EPIDEMIOLOGY AND IMMUNIZATION SERVICES BRANCH

MONTHLY COMMUNICABLE DISEASE REPORT

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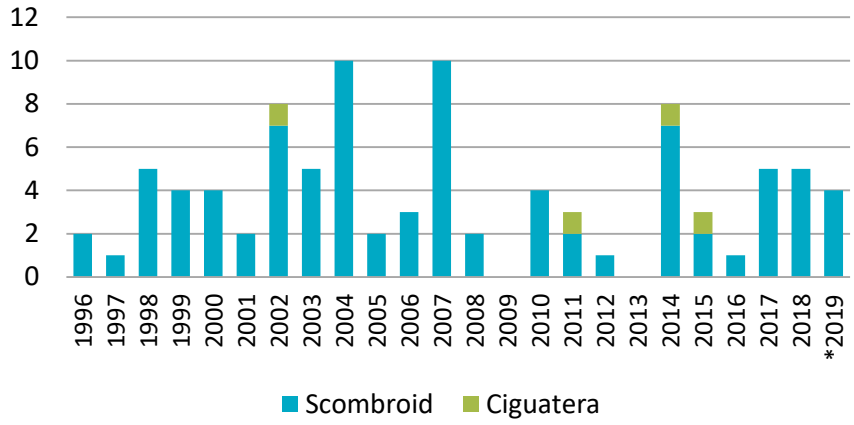
SCOMBROID AND CIGUATERA FISH POISONINGS

Scombroid and ciguatera are common causes of fish-related poisonings that can be difficult to diagnose and are underreported.

Scombroid poisoning, also referred to as histamine fish poisoning, is caused by the consumption of fish in which scombrotoxin has formed. Improper storage temperatures lead to the growth of bacteria in the fish. Histamine, a primary component of scombrotoxin, is produced when histidine decarboxylase, a by-product of the proliferation of bacteria, reacts with naturally-occurring histidine present in certain species of fish.

Figure 1. Scombroid and Ciguatera Fish Poisoning Cases, San Diego County, 1996-2019*



*2019 data are year-to-date; current as of 5/15/2019. Data are provisional and subject to change as additional information becomes available. Grouped by CDC disease years.

Dark meat fish of the Scombroidae and Scomberesocidae families, such as tuna and skipjack, are frequently responsible for poisoning. However, poisoning has occurred after eating non-scombroid fish, such as mahi-mahi and bluefish.

Once histidine decarboxylase is present, histamine can be continually produced in the fish even if the bacteria are not active. The enzyme and bacteria can be deactivated by cooking, but once histamine has been produced, it cannot be eliminated by freezing, subsequent refrigeration, or cooking. Contaminated fish may taste peppery, sharp or salty, or have a bubbly feel, but will usually look, smell, and taste normal.

Symptoms of scombroid are consistent with histamine poisoning and may include rash or hives on the upper body, tingling or burning around the mouth and throat, stomach pain, and vomiting. After consumption of contaminated fish, symptoms usually appear within 15 minutes, but may be delayed up to a few hours. Symptoms may last up to 12 hours to a few days. Severe reactions, such as a drop in blood pressure, headaches, dizziness, heart palpitations, and respiratory distress, rarely occur, but those who are at the highest risk include people who have pre-existing medical conditions or are taking certain medications, such as isoniazid.

There are currently no diagnostic tests available and cases are generally identified by symptoms and a history of eating fish a short time before symptom onset. Scombroid may be difficult to differentiate from allergic reactions; however, symptoms in a person with no prior history of food allergy or more than one person with symptoms after a shared meal with fish should prompt consideration of poisoning. Treatment with antihistamines and fluids have shown to be effective. Proper storage of fish below 4.4° C at all times between catching and consumption is the most effective preventive measure. Sensory examination of fish is not an effective means of detection and control.

Scombroid poisoning is one of the most common fish poisonings in the United States (U.S.). However, it is not nationally notifiable, so comprehensive data are not available. Data from the Centers for Disease Control and Prevention (CDC) National Outbreak Reporting System (NORS), describe 419 scombroid poisoning outbreaks,

Continued on next page

The Monthly Communicable Disease Surveillance Report is a publication of the County of San Diego Public Health Services Epidemiology and Immunization Services Branch (EISB). EISB identifies, investigates, registers, and evaluates communicable, reportable, and emerging diseases and conditions to protect the health of the community. The purpose of this report is to present trends in communicable disease in San Diego County. To subscribe to this report, visit the Statistics and Reports page on the Epidemiology Program website (www.sdepi.org) and click on the subscribe link.

SCOMBROID AND CIGUATERA, continued

with 1,555 associated cases, 49 hospitalizations, and no deaths across the U.S. between 1998-2017.

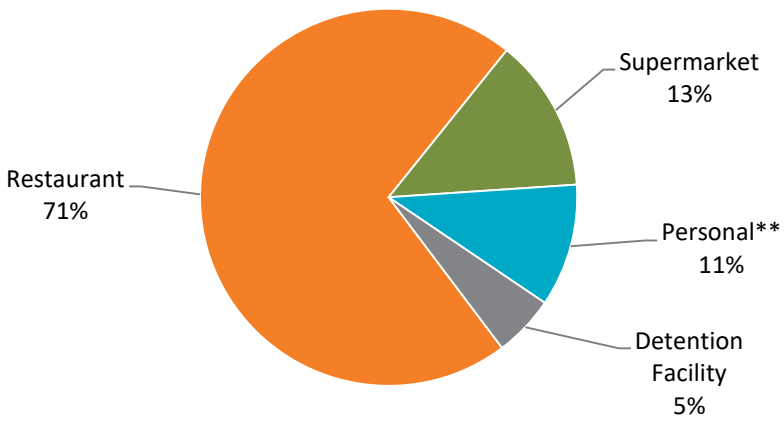
In 2018, 33 cases of scombroid poisoning were reported in California. Five cases were reported in San Diego County in 2018, and four cases have been reported to date in 2019. Due to under diagnosis and reporting, the true numbers are likely higher.

In California, ciguatera fish poisoning is also reportable to local health departments. The toxins ciguatoxin and maitotoxin originate from *Gambierdiscus toxicus* dinoflagellates that grow on marine algae. They are not destroyed by cooking or freezing. Predatory reef fish, such as barracuda, grouper, and snapper, acquire and concentrate the toxin by consuming small-bottom feeding fish that feed on marine algae.

Symptoms of ciguatera may occur within six hours after ingestion of toxic fish, or may be delayed up to 30 hours. Persons affected may present with gastrointestinal, cardiovascular, neurologic, or neuropsychiatric symptoms, which may last for a few days up to weeks, months, or years in severe cases. Patients who have recovered have experienced relapses associated with consuming fish, alcohol, caffeine, or nuts up to six months after illness. Treatment for the illness is supportive, although mannitol may be considered. The best way to prevent ciguatera is to avoid eating tropical reef fish.

No clinical tests are available to diagnose ciguatera and cases are generally identified by symptoms such as diarrhea and temperature sensitivity, a history of eating tropical reef fish, and exclusion of other causes. CDC estimates that 50,000 cases occur annually worldwide, but the illness is difficult to recognize and is likely underreported. Only four cases have been reported in San Diego County since 2002.

Figure 2. Scombroid Cases by Location Fish was Obtained, San Diego County, 2004-2019* (N=38)



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**Personal defined as fish caught personally or received from someone who caught it.

Resources

- Centers for Disease Control and Prevention (CDC) Yellow Book: Food Poisoning from Marine Toxins
- CDC Fish Poisoning in Travelers: Ciguatera and Scombroid
- California Department of Public Health (CDPH) Scombroid Fish Poisoning website
- CDPH Ciguatera Fish Poisoning website
- Food and Drug Administration (FDA) Fish and Fishery Products Hazards and Control Guidance
- FDA Bad Bug Book

Suspected cases of either scombroid or ciguatera fish poisoning should be reported immediately to the County of San Diego Public Health Services (PHS). If one fish is implicated in causing illness, there is concern that fish from the same lot may also be affected and potentially cause illness in others.

When a scombroid or ciguatera fish poisoning case is reported to PHS, the County of San Diego Department of Environmental Health (DEH) is immediately notified. DEH responds to a report of scombroid or ciguatera as a priority, meaning that the facility is contacted that same day or within 24 hours to ensure any remaining fish are destroyed. When DEH receives a report of a suspected case of scombroid or ciguatera, they inspect the facility to determine if fish from the same lot are still on site. If so, DEH will ask the facility to voluntarily destroy the fish.

Prompt reporting helps prevent additional poisonings.

Table 1. Select Reportable Diseases		2019			Prior Years		
Disease and Case Inclusion Criteria (C,P,S)		Current Month	Prior Month	Year-to-Date (YTD)	2018 YTD	Avg YTD, Prior 3 Years	2018 Total
Amebiasis	C	1	3	6	4	3.0	10
Botulism (Foodborne, Infant, Wound, Other)	C,P	0	0	0	9	3.7	11
Brucellosis	C,P	0	0	1	1	2.0	1
Campylobacteriosis	C,P	81	80	278	191	221.7	827
Chickenpox, Hospitalization or Death	C,P	0	0	0	0	0.3	4
Chikungunya	C,P	0	0	0	0	0.3	5
Coccidioidomycosis	C	15	17	106	113	72.0	295
Cryptosporidiosis	C,P	4	2	13	16	11.0	90
Dengue Virus Infection	C,P	2	0	2	2	4.0	8
Encephalitis, All	C	3	3	10	20	18.3	60
Giardiasis	C,P	18	17	75	95	100.3	227
Hepatitis A, Acute	C	4	1	6	19	38.7	35
Hepatitis B, Acute	C	0	0	2	5	4.0	9
Hepatitis B, Chronic	C,P	14	20	253	287	293.3	874
Hepatitis C, Acute	C,P	2	3	10	1	0.7	1
Hepatitis C, Chronic	C,P	260	316	1,201	1,516	1,094.3	4,194
Legionellosis	C	4	3	17	16	19.0	53
Listeriosis	C	1	0	2	2	4.0	13
Lyme Disease	C,P	2	0	2	3	2.7	13
Malaria	C	0	2	2	3	2.0	7
Measles (Rubeola)	C	0	0	0	0	0.7	0
Meningitis, Aseptic/Viral	C,P,S	7	8	33	28	32.7	129
Meningitis, Bacterial	C,P,S	2	2	11	23	17.0	35
Meningitis, Other/Unknown	C	1	1	4	4	8.7	16
Meningococcal Disease	C,P	2	1	6	3	1.0	11
Mumps	C,P	1	2	9	3	7.3	9
Pertussis	C,P,S	28	50	182	308	247.3	648
Rabies, Animal	C	0	0	0	4	3.0	7
Rocky Mountain Spotted Fever	C,P	0	0	0	0	0.3	1
Salmonellosis (Non-Typhoid/Non-Paratyphoid)	C,P	40	48	146	167	136.0	772
Shiga toxin-Producing *E. coli* (including O157)	C,P	9	16	40	32	18.0	171
Shigellosis	C,P	25	20	112	74	67.7	386
Typhoid Fever	C,P	1	0	6	0	1.0	4
Vibriosis	C,P	2	2	10	4	7.3	57
West Nile Virus Infection	C,P	0	0	0	0	0.0	3
Yersiniosis	C,P	7	3	15	8	10.3	26
Zika Virus	C,P	2	0	3	2	6.0	7

Case counts are provisional and subject to change as additional information becomes available. Cases are grouped into calendar months and calendar years on the basis of the earliest of the following dates: onset, lab specimen collection, diagnosis, death, and report received. Counts may differ from previously or subsequently reported counts due to differences in inclusion or grouping criteria, late reporting, or updated case information. Inclusion criteria (C,P,S = Confirmed, Probable, Suspect) based on Council of State and Territorial Epidemiologists/Centers for Disease Control and Prevention (CSTE/CDC) surveillance case criteria.

Figure 3. Select Enteric Infections by Month
May 2018 – April 2019

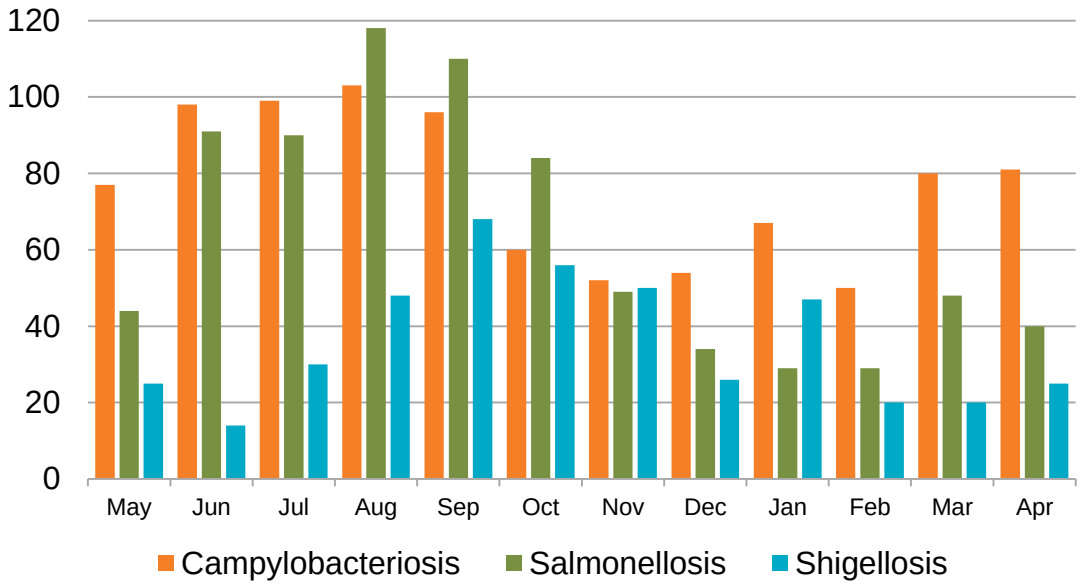

Figure 4. Select Vaccine-Preventable Infections by Month
May 2018 – April 2019

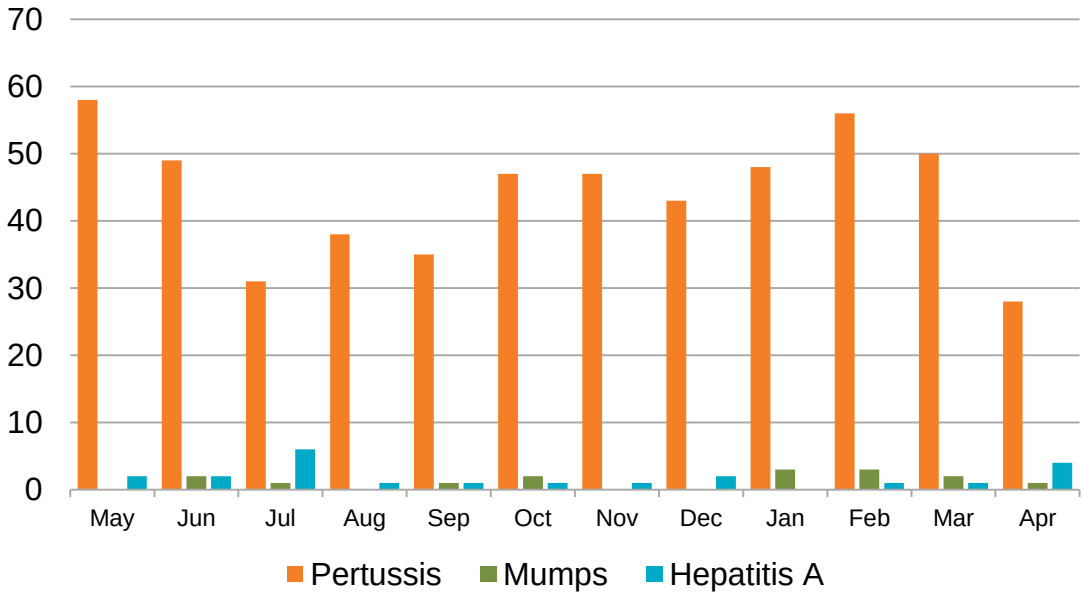

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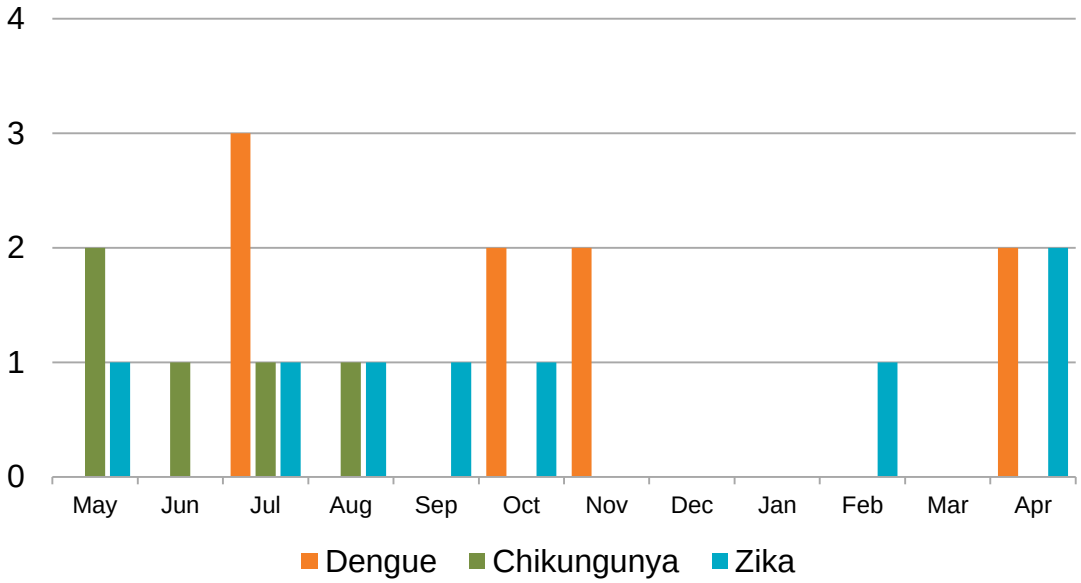
Figure 5. Select Vector-Borne Infections by Month
May 2018 – April 2019



All of these dengue, chikungunya, and Zika virus cases are travel-associated. For additional information on Zika cases, see the HHSA Zika Virus webpage. ***Case counts are provisional and subject to change as additional information becomes available.*** Cases are grouped into calendar months and calendar years on the basis of the earliest of the following dates: onset, lab specimen collection, diagnosis, death, and report received. Counts may differ from previously or subsequently reported counts due to differences in inclusion or grouping criteria, late reporting, or updated case information. Inclusion criteria (C,P,S = Confirmed, Probable, Suspect) based on Council of State and Territorial Epidemiologists/Centers for Disease Control and Prevention (CSTE/CDC) surveillance case criteria.

Disease Reporting in San Diego County

San Diego County communicable disease surveillance is a collaborative effort among Public Health Services, hospitals, medical providers, laboratories, and the San Diego Health Connect Health Information Exchange (HIE). The data presented in this report are the result of this effort.

Reporting is crucial for disease surveillance and detection of disease outbreaks. Under the California Code of Regulations, Title 17 (Sections 2500, 2505, and 2508), public health professionals, medical providers, laboratories, schools, and others are mandated to report more than 80 diseases or conditions to San Diego County Health and Human Services Agency.

To report a communicable disease, contact the Epidemiology Program by phone at (619) 692-8499 or download and print a Confidential Morbidity Report form and fax it to (858) 715-6458. For urgent matters on evenings, weekends or holidays, dial (858) 565-5255 and ask for the Epidemiology Program duty officer. For more information, including a complete list of reportable diseases and conditions in California, visit the Epidemiology Program website, www.sdepi.org.

Tuberculosis, sexually transmitted infections, and HIV disease are covered by other programs within Public Health Services. For information about reporting and data related to these conditions, search for the relevant program on the Public Health Services website, http://www.sandiegocounty.gov/content/sdc/hhsa/programs/phs.html.