Please call **2-1-1** to find out where these vaccination events are being held.

Is the Hepatitis A vaccine safe?

Yes, the vaccine is safe and highly effective in preventing the Hepatitis A virus infection. You will be protected approximately 2 to 4 weeks after the first injection and longer-term defense is gained with the second injection. If you do not remember whether or not you have been vaccinated, repeating the vaccination is not harmful.

According to the Centers for Disease Control and Prevention (CDC), before the Hepatitis A vaccine became available in 1995, more than 25,000 people developed Hepatitis A each year in the U.S. In 2017, there were about 2,500 cases reported. In 1999, routine vaccination was recommended by the CDC Advisory Committee on Immunization Practices for children in high-incidence states, including California. In 2006, routine vaccination was recommended in all states.

Is there a fee to get vaccinated?

Always check with your occupational or personal health provider first when seeking a vaccination. Most providers have a mechanism for their patients to obtain vaccinations, which often includes getting a vaccination from a local pharmacy. Medi-Cal covers this vaccine without prior authorization. Individuals who are uninsured, whose insurance does not cover routine vaccinations, or whose occupational groups have been recommended for vaccination can go to a County Public Health Immunization Clinic to obtain the vaccine at no cost.

For more Information

For additional information, please go to the County of San Diego's Hepatitis A website:

http://www.sandiegocounty.gov/content/sdc/hhsa/programs/phs/community_epidemiology/dc/Hepatitis_A.html

Or call **2-1-1**

LIVE WELL SAN DIEGO
LIVEWELLSD.ORG

(Rev. 11/14/17)

Preventing the Spread of Illness

- ✓ **All food employees must practice diligent handwashing and good personal hygiene (see below for handwashing procedures).**
- ✓ **Use utensils or gloves to eliminate bare hand contact with ready- to-eat food.**
- ✓ **Thoroughly and continuously disinfect the facility and food areas using the guidelines at the reverse of this document.**

Handwashing

- ✓ **Food employees shall thoroughly wash their hands and arms with soap and water for at least 20 seconds; thoroughly rinse with clean running water and properly dry their hands and arms.**
- ✓ **Ensure handwashing signs are posted in the appropriate locations.**

Employees shall wash their hands in <u>all</u> of the following instances:

- Immediately before engaging in food preparations, including working with non-prepackaged food, clean equipment and utensils, and unwrapped single-use food containers and utensils.
- After touching bare human body parts other than clean hands and clean, exposed portions of arms.
- After using the toilet room.
- After caring for, or handling any animal allowed in a food facility.
- After coughing, sneezing, using a handkerchief or disposable tissue, using tobacco, eating or drinking.
- After handling soiled equipment or utensils.
- Before putting on disposable gloves to start working with food.
- During food preparation, as often as necessary to remove dirt and contamination; and when changing tasks to prevent cross-contamination.
- When switching between working with raw food and working with ready-to-eat food.
- Before dispensing or serving food, or handling clean tableware and serving utensils in the food service area.
- After engaging in other activities that contaminate hands.

Employee Health Guidelines

All food employees must be knowledgeable of the relationship between <u>personal health, hygiene and food safety.</u> Information on this topic can be found in the California Retail Food Code, Chapter 3 Article 3 – Employee Health.

The Employees are Responsible for Notifying the Person in Charge

- Notify the Person in Charge if you have been diagnosed with a Hepatitis A infection. Be advised that employees are also required to report the following: Salmonella, Shigella, Enterohemorrhagic or shiga toxin-producing E. coli, Norovirus, and Entamoeba histolytica.
- Remember, you should not work with food or utensils if you are sick with acute gastrointestinal illnesses. **Acute gastrointestinal illness is diarrhea, either alone or with vomiting, fever or abdominal cramps.**

The Person in Charge is Responsible for Meeting the Following Requirements

- **<u>REPORT</u>** to the County of San Diego - Department of Environmental Health (DEH) when a food employee is diagnosed with Hepatitis A. **Call (858) 505-6814**. Remember that the following illnesses must also be reported: Salmonella, Shigella, Enterohemorrhagic or shiga toxin-producing E. coli, Norovirus, and Entamoeba histolytica.
- **<u>REPORT</u>** to the DEH if **two or more people** are sick with acute gastrointestinal illness; **call (858) 505-6814. Acute gastrointestinal illness is diarrhea, either alone or with vomiting, fever or abdominal cramps.**
- **<u>EXCLUDE</u>** a food employee from the food facility if diagnosed with Salmonella, Hepatitis A, Norovirus, Shigella, Enterohemorrhagic or shiga toxin producing E. coli, or Entamoeba histolytica. Only the County of San Diego DEH or the Health and Human Services Agency can clear an excluded employee to return to work.
- **<u>RESTRICT</u>** a food employee from working with exposed food, clean equipment, clean linens, clean utensils and unwrapped single-service articles if food employee is suffering from symptoms of acute gastrointestinal illness or experiencing persistent coughing, sneezing or nasal discharges. Restrictions can be removed by the Person in Charge when the food employee states they no longer have symptoms of illness.

County of San Diego Department of Environmental Health 5500 Overland Ave. #170 | San Diego, CA 92123 858-505-6814

For more information on Hepatitis A or to report individuals with vomiting, diarrhea, or fever associated with food consumption, contact:
Email: epidemiology.fhd@sdcounty.ca.gov
Phone: (858) 505-6814
Website: www.sdcdeh.org

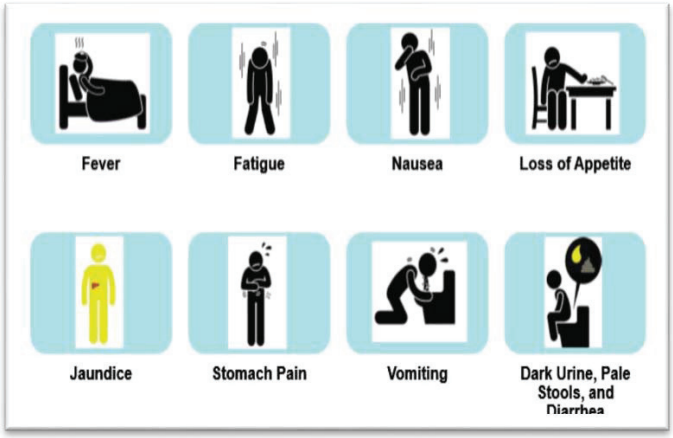
HEPATITIS A GUIDANCE FOR FOOD FACILITIES

What is Hepatitis A?

Hepatitis A is a liver infection caused by the Hepatitis A virus, which is highly contagious. It can cause liver disease lasting a few weeks to a serious illness lasting many months.

A person infected with Hepatitis A typically misses work for up to a month.

What are the symptoms of Hepatitis A?



How can it spread in a food facility?

Hepatitis A is usually spread from person to person, through the fecal-oral route. This means, by ingesting fecal matter, even in microscopic amounts from:

- **Close person-to-person contact with an infected person**
- **Touching objects or eating food handled by someone with Hepatitis A**
- **Touching common surfaces that a person with Hepatitis A has touched**

How can I protect my customers?

GET VACCINATED

It is recommended that all foodhandlers be vaccinated against Hepatitis A.

DO NOT WORK WHEN ILL

Help prevent the spread of illness by ensuring staff do not work when they are ill. Contact the Department of Environmental Health if two or more staff are ill with gastrointestinal symptoms or if a staff member is diagnosed with a reportable illness. Hepatitis A is a reportable illness.

ALWAYS PRACTICE PROPER HANDWASHING

Food employees shall thoroughly wash their hands and arms with soap and warm water for at least 20 seconds. Thoroughly rinse with clean running water and properly dry their hands and arms. Ensure handwashing signs are posted at the appropriate locations to remind employees.

USE PROPER DISINFECTION WHEN NEEDED

Follow procedures listed on the reverse page.

HEPATITIS A GUIDANCE FOR FOOD FACILITIES

When do I need to disinfect my food facility?

- When the food facility has been exposed to Hepatitis A or there is concern of exposure
- When there was a fecal or vomiting incident in the facility

How do I disinfect my food facility for Hepatitis A?

Effective Disinfectants

Chlorine Bleach: Mix a chlorine solution and use it promptly. Allow 1 minute of contact time and then rinse with water.

- **5000 ppm:** 1 and 2/3 cups bleach in 1 gallon water. Use for stainless steel, food/mouth contact items, tile floors, nonporous surfaces, counters, sinks and toilets.

Other Disinfectants:

To determine if a product is effective against Hepatitis A, review the product label or product specification sheet and ensure it states "**effective against Hepatitis A"** or "**effective against Feline Calicivirus**". You may also search a product's name in the Environmental Protection Agency's registered product database at:

https://iaspub.epa.gov/apex/pesticides/f?p=PPLS:1

Proper Handling

- Use chemicals in well-ventilated areas.
- Avoid contact between incompatible chemicals.
- Prevent chemical contact with food during cleaning.
- Handle contaminated material as little as possible and with minimal agitation to reduce aerosols.
- Manage waste safely and dispose in a secure trash container.

Steps to Clean Spills of Vomit or Feces

- Put on personal protective equipment, including two sets of gloves, masks and gowns.
- Block-off area immediately.
- Clean up visible vomit or feces using disposable absorbent material (paper towels or other type of disposable cloths) and minimize aerosols.
- Discard soiled items carefully in an impervious plastic bag.
- Thoroughly clean affected area.
- Disinfect area and objects surrounding the contamination with an appropriate disinfectant effective against Hepatitis A. See box to the left "Effective Disinfectants".
- Take off outer set of gloves, gown and mask, in that order, and discard before exiting contaminated clean-up area.
- Place discarded PPE in an impervious plastic bag.
- Wearing the inner set of gloves, transport bag to a secure trash container; do not allow the bag to come into contact with clothing.
- Always wash your hands after handling any contaminated material, trash or waste.

Other Recommendations if there is Concern of Hepatitis A Exposure

- **Protect single service utensils**
- **Limit bare hand contact and self-service food items**
- **Clean public or common areas with these heightened disinfection procedures once per day**
- **Ensure employees wear gloves when cleaning, then remove the gloves and wash hands prior to switching tasks**

SANITATION PROCEDURES FOR PUBLIC RIGHT-OF-WAYS

UPDATED AUGUST 31, 2017

OBJECTIVE

The purpose of this document is to provide operating procedures and recommendations for the sanitation of public right-of-ways (e.g., sidewalks, streets, and gutters).

PUBLIC NOTIFICATION

Public notification must adhere to the respective City regulations prior to the cleanup, removal, and storage of personal property found on city streets and property.

HAZARD ASSESSMENT

For the safety of everyone working in the area to be sanitized, it is recommended that a hazard assessment be conducted to identify any hazardous or otherwise unsafe items prior to conducting any sanitation activities. These items can include, but are not limited to hazardous chemicals, infectious waste (e.g., hypodermic needles/sharps), drug paraphernalia, firearms, live ammunition, explosives, or weapons. All employees or contractors should be properly trained prior to conducting a hazard assessment or any activities included in this sanitation procedure. Training should include, but is not limited to:

- 40 hour HazWoper training with current refresher training
- Occupational Safety and Health Administration (OSHA) Universal and Standard Precautions for Bloodborne pathogens and other Potentially Infectious Materials

Other training may be required for the safe handling of hazardous and biohazardous wastes

SANITATION PROCEDURE

High concentration chlorine (sodium hypochlorite) solutions are effective and universally available products for the disinfection of a wide range of surfaces. For the purposes of sanitizing public right-of-ways, the following procedures must be followed after conducting the hazard assessment:

1. While wearing appropriate personal protective equipment (PPE), prepare a 5,000 ppm solution of bleach and water (Solution A). Use 5.25% chlorine (household bleach) and mix a 1:10 dilution (1 part bleach, 9 parts water).
2. Use a chlorine test strip to ensure you have reached the desired concentration (5,000 ppm). There are several test strips that are commercially available.
3. Fill Hudson sprayers or similar distribution equipment.
4. Cover all storm drains to prevent run off.
5. Carefully spray all feces, blood, bodily fluids or contaminated surfaces with Solution A and wait for a minimum of 10 minutes.
6. After 10 or more minutes, carefully containerize feces or any other contaminated solid materials for disposal to landfill.
7. Respray any newly exposed surfaces with Solution A and wait for a minimum of 10 minutes.
8. Pressure-wash the sidewalks, streets, gutters, and inlet of storm drain catch basins with water.
9. Recover the generated waste water with a Vactor Truck for disposal to the sanitary sewer.
10. Mix 1 part of Solution A with 9 parts water to make Solution B (500 ppm) for final disinfection.
11. Use a chlorine test strip to ensure you have reached the desired concentration (500 ppm).

12. Carefully spray all washed areas with Solution B and wait for a minimum of 30 minutes to allow for adequate disinfection and degradation of residual chlorine.
13. Use a test strip on treated surfaces to determine the chlorine has adequately degraded prior to reoccupation.

It is important to note that higher concentrations and elevated temperatures can cause chlorine to degrade quickly over time. It is recommended that a fresh solution be made each day to ensure the most effective solution is used.

RECOMMENDED FREQUENCY

In concentrated areas of homeless and drug using individuals, after the complete sanitation process (above), weekly spot maintenance should occur with additional rounds of the complete sanitation process at least every two weeks.

REFERENCES

1. City of Los Angeles. *Operation Healthy Streets Protocol*. 2012.
2. U.S. Occupational Safety & health Administration. *Healthcare Wide Hazards*. 2017. Retrieved from: https://www.osha.gov/SLTC/etools/hospital/hazards/univprec/univ.html
3. Center for Disease Control and Prevention. *Chemical Disinfectants - Guideline for Disinfection and Sterilization in Healthcare Facilities*. 2008. Retrieved from: https://www.cdc.gov/infectioncontrol/guidelines/disinfection/disinfection-methods/chemical.html
4. U.S. Army Public Health Command. *Preparing and Measuring High Chlorine Concentration Solution for Disinfection*. 2014. Retrieved from: https://phc.amedd.army.mil/PHC%20Resource%20Library/TIP_No_13-034-1114_Prepare_Measure_High_Chlorine_Solutions.pdf

Developed by County of San Diego Department of Environmental Health

SANITATION PROCEDURES FOR PUBLIC RIGHT-OF-WAYS

UPDATED SEPTEMBER 6, 2017

OBJECTIVE

The purpose of this document is to provide operating procedures and recommendations for the sanitation of public right-of-ways (e.g., sidewalks, streets, and gutters).

PUBLIC NOTIFICATION

Public notification must adhere to the respective City regulations prior to the cleanup, removal, and storage of personal property found on city streets and property.

HAZARD ASSESSMENT

For the safety of everyone working in the area to be sanitized, it is recommended that a hazard assessment be conducted to identify any hazardous or otherwise unsafe items prior to conducting any sanitation activities. These items can include, but are not limited to hazardous chemicals, infectious waste (e.g., hypodermic needles/sharps), drug paraphernalia, firearms, live ammunition, explosives, or weapons. All employees or contractors should be properly trained prior to conducting a hazard assessment or any activities included in this sanitation procedure. Training should include, but is not limited to:

- 40 hour HazWoper training with current refresher training
- Occupational Safety and Health Administration (OSHA) Universal and Standard Precautions for Bloodborne pathogens and other Potentially Infectious Materials

Other training may be required for the safe handling of hazardous and biohazardous wastes

SANITATION PROCEDURE

Disinfectants used must be registered with the United States Environmental Protection Agency (EPA). Only EPA-registered disinfectant products approved for Hepatitis A are recommended for use. Application of the disinfectant must be in accordance with label specifications.

High concentration chlorine (sodium hypochlorite) solutions are effective and universally available products for the disinfection of a wide range of surfaces. For the purposes of sanitizing public right-of-ways, it is recommended, and consistent with the 2012 City of Los Angeles Department of Public Works Bureau of Sanitation Operation Healthy Streets Protocol, that the following procedures be followed after conducting a hazard assessment:

1. While wearing appropriate personal protective equipment (PPE), prepare a 5,000 ppm solution of bleach and water (Solution A). Use 5.25% chlorine (household bleach) and mix a 1:10 dilution (1 part bleach, 9 parts water).
2. Use a chlorine test strip to ensure you have reached the desired concentration (5,000 ppm). There are several test strips that are commercially available.
3. Fill Hudson sprayers or similar distribution equipment.
4. Cover all storm drains to prevent run off.
5. Carefully spray all feces, blood, bodily fluids or contaminated surfaces with Solution A and wait for a minimum of 10 minutes.
6. After 10 or more minutes, carefully containerize feces or any other contaminated solid materials for disposal to landfill.

7. Respray any newly exposed surfaces with Solution A and wait for a minimum of 10 minutes.
8. Pressure-wash the sidewalks, streets, gutters, and inlet of storm drain catch basins with water.
9. Recover the generated waste water with a Vactor Truck for disposal to the sanitary sewer.
10. Mix 1 part of Solution A with 9 parts water to make Solution B (500 ppm) for final disinfection.
11. Use a chlorine test strip to ensure you have reached the desired concentration (500 ppm).
12. Carefully spray all washed areas with Solution B and wait for a minimum of 30 minutes to allow for adequate disinfection and degradation of residual chlorine.
13. Use a test strip on treated surfaces to determine the chlorine has adequately degraded prior to reoccupation.

It is important to note that higher concentrations and elevated temperatures can cause chlorine to degrade quickly over time. It is recommended that a fresh solution be made each day to ensure the most effective solution is used.

RECOMMENDED FREQUENCY

In concentrated areas of homeless and drug using individuals, after the complete sanitation process (above), weekly spot maintenance should occur with additional rounds of the complete sanitation process at least every two weeks.

REFERENCES

1. City of Los Angeles. *Operation Healthy Streets Protocol*. 2012.
2. U.S. Occupational Safety & health Administration. *Healthcare Wide Hazards*. 2017. Retrieved from: https://www.osha.gov/SLTC/etools/hospital/hazards/univprec/univ.html
3. Center for Disease Control and Prevention. *Chemical Disinfectants - Guideline for Disinfection and Sterilization in Healthcare Facilities*. 2008. Retrieved from: https://www.cdc.gov/infectioncontrol/guidelines/disinfection/disinfection-methods/chemical.html
4. U.S. Army Public Health Command. *Preparing and Measuring High Chlorine Concentration Solution for Disinfection*. 2014. Retrieved from: https://phc.amedd.army.mil/PHC%20Resource%20Library/TIP_No_13-034-1114_Prepare_Measure_High_Chlorine_Solutions.pdf

Developed by County of San Diego Department of Environmental Health

SANITATION PROCEDURES FOR PUBLIC RIGHT-OF-WAYS

UPDATED OCTOBER 6, 2017

OBJECTIVE

The purpose of this document is to provide operating procedures and recommendations for the sanitation of public right-of-ways (e.g., sidewalks, streets, and gutters) in times of elevated risk to public health, (example: Declared Public Health Emergency for Hepatitis A outbreak).

PUBLIC NOTIFICATION

Public notification must adhere to the respective jurisdiction regulations and/or constitutional protections prior to the cleanup, removal, and storage of personal property found on public right-of-ways. Each jurisdiction should consult with its legal counsel concerning these or related requirements.

When applying a disinfectant/sanitizer, notice of application must be in accordance with Title 3 California Code of Regulations (3CCR) 6618.

HAZARD ASSESSMENT

For the safety of everyone working in the area to be sanitized, it is recommended that a hazard assessment be conducted to identify any hazardous or otherwise unsafe items prior to conducting any sanitation activities. These items can include, but are not limited to hazardous chemicals, infectious waste (e.g., hypodermic needles/sharps), drug paraphernalia, firearms, live ammunition, explosives, or weapons. All employees or contractors should be properly trained prior to conducting a hazard assessment or any activities included in this sanitation procedure. Training should include, but is not limited to:

- 40 hour HazWoper training with current refresher training
- Occupational Safety and Health Administration (OSHA) Universal and Standard Precautions for Bloodborne Pathogens and other Potentially Infectious Materials
- Employers must assure employees that handle disinfectants comply with employee safety requirements in 3CCR Division 6, Chapter 3, Subchapter 3 or the applicable requirements of 8CCR (*see 3CCR 6720(c) for corresponding provisions*)

Other training may be required for the safe handling of hazardous and biohazardous wastes.

SANITATION PROCEDURE

Disinfectants used must be registered with the United States Environmental Protection Agency (EPA) and the California Department of Pesticide Regulation (CDPR). Only registered disinfectant products approved for Hepatitis A are recommended for use. Application of the disinfectant must be in accordance with label specifications.

Product names can be searched in the CDPR registered product data base at: http://cdpr.ca.gov/docs/label/labelque.htm. Additionally, questions on product labels can be directed to County of San Diego Department of Agriculture, Weights and Measures Pesticide Regulation Program at (858) 694-8980.

High concentration chlorine (sodium hypochlorite) solutions are effective and universally available products for the disinfection of a wide range of surfaces. For the purposes of sanitizing public right-of-ways, it is recommended, and consistent with the 2012 City of Los Angeles Department of Public Works Bureau of Sanitation Operation Healthy Streets Protocol, that the following procedures be followed after conducting a hazard assessment:

1. While wearing appropriate personal protective equipment (PPE), prepare a 5,000 ppm solution of bleach and water (Solution A). Use 5.25% chlorine (sodium hypochlorite) and mix a 1:10 dilution (1 part bleach, 9 parts water).
2. Use a chlorine test strip to ensure you have reached the desired concentration (5,000 ppm). There are several test strips that are commercially available.
3. Fill Hudson sprayers or similar distribution equipment.
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5. Carefully spray all feces, blood, bodily fluids or contaminated surfaces with Solution A and wait for a minimum of 10 minutes.
6. After 10 or more minutes, carefully containerize feces or any other contaminated solid materials for disposal to landfill.
7. Respray any newly exposed surfaces with Solution A and wait for a minimum of 10 minutes.
8. Pressure-wash the sidewalks, streets, gutters, and inlet of storm drain catch basins with water.
9. Recover the generated waste water with a Vactor Truck for disposal to the sanitary sewer.
10. Mix 1 part of Solution A with 9 parts water to make Solution B (500 ppm) for final disinfection.
11. Use a chlorine test strip to ensure you have reached the desired concentration (500 ppm).
12. Carefully spray all washed areas with Solution B and wait for a minimum of 30 minutes to allow for adequate disinfection and degradation of residual chlorine.
13. Use a test strip on treated surfaces to determine the chlorine has adequately degraded prior to reoccupation.
14. PPE and/or tools that have become contaminated should be disinfected or disposed of appropriately.

It is important to note that higher concentrations and elevated temperatures can cause chlorine to degrade quickly over time. It is recommended that a fresh solution be made each day to ensure the most effective solution is used.

RECOMMENDED FREQUENCY

In concentrated areas of homeless and drug using individuals, after the complete sanitation process (above), weekly spot maintenance should occur with additional rounds of the complete sanitation process at least every two weeks.

REFERENCES

1. City of Los Angeles. *Operation Healthy Streets Protocol*. 2012.
2. U.S. Occupational Safety & health Administration. *Healthcare Wide Hazards*. 2017. Retrieved from: https://www.osha.gov/SLTC/etools/hospital/hazards/univprec/univ.html
3. Center for Disease Control and Prevention. *Chemical Disinfectants - Guideline for Disinfection and Sterilization in Healthcare Facilities*. 2008. Retrieved from: https://www.cdc.gov/infectioncontrol/guidelines/disinfection/disinfection-methods/chemical.html
4. U.S. Army Public Health Command. *Preparing and Measuring High Chlorine Concentration Solution for Disinfection*. 2014. Retrieved from: https://phc.amedd.army.mil/PHC%20Resource%20Library/TIP_No_13-034-1114_Prepare_Measure_High_Chlorine_Solutions.pdf
5. Occupational Safety and Health Administration: https://www.osha.gov/
6. California Code of Regulations, Title 3 and Title 8: https://govt.westlaw.com/calregs/
7. CDPR Product/Label Database: http://cdpr.ca.gov/docs/label/labelque.htm

Developed by County of San Diego Department of Environmental Health

APPENDIX H
Confidentiality Resources

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Code of California Regulations, title 17, section 2502

(a) Summary Reports: Each local health officer shall report at least weekly, on the Weekly Morbidity by Place of Report form to the Director the number of cases of those diseases, conditions, unusual diseases or outbreaks of disease reported pursuant to Section 2500. Copies of the form are available from the Department's Division of Communicable Disease Control.

(b) Individual Case and Outbreak Reports: For the diseases listed below, the local health officer shall prepare and send to the Department along with the summary report described in (a) above an individual case or outbreak report for each individual case/outbreak of those diseases which the Department has identified as requiring epidemiological analysis reported pursuant to Section 2500. At the discretion of the Director, the required individual case/outbreak report may be either a Confidential Morbidity Report, its electronic equivalent or a hard copy 8.5x11 inch individual case/outbreak report form. The Weekly Morbidity by Place of Report form indicates which format to use. Each individual case report shall include the following: (1) verification of information reported pursuant to Section 2500; (2) information on the probable source of infection, if known; (3) laboratory or radiologic findings, if any; (4) clinical signs and/or symptoms, if applicable; and (5) any known epidemiological risk factors. The Department or CDC has prepared forms that may be used for many of the diseases requiring individual case reports. Copies of these case report forms are available from the Department's Division of Communicable Disease Control. An individual case report is required for the following diseases:
…
Hepatitis A, acute infection
…
(f) Confidentiality. Information reported pursuant to this section is acquired in confidence and shall not be disclosed by the local health officer except as authorized by these regulations, as required by state or federal law, or with the written consent of the individual to whom the information pertains or to the legal representative of that individual.

(1) A health officer shall disclose any information, including personal information, contained in an individual case report to state, federal or local public health officials in order to determine the existence of a disease, its likely cause or the measures necessary to stop its spread.

(2) A health officer may for purposes of his or her investigation disclose any information contained in an individual case report, including personal information, as may be necessary to prevent the spread of disease or occurrence of additional cases.

(3) A health officer may disclose any information contained in an individual case report to any person or entity if the disclosure may occur without linking the information disclosed to the individual to whom it pertains, and the purpose of the disclosure is to increase understanding of disease patterns, to develop prevention and control programs, to communicate new knowledge about a disease to the community, or for research.

(4) Notwithstanding subsections (1), (2), and (3) above, no information that would directly or indirectly identify an individual as one who has applied for or been given services for alcohol or other drug abuse by a federally assisted drug or alcohol abuse treatment program (as defined in 42 C.F.R. § 2.11) shall be included in an individual case report or otherwise disclosed absent the individual's written consent.

(g) Whenever the health officer collects personal information in order to prepare an individual case report required by subsection (b), the health officer shall notify the individual from whom the information is collected that: (1) supplying personal information related to the individual's disease is mandatory; (2) the only disclosure of personal information will be pursuant to subsections 2502(f(1) and 2502(f)(2); and (3) non-personal information may be disclosed pursuant to subsection 2502(f)(3).

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Practice of Epidemiology

Mapping Health Data: Improved Privacy Protection With Donut Method Geomasking

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* Correspondence to Dr. William C. Miller, The University of North Carolina at Chapel Hill, School of Medicine, Division of Infectious Diseases, CB #7030, Chapel Hill, NC 27599-7030 (e-mail: bill_miller@unc.edu).

Initially submitted January 29, 2010; accepted for publication July 6, 2010.

A major challenge in mapping health data is protecting patient privacy while maintaining the spatial resolution necessary for spatial surveillance and outbreak identification. A new adaptive geomasking technique, referred to as the donut method, extends current methods of random displacement by ensuring a user-defined minimum level of geoprivacy. In donut method geomasking, each geocoded address is relocated in a random direction by at least a minimum distance, but less than a maximum distance. The authors compared the donut method with current methods of random perturbation and aggregation regarding measures of privacy protection and cluster detection performance by masking multiple disease field simulations under a range of parameters. Both the donut method and random perturbation performed better than aggregation in cluster detection measures. The performance of the donut method in geoprivacy measures was at least 42.7% higher and in cluster detection measures was less than 4.8% lower than that of random perturbation. Results show that the donut method provides a consistently higher level of privacy protection with a minimal decrease in cluster detection performance, especially in areas where the risk to individual geoprivacy is greatest.

cluster analysis; confidentiality; demography; epidemiologic methods; population surveillance; public health practice

Advances in geostatistical computing have enabled epidemiologists to examine the spatial and spatio-temporal distribution of diseases by mapping patient location information. Disease maps have a wide range of applications, from hypothesis generation to public health surveillance. Assessment of the spatial heterogeneity of a disease within a specified time frame allows investigators to highlight areas with unusually high or low rates, identify spatial patterns that may indicate clusters or ''hot spots'' of disease, or obtain clues as to disease etiology and community-level risk factors through ecologic regression studies (1–3). In addition, spatial patterns of disease may change over time, possibly serving as a geographic early warning disease surveillance system when case data are mapped in real time (4, 5). At the policy level, disease maps may aid decisions regarding intervention or prevention programs, allocation of health care resources, and assessment of inequalities or provide context for further epidemiologic studies (2, 6).

In the United States, a number of laws and guidelines, such as the Public Health Service Act (1946), the Privacy Act of 1974, and the Health Insurance Portability and Accountability Act (1996), place restrictions on the collection and dissemination of data in order to protect patient confidentiality and prevent identification of individuals (7, 8). In disease mapping, publishing maps that use exact patient location information jeopardizes patients' privacy because of ''reverse geocoding'' techniques. Reverse geocoding can generate an approximate address based on a latitude and longitude (9, 10). Consequently, geographic location is considered a personal identifier that could breach patient or study subject confidentiality if known, so it presents an ethical hurdle requiring justification for inclusion in data sets and analyses. A major challenge in working with geographic health data then becomes protecting patient confidentiality while maintaining the spatial resolution necessary for small-area analyses such as outbreak and cluster detection. This problem also extends to the sharing of data with researchers and analysts. Many governmental agencies have access to sensitive information combined with address data. Sharing these data directly with researchers may compromise

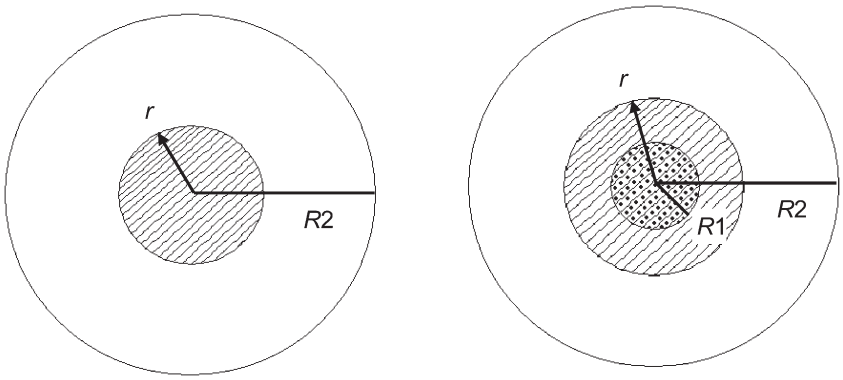

Figure 1. Comparison of random perturbation (left) and donut method (right) geomasks. For a given Max *k* geoprivacy level, the Euclidean distance *R*2 is calculated for each point from the underlying population density. The population within a circular region of radius *R*2 around a point is equal to Max *k*, with *R*2 being the maximum distance the point may be displaced from its original location. For the donut method (right), a Min *k* (dotted) is also given that defines the minimum displacement *R*1. The actual distance displaced, *r*, ranges in value from 0 to *R*2 for random perturbation (left) and from *R*1 to *R*2 for the donut method (right). The population within the circular region of radius *r* (striped) is the actual *k* achieved by the geomask.

individuals' privacy. Thus, patients' *geoprivacy* must be protected so that individuals cannot be identified through locational information (7, 11).

In response, a variety of methods have been proposed that modify the geographic coordinates of the original data set to mask patients' locational information. The aim of these geomasks is to protect patient geoprivacy while allowing for valid geographic analyses of the data (12). However, when geomasks are used, a trade-off exists between privacy protection and accuracy of analytical results (7, 8, 13). For example, the most common geomasking practice is to aggregate individual-level information to preexisting administrative or political boundaries, such as census tracts or zip codes. Although patient geoprivacy protection improves, aggregation causes a loss in data resolution. If the disease process operates at a finer resolution than the aggregated data, aggregation decreases the power, sensitivity, and specificity of detecting an excess risk (4, 7, 12, 14, 15). For example, if addresses are analyzed as center points of zip code or census tracts, spatial cluster detection algorithms perform worse than when addresses are analyzed at exact locations, particularly when case locations of a single cluster cross administrative boundaries (8). Similarly, the farther a point is moved from its original location, the greater the introduced error. This error increases the magnitude of anonymization but decreases spatial detection performance (13).

Other geomasks, such as random perturbation, have been proposed that reduce the amount of introduced error in the data set, which improves cluster detection performance but also increases the risk to patient privacy. For example, in random perturbation masking, each individual point is moved a random distance in a random direction from its original location. However, as shown in Figure 1, the randomly generated masked point may be located on or near the original coordinates. This is a problem because, while the number of individuals geomasked to their original locations may constitute only a small proportion of the overall data set, an adversary intent on reidentification may reverse geocode all points with the assumption that a few individuals will be correctly identified. Furthermore, researchers analyzing surveillance data from government agencies, such as departments of public health, may be restricted from accessing any individually identifiable health information, in which case anonymity of all individuals must be ensured before data access is granted (16). Methods are needed that protect geoprivacy without significantly affecting the accuracy of analytical results.

In this simulation, we examine a new adaptive geomasking technique, referred to as the donut method, which extends current methods of random displacement by ensuring that an address is not randomly assigned on or too near its original location. Although versions of the donut method have been proposed for use with mobile systems and environmental exposure data (16, 17), we examine the donut method here as it applies to disease mapping. In donut method geomasking, each geocoded address is relocated in a random direction by at least a minimum distance, but less than a maximum distance (10). In addition, each point is moved a distance inversely proportional to the underlying population density, which provides privacy protection while minimizing the introduced spatial error (10, 12, 13). For example, persons in high-density urban areas do not need to be moved as far as persons in low-density rural areas to achieve the same magnitude of anonymization. The donut method is an adaptive geomask because the dimensions of the mask around each point vary to meet specified anonymity constraints based on the underlying population density (16, 17). Accounting for population density variation also optimizes the donut method by minimizing the distances required for privacy protection while maximizing analytical validity.

In this implementation of the donut method, we retained each geomasked location within the administrative boundaries of the original point. Since the population at risk is often derived from areal demographics, it is important to keep geomasked points within their original administrative

boundaries to maintain each case with its associated population at risk. Doing so also allows researchers to derive accurate aggregated data without accessing the original data set since aggregation of the geomasked points matches that of the original locations. However, the donut method may be implemented without the administrative boundary restriction, depending on the research environment. We compared the donut method with simple random perturbation and aggregation to assess its effectiveness in terms of both cluster detection and protection of patient geoprivacy.

MATERIALS AND METHODS

We constructed 3 disease field simulations over a 4-county region of varying population density to assess how a health data set is affected by geomasking (Web Figure 1, the first of 2 supplementary figures posted on the *Journal*'s Web site (http://aje.oupjournals.org/)). Each disease field consisted of endemic background cases spatially distributed across the study area and 3 injected case clusters. The background cases were generated by assigning a random incidence rate, between 0 and 500 infections per 100,000 people, to each census block group. The endemic incidence rate was then combined with the 2000 US Census population to determine the number of background cases per block group, which were placed a random distance from the areal centroid but within census block group boundaries (18). We then injected 3 circular clusters into the disease field.

Cluster center points were identified in one region each of low, medium, and high population density. Cluster cases were then distributed a random distance and direction from each center point using a uniformly distributed pseudo-random number generator in the MATLAB programming environment (19). Cluster cases were also allowed to cross administrative boundaries, resulting in clusters that spanned multiple census block groups. To reflect the observed local spatial structure of an infectious disease such as gonorrhea (20, 21), the radius of each cluster was proportionate to the underlying population density. Therefore, cluster cases in the high-density area were spatially more compact than cluster cases in the low-density area. However, between disease fields, in addition to having different endemic incidence rates, the maximum cluster radius was varied manually to ensure 3 distinct data sets.

Geomask definitions

Aggregation sets the benchmark for privacy protection when comparing current geomasking methods, while random perturbation has been demonstrated to provide superior cluster detection performance. Each of the baseline disease fields was therefore masked using the donut method (Figure 1), random perturbation, and aggregation to the centroid of the census block group.

In random perturbation geomasking, points are displaced randomly within a circular region around their original locations. In donut method geomasking, points are moved at least a minimum distance and are therefore displaced in a torus, or donut-shaped region, around their original locations. With both random perturbation and the donut method, the maximum distance a point can be displaced from its original location corresponds to the outer radius $R2$ of the geomask around that point (Figure 1).

To determine $R2$, we used the k-anonymity metric, where k refers to the number of people among whom a specific deidentified cluster case cannot be reversely identified (13, 22). For example, if an individual case is moved a distance $R2$ from its original location, the k-anonymity achieved by the displacement is the population within a circular region of radius $R2$ around the original point. Conversely, given a desired k-anonymity level, $R2$ may be calculated from the underlying population density. The $R2$ radius of a particular point is the same for both random perturbation and donut method geomasks, but it will vary from point to point since cases in low-density areas need to be moved farther distances than those in high-density areas in order to achieve the same magnitude of k-anonymity. We used predefined maximum k-anonymity, or Max K, levels to calculate sets of $R2$ radii for each disease field. For the donut method, a minimum k-anonymity, or Min K, was also defined to determine the inner radius $R1$ of the torus, or the minimum distance each point was to be moved. Each disease field was geomasked at multiple Max K and Min K values to examine how changing the size of the random perturbation and donut method geomasks affected results.

To determine the actual distance and angle to move each point in random perturbation and donut method geomasking, a uniformly distributed pseudo-random number generator in MATLAB (19) was used, bounded by the condition that the new coordinates fall within the specified geomask region. Another condition was that points not be displaced out of their original administrative boundaries. Therefore, for a point located near the edge of its census block group, the geomask regions would be dissected by the block group boundaries, resembling a rough ''slice of pie'' for random perturbation and an ''eaten donut'' for the donut method. For aggregation geomasking, points were displaced to the centroid of their respective census block groups.

Since the aggregation geomask is based on administrative boundaries, it does not vary from point to point because of anonymity constraints and is therefore a ''fixed'' mask. In contrast, the donut method is an adaptive mask because the range of the mask at each point is determined by the underlying population density and user-specified minimum and maximum k-anonymity. Random perturbation may be considered ''semiadaptive'' because, while its outer radii may vary, it is not bounded by any minimum anonymity constraint.

Privacy protection

The k-anonymity metric was also used to measure privacy protection performance. As shown in Figure 1, if an individual case is moved an actual distance r from its original location, the actual k achieved by the displacement is the population within a circular region of radius r around the original point. Higher actual k values correspond to higher magnitudes of anonymization. Therefore, how well each geomask performed with respect to privacy protection was assessed by recording the actual distance that points were displaced from their original location and then calculating the actual k achieved with each method.

Cluster detection

Geomasking introduces error into the data set, which affects the performance of cluster detection algorithms such as the spatial scan statistic test implemented by the SaTScan program (8). The ideal outcome would be for geographic analysis of the geomasked data to match that of the original data set. Therefore, we compared the sensitivity and specificity of the donut method masked, random perturbation masked, and aggregated disease fields with those of the baseline (unmasked) data to assess how geomasking affected cluster detection performance.

Cluster detection performance was analyzed for each disease field iteration with the SaTScan Spatial Bernouilli Model scanning algorithm (23, 24). We used a circular scanning window to identify the most likely clusters and assign them a *P* value. We assumed spatial clustering when the *P* value of SaTScan-identified clusters was less than 0.05 on the basis of 999 Monte Carlo simulations.

Cluster detection sensitivity and specificity were calculated for each masking technique. Sensitivity was defined as the number of simulated cluster cases identified by SaTScan divided by the total number of cluster cases injected into each disease field. Specificity was defined as the number of endemic background cases *not* belonging to SaTScan clusters divided by the total number of endemic cases.

RESULTS

We examined how the donut method compared with current methods of random perturbation and aggregation in protecting patient privacy while maintaining cluster detection performance by masking multiple disease field simulations under a range of parameters. Each of the 3 disease fields consisted of approximately 2,500 endemic background cases and 150 cluster cases (3 clusters × 50 cases). We examined how the size of the random perturbation and donut method geomasks affected the results by geomasking each disease field for 10 different Max *K* levels with 20 iterations per level. Thus, a total of 600 iterations were generated for random perturbation and donut method geomasking (3 disease fields × 10 Max *K* levels × 20 iterations/level). For the donut method, Min *K* was defined as 10% of the Max *K* level.

Distance displaced and *k*-anonymity

Random perturbation and donut method geomasks protect patient privacy by displacing cases random distances from their original location within a defined region. In random perturbation geomasking, the distance that points are displaced range in value from 0 to the upper limit of *R*2, as determined by the Max *K* level and underlying population density. In donut method geomasking, distance values range from the lower limit of *R*1, as determined by the Min *K* level, to the upper limit of *R*2. We plotted density scaled histograms of the Euclidean distance moved (Figure 2a and b) and actual *k* achieved (Figure 2c and d) for all points masked using random perturbation and the donut method at a Max *K* level of 1,000 people to examine how far points in our simulation were displaced from their original locations. As shown in Figure 2a, the majority of random perturbation masked points were displaced very small distances, with the highest likelihood being a value at or near zero. Correspondingly, most random perturbation masked points had an actual *k* value of zero (Figure 2c), placing them at high risk of reidentification.

In comparison, the distance distribution of donut method masked points (Figure 2b), while also skewed toward the lower bound, had all positive values. With a Min *K* level of 100 people, all lower-bound values of *R*1 were greater than zero (Figure 2b), and donut method masked points were displaced far enough from their original locations to ensure an actual *k* value of at least the Min *K* level. As shown in Figure 2d, the minimum actual *k* value achieved with the donut method was 100 people. Compared with random perturbation, the donut method reduces risk to patient privacy by ensuring that all points achieve at least the user-defined Min *K* value.

Privacy protection performance

We examined random perturbation and donut method geomasking at 10 different Max *K* levels. As the Max *K* level increased, so did the outer radius *R*2, and thus the size, of the random perturbation and donut method geomasks around each point. Increasing geomask size increased the amount of error introduced into the data set, thereby raising the level of privacy protection. Figure 3a shows the mean actual *k* achieved by random perturbation, donut method, and aggregation geomasking, averaged across all disease field simulations, as a function of the Max *K* level. Because the distance displacements from aggregation are independent of the Max *K* level, the aggregation mean actual *k* value remains constant through the plot and serves as a benchmark against which to compare random perturbation and the donut method.

At all levels, the donut method mean actual *k* was greater than that of random perturbation, with the difference increasing as the Max *K* level increased. For Max *K* levels of less than 3,000 people, aggregation yielded a higher value than the donut method and random perturbation. However, for higher levels of Max *K*, the mean actual *k* of the donut method surpassed that of aggregation. In other words, the donut method provided a consistently higher level of patient privacy when compared with random perturbation. Compared with aggregation, the donut method performed worse at low levels of Max *K*, but, as Max *K* and the size of the geomask increased, the donut method provided increasingly higher levels of privacy protection that quickly outperformed the level achieved by aggregation.

Cluster detection performance

Increasing the amount of error introduced with greater privacy protection decreases cluster detection performance (13). Figure 3 also displays the average sensitivity (Figure 3b) and specificity (Figure 3c) from SaTScan analyses of the baseline, random perturbation masked, donut method masked, and aggregated disease fields as a function of the Max *K* level. Since the spatial distributions of points in the baseline and aggregated disease fields are independent of

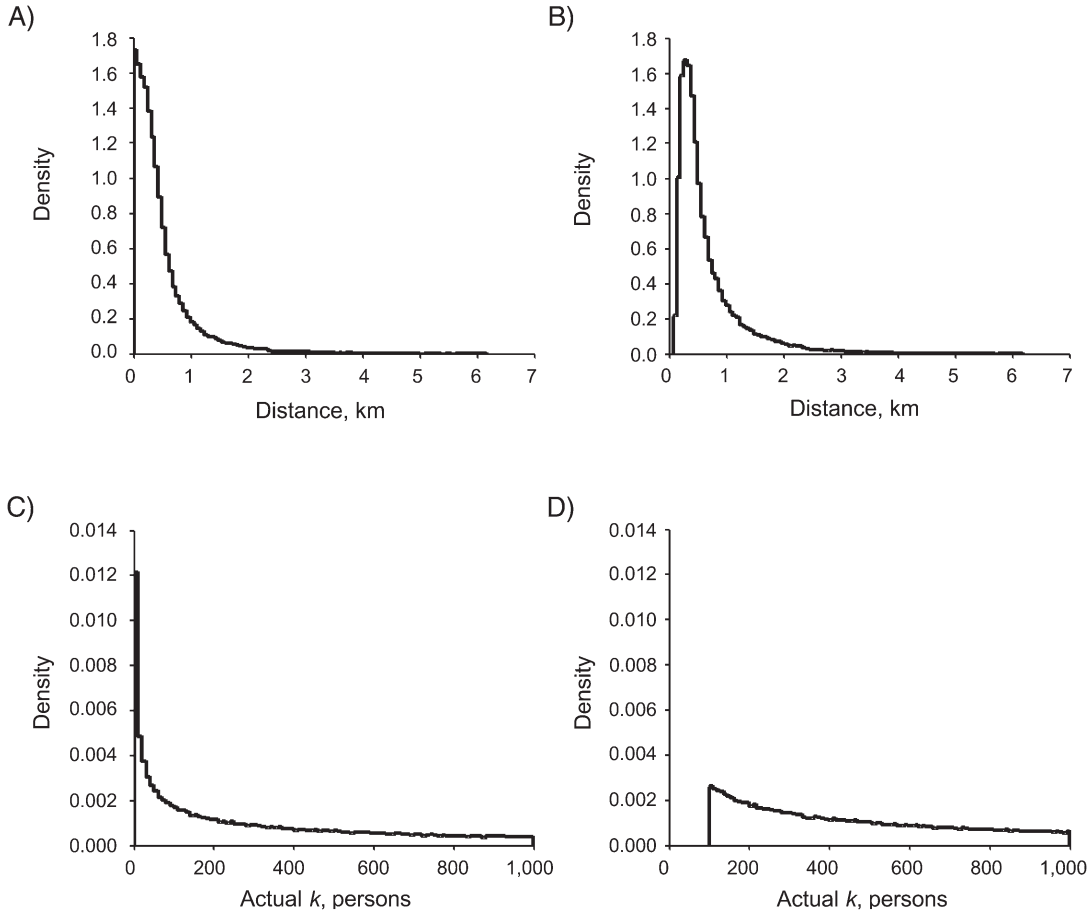

Figure 2. For a given geoprivacy level (Max $k = 1{,}000$), shown are density-scaled histograms of the A) distance displaced with random perturbation, B) distance displaced with the donut method, C) actual *k* achieved with random perturbation, and D) actual *k* achieved with the donut method (all iterations). With the donut method, points were perturbed at least a minimum distance from their original locations. Correspondingly, the donut method maintained a minimum level of *k*-anonymity with more points achieving higher actual *k* values.

the Max *K* level, their sensitivity and specificity values are also independent of Max *K* and therefore are constant through the plots. Analyses of the baseline disease fields yielded the highest average values and serve as a benchmark against which to compare the geomasked data.

With respect to sensitivity (Figure 3b), random perturbation geomasking yielded values closest to the baseline results. Donut method sensitivity values were similar to random perturbation values at low levels of Max *K*, but they diverged as Max *K* increased, particularly at levels greater than 5,000 persons. However, at all but the greatest Max *K* level, both the donut method and random perturbation performed better than aggregation. Similarly, in terms of specificity (Figure 3c), both the donut method and random perturbation yielded values that were higher than aggregation at all levels and that closely matched the baseline results. As shown in Figure 3b, the sensitivity of the donut method and random perturbation were comparable and outperformed aggregation at Max *K* levels below 5,000 persons. At higher Max *K* levels, donut method cluster detection sensitivity declined at a faster rate and performed worse than that of random perturbation.

Although Figure 3 shows the relative performance of the geomasking methods, the magnitude of the difference between geomasks is difficult to assess because of differing units between plots. To further examine the relative tradeoff between the donut method and random perturbation regarding measures of privacy protection and cluster detection, we plotted the percent change in mean actual *k*, sensitivity, and specificity values when using the donut method over random perturbation as a function of the Max *K* level (Figure 4). The percent change in mean actual *k* ranged from 42.7% to 110.5%. The percent change in sensitivity ranged from 0% to −4.8%; the percent change in specificity hovered around zero. These results show that, compared with random perturbation, the minimum percent increase in privacy protection with the donut method is approximately 9 times greater than the maximum decrease in cluster detection measures.

DISCUSSION

Aggregation is a commonly used geomasking method because of the magnitude of anonymization it provides.

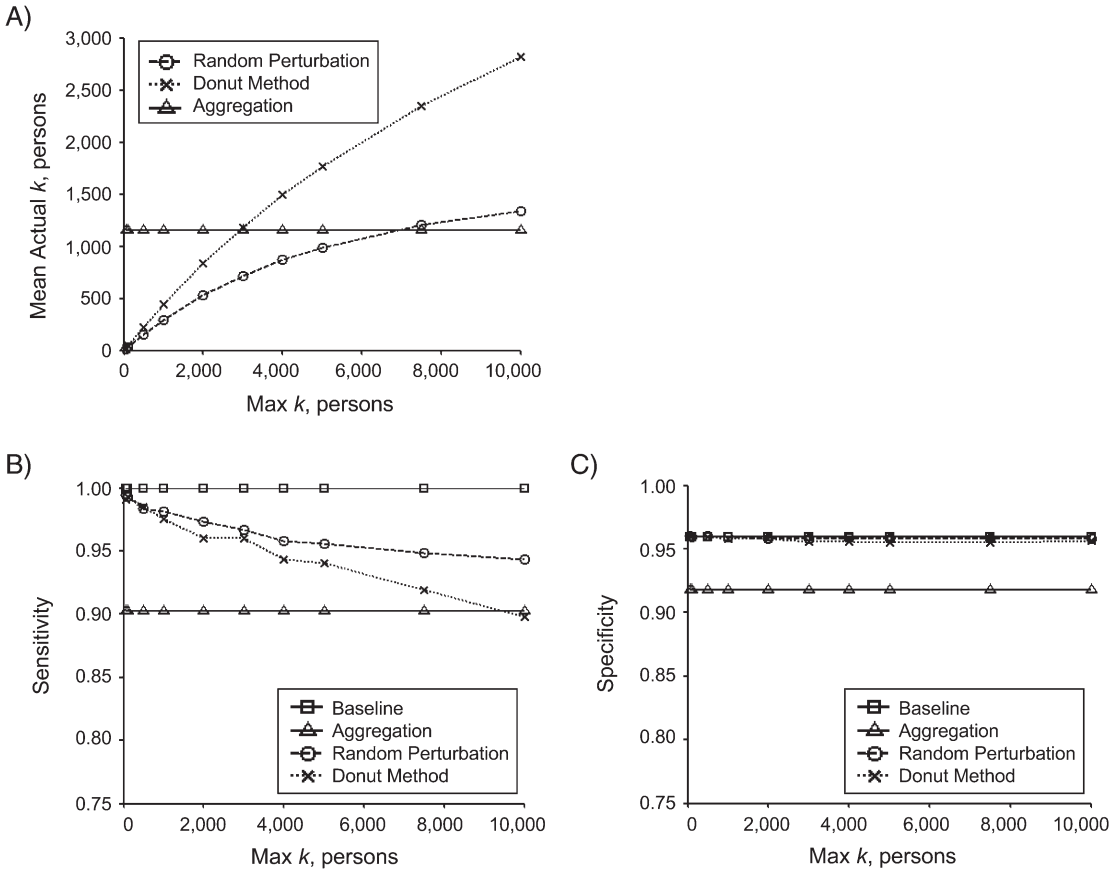

Figure 3. Average A) actual *k*, B) sensitivity, and C) specificity for random perturbation and the donut method as a function of Max *k*. At all levels, the donut method, compared with random perturbation, achieved higher average *k*-anonymity. Regarding sensitivity, both random perturbation and the donut method performed worse than baseline (no geomasking) and better than aggregation, with no significant difference in specificity.

However, particularly for local phenomena that cross administrative boundaries, aggregation obscures spatial details needed for in-depth geographic analyses. In contrast, random perturbation masking allows access to health data at the geopoint level but may not sufficiently protect patient privacy. Suggested ways to improve random perturbation include using a normal random number generator to spread out the distance distribution, but these methods do not eliminate the possibility in random perturbation that a point may be placed on or near its original location. Other proposed methods, such as linear programming (25), require specific information, such as the locations of all possible patients, that is unavailable for most study areas.

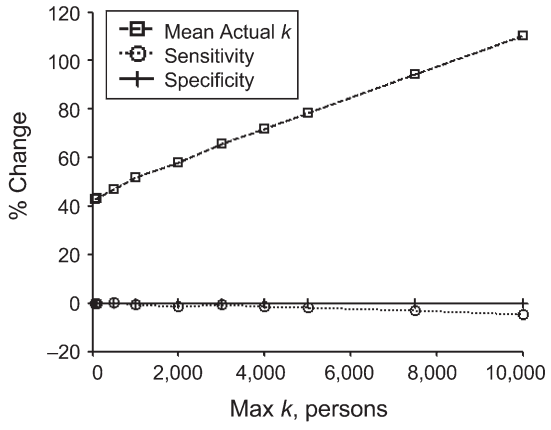

Figure 4. Average percent change between random perturbation and donut method values as a function of Max *k*. The percent change in mean actual *k* was significantly higher and increased at a faster rate than that of sensitivity and specificity.

In this simulation study, the donut method, a straightforward extension of current geomasking methods, provided a consistently higher level of privacy protection with a generally minimal decrease in cluster detection performance. The donut method was particularly valuable at low levels of *k*-anonymity where the risk to individual geoprivacy is greatest. As shown in Figures 1 and 2, the donut method relocated each case in the data set far enough from its original location to ensure at least a minimum level of anonymization. Furthermore, the donut method provides this minimum level of privacy protection without sacrificing analytical validity. Examination of actual *k* values below the 50th percentile shows that the donut method provided a clear advantage in privacy protection at lower percentiles while

maintaining the same cluster detection sensitivity as random perturbation (Web Figure 2).

Another major advantage of the donut method is the ability to solicit user input in determining the minimum and maximum levels of privacy protection. Factors such as population density, endemic disease frequency, cluster size, and social stigma associated with the disease may influence the optimal level of anonymization. In addition, the donut method is able to incorporate suggested improvements for other point geomasks, such as using demographic characteristics of the underlying population to determine the privacy protection level. For example, in addition to population density, gender- and age-based adjustments may be used to determine the inner and outer radii of the donut to account for spatial variation in population distribution patterns (13). Additional research is needed to examine the optimal parameters of the donut method geomask in real-world settings.

We used simulated data to model the spatial pattern of real-world disease fields that may not completely reflect performance with actual data. For example, while the size and shape of real-world disease clusters are often irregular, we injected circular clusters into the simulated baseline disease fields. In these analyses, we used a circular SaTScan window, which maximized the likelihood that the unmasked cluster cases would be identified. Additional research will be required to investigate the performance of geomasks when applied to real-world data sets and examined with a variety of outbreak detection tools.

With increased use of geographic information systems, geocoded addresses offer new insights and opportunities for epidemiologic research and public health planning. However, unmodified geocoded addresses threaten the privacy and confidentiality of patients and research participants. As implemented for other forms of private health and personal identifying information, obscuring individuals' locational information is critical, yet often overlooked. The donut method presented here provides researchers and public health practitioners with a flexible technique that maximizes privacy protection with minimal loss of geographic resolution to accurately detect disease clusters.

To facilitate dissemination of the donut method, source code written for the MATLAB program (19) detailing our application of this method is available on the University of North Carolina (UNC)–BMElab Web page by accessing http://www.unc.edu/depts/case/BMElab/ and clicking on the ''donutGeomask'' link in the left-hand menu. Readers interested in other versions should contact the corresponding author.

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