US VIRGIN ISLANDS DEPARTMENT OF HEALTH

Epidemiology Division

2021 Annual Report

Justa Encarnacion
Health Commissioner
Virgin Islands Department of Health

Message from the Commissioner

The goal of the Virgin Islands Department of Health (VIDOH) is to protect and improve the health of U.S. Virgin Islands residents through science, policy, partnership, and evidence-based public health action. There have been tremendous developments in epidemiology over the last few decades, including research, analytical methods, and surveillance. As the Territorial Epidemiologist, Dr. Esther Ellis continues to achieve outstanding results utilizing the principles of epidemiology, especially in the face of the COVID-19 pandemic. The Epidemiology Division (VIDOH-EPI) provides the data that drive policy decisions and guide public health mitigation efforts. I would like to thank the dedicated and hardworking team from Epidemiology and the Public Health Laboratory for their contribution to public health and their partnership in supporting our mission to "reduce health risks, increase access to quality healthcare, and enforce health standards," particularly for their pivotal involvement in the response to the COVID-19 pandemic. This has shifted the way in which VIDOH-EPI thinks, operates, and executes relative to infectious disease threats and future outbreak response activities. I would also like to thank our great network of healthcare providers, and to make the call to continue to participate in disease reporting beyond COVID-19.

Justa Encarnacion, RN, BSN, MBS/HCM

Dr. Nicole Syms
Assistant Commissioner
Virgin Islands Department of Health

Message from the Assistant Commissioner

The Epidemiology Division of the Virgin Islands Department of Health (VIDOH-EPI) is critical in maintaining public health surveillance in the Territory. This division has been vital in producing infectious disease data analysis for our community. The Epidemiology Division is a multi-disciplinary division, understanding the causes of infectious diseases within the Territory while improving local surveillance methods.

Together, we:

• Focus on research related to understanding the determinants of health and diseases in our population.

• Utilize data from the population with the goal of improving overall clinical care and achieving better health outcomes.
• Monitor notifiable diseases reported by health care professionals and assist with investigation and public health interventions.
• Provide education and consultation to health care professionals and community groups and members.

Keeping our islands safe from emerging disease is a collective effort, with VIDOH-EPI at the helm.

Nicole Syms, PhD

Message from the Director

Marking the eighth year since the establishment of the Epidemiology Division under my lead, this report continues to document our response to the priorities established by the VIDOH and the Virgin Islands community. For VIDOH-EPI, 2021 was a year defined by continued focus on the management of the COVID-19 pandemic locally. While our efforts were largely targeted to pandemic response, we have strived to perform outside of these duties as illustrated in this report.

We must remain vigilant and prepared to identify and respond to current as well as emerging health threats. VIDOH-EPI tirelessly works on building capacity so that we are ready and well-equipped to address any future public health challenges.

VIDOH-EPI has diligently served the public and will remain a driving force for public health surveillance in the U.S. Virgin Islands. In 2021 and beyond, VIDOH-EPI continues to build on joint efforts to rapidly respond to emerging health threats, modernize interdepartmental data sharing, and fully establish the Territory's first Public Health Laboratory.

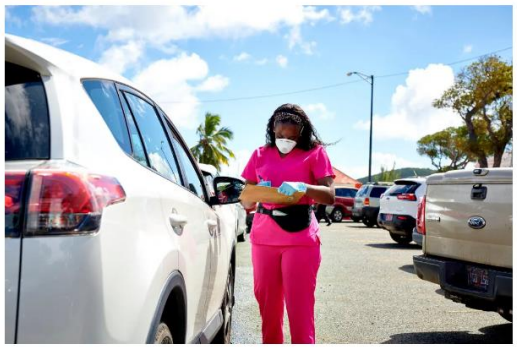
I invite you to help us in sharing this information with our community. Please click or scan the QR code on the right to download the PDF and share with other stakeholders.

Esther M. Ellis, PhD

Dr. Esther Ellis
Territorial Epidemiologist,
Director,
Epidemiology Division

"I AM PROUD OF OUR WORK AND CONTINUED SERVICE TO THE COMMUNITY OF THE U.S. VIRGIN ISLANDS AS TOGETHER, WE FACE THE COVID-19 PANDEMIC."

https://bit.ly/epivi-reports



In Search of a Vaccine, Some Tourists Find Luck in the Caribbean

Roughly 3 percent of vaccines in the U.S. Virgin Islands have gone to tourists, the governor said this week. "Nowhere else in the U.S. can you actually just walk in and get the vaccine," he said.

A pop-up coronavirus testing site by the U.S. Virgin Islands Department of Health in a parking lot in Charlette Amalie on Saint Thomas last month. Gabby Jones for The New York Times

CDC Foundation COVID-19 surge staffing team member, Nickee Hernandez, featured in the *New York Times*.
Source: New York Times, Melinda Moyer and Gabby Jones

Table of Contents

Sociodemographic Characteristics of the United States Virgin Islands (USVI)

The USVI is a U.S. territory located between the Atlantic Ocean and the Caribbean Sea, consisting of four major islands: Saint Croix (STX), Saint Thomas (STT), Saint John (STJ), and Water Island (WI). The USVI covers approximately 133 square miles of combined land area (approximately twice the area of the District of Columbia). USVI is located 40-50 miles east of Puerto Rico and extends from west to east ~60 miles at the top of the arc of the other Caribbean Islands. Compared to the U.S. Census Bureau 2010 Decennial Census of Island Areas (DECIA) for USVI*, the 2020 DECIA indicated that the population of the USVI decreased by 19,259 (-18.1%) residents for a remaining total of 87,146 residents. This decrease differed by island. STX reported a decrease of 9,957 (-19%) residents, STT reported a decrease of 9,373 residents (-18.2%), and STJ reported a decrease of 289 (-6.9%) residents.

Race and Ethnicity
In 2020, the racial distribution of USVI included 67,768 (77.8%) residents identifying as Black or African American, 11,584 (13.3%) residents as White, 910 (1.0%) residents as Asian, 371 (0.4%) residents as American Indian and Alaskan Native, 51 (0.1%) residents as Native Hawaiian or Other Pacific Islander, 5,478 (6.3%) residents as some other race, and 6,569 (7.5%) residents as two or more races. A total of 16,075 (18.4%) residents identified as having Hispanic ethnicity. Approximately 1/3 of the population is foreign-born with familial and cultural ties elsewhere, primarily in the Caribbean.

Age
The median age in 2020 was 45.9 years, a 6.7-year increase from the estimated median age of 39.2 years reported in 2010. The median age has consistently increased since 2000 (median 33.4 years), indicating an aging population. In 2020, 14,165 USVI residents (16.2%) were ≤ 14 years, while 32,134 (36.9%) residents were ≥ 55 years. Approximately 19,468 (22%) residents were between 25 to 44 years old. In 2020, 9,553 (24.1%) households reported a resident under the age of 18 years, whereas 14,602 (36.8%) households reported a resident 65 years of age and older.

Current Sex
In the 2020 DECIA, approximately 49% of the USVI population were reported as male sex and 51% were reported as female sex.

Insurance
Of the 84,630 persons reported by households in the 2020 DECIA, the number of individuals without insurance was 20,825 (24.6%). Of the 63,805 (75.4%) insured individuals, 46.6% had private health insurance and 37.2% had medical assistance. The proportion of uninsured persons in the USVI in 2020 (24.6%) was almost three times the national estimate for uninsured persons (8.6%) in 2020.

Educational Attainment
In 2020, 38.8% of residents ≥ 25 years had at least a high school diploma, while only 22.3% had a bachelor's degree or higher.

Language
According to the 2020 DECIA, 69.8% of USVI residents ≥ 5 years spoke only English at home. Of the 30.2% who reported speaking another language at home, 56.9% spoke Spanish, 29.3% spoke French Creole, and 13.8% spoke a language other than Spanish or French Creole.

Household Income
In 2019, the median household income in the USVI was $40,408 (in 2019 inflation-adjusted dollars), which is considerably lower than the U.S. median household income of $67,521, and lower than the USVI household median income in 2009 of $44,499. A greater portion of USVI households have a household income of < $25,000 per year compared to the overall U.S. (32.9% vs 18.1%). In 2020, the unemployment rate for USVI was 9.7%.

Country of Birth
In 2020, 47% (39,916) of the USVI population were born in USVI, 8.1% (15,396) of residents were born in the U.S. or other U.S. island area or Puerto Rico, and 34.8% (29,579) of residents were born elsewhere (predominantly in Latin American or the Caribbean).

The Epidemiology Division

The VIDOH-EPI conducts surveillance of nationally notifiable diseases (NNDs) needed for Territorial disease monitoring, analysis, and timely reporting of findings to guide public health policy and decision-making. The VIDOH-EPI and the Public Health Laboratory (PHL) are funded through the Epidemiology and Laboratory Capacity for Infectious Diseases Cooperative Agreement from the U.S. Centers for Disease Control and Prevention (CDC).

Why is surveillance needed?

According to the Caribbean Tourism Organization, the region experienced record travel of 32 million people in 2019; with 2,074,009 visitors to the USVI (USVI Bureau of Economic Research). The unprecedented impact of the COVID-19 pandemic and our experience with the 2017 hurricanes highlighted the importance of establishing local capacity for the execution of emergency epidemiology.

Surveillance allows VIDOH-EPI:

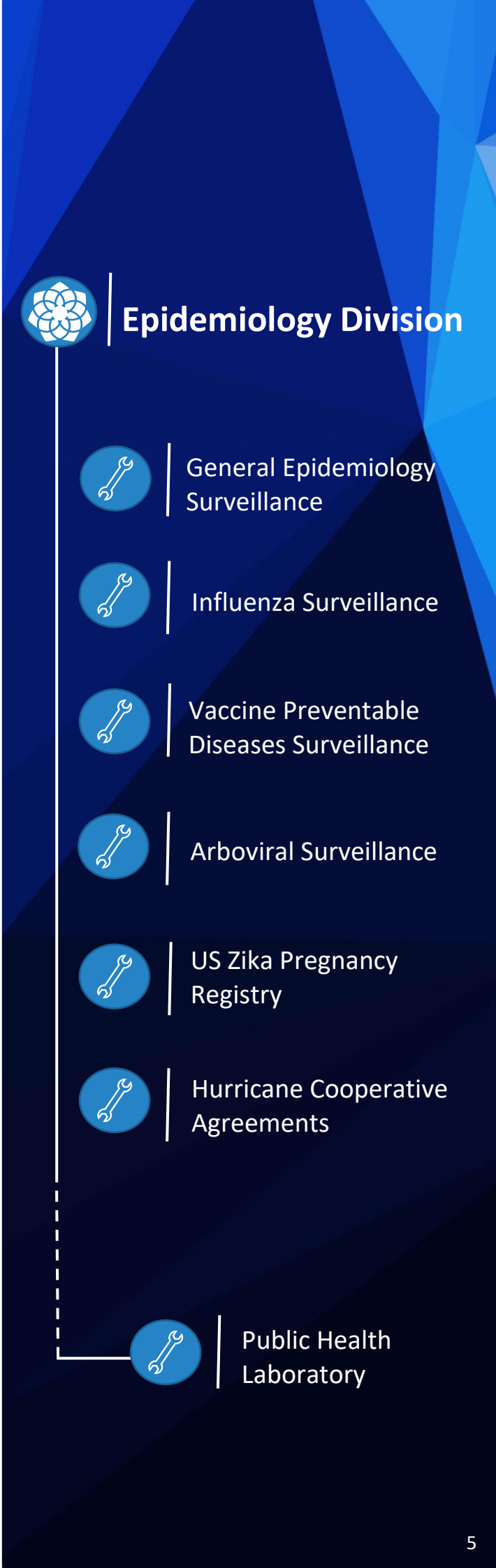
- To quickly identify and respond to public health emergencies.
- To document the impact of an intervention or progress towards specified public health goals.
- To monitor and understand the epidemiology of a condition to set priorities and guide public health policy and interventions.

VIDOH-EPI Programs and Priorities

VIDOH-EPI primarily coordinates infectious disease epidemiology across the territory. Currently, VIDOH-EPI is made up of the General Epidemiology Program, the Vaccine Preventable Diseases Surveillance Program, the Influenza Surveillance Program, the U.S. Zika Pregnancy Registry Program, and several Hurricane Cooperation Agreements. VIDOH-EPI works together with the USVI Public Health Laboratory (PHL) to process any specimens collected during an investigation and to conduct vector control surveillance efforts.

Together, these programs aim to:

- Monitor outbreaks, support regional disease detection, and respond rapidly to emergencies.
- Conduct effective disease surveillance and build a strong outbreak response system.
- Sustain and strengthen partnerships with the public and private sector, non-governmental organizations (NGOs), and federal partners.



VIDOH-EPI epidemiologists, Hannah Cranford, MPH, and Cosme Harrison, MPH, set up for COVID-19 daily drive-through testing in Saint Thomas, 2021.

Zula Battiste performs COVID-19 testing as part of school testing efforts at the All Saints Cathedral School in Saint Thomas, 2021.

VIDOH-EPI: Our mission

To provide efficient epidemiological services that will enhance public health practice and facilitate a continuum of care to the community of the U.S. Virgin Islands.

Together, EPI works territory wide to:

Respond quickly to threats posed by infectious diseases like Zika virus and the novel SARS-CoV-2 coronavirus.

Implement evidence-based prevention programs for nationally notifiable diseases and conditions.

Detect and report outbreaks from leading disease threats by training public health stakeholders to build a ready workforce and enhance local capacity.

Increase epidemiology and laboratory capacity in the territory.

Strengthen public health infrastructure and information systems needed for data-driven decision-making and faster local action.

Develop and evaluate new tools and approaches to combat emerging health threats.

SNAPSHOT

VIDOH-EPI Accomplishments 2021

VIDOH-EPI worked closely with key local and federal partners, including the CDC, in response to the COVID-19 pandemic. Notably, we assisted the Virgin Islands Lottery by managing the COVID-19 vaccine registry data for all Vax-to-Win events. In addition, as part of the COVID-19 Task Force activities, we assisted with COVID-19 test verifications for incoming travelers in collaboration with the Department of Tourism's USVI Travel Portal and led the effort to establish and manage the digital vaccination pass platform (Polaris Key).

During 2021, VIDOH-EPI in collaboration with our Public Health Laboratory and Territorial healthcare providers, carried out a total of 218,723 COVID-19 tests for a cumulative total of 254,989. VIDOH-EPI also provided key technical support to Community Vaccination Centers across USVI. A total of 8,514 confirmed cases of COVID-19 were identified and investigated during 2021.

Despite the increased workload, VIDOH-EPI published 5 peer-reviewed scientific publications in 2021. These publications cover a range of topics including longitudinal surveillance of mother-baby preparedness for emerging threats, ocular findings in children examined during the 2018 Zika Health Brigade, characterization of Leptospira spp. in USVI, as well as rabies biosurveillance in known wild animal reservoirs. VIDOH-EPI is proud to represent the USVI in the scientific community across a wide range of infectious diseases.

Together with VIDOH leadership, VIDOH-EPI participated in ongoing messaging efforts to provide accurate COVID-19 response information to the community. These included weekly radio shows, Government House Press Briefings, Government House *The Box*, and social media. Our COVID-19 mobile testing efforts (known as "popup testing") and COVID-19 response teams were featured in a March 2021 article from *The New York Times*.

USVI Notifiable Conditions

Category A
Acute Flaccid Myelitis
Anthrax
Botulism
Brucellosis
Cholera
Coronavirus (novel, including SARS)
CP-CRE
Diptheria
E.coli (O 157)
Encephalitis
Enterovirus D-68
Foodborne Outbreak
Haemophilus influenzae
Influenza (novel and seasonal)
Legionellosis
Measles
Meningitis
Pertussis
Plague
Poliomyelitis
Rabies
Rubella
Q Fever
Smallpox
Tuberculosis
Tularemia
Typhoid
Typhus
Viral Hemorrhagic Fever (including Ebola)
Waterborne Outbreak
West Nile
Yellow Fever

Category B
Anaplasmosis
Chancroid
Chlamydia
Ciguatera
Ehrlichiosis
Gonorrhea
Hansen's Disease
Hanta Virus Pulmonary Syndrome
Hemolytic Uremia Syndrome
Hepatitis A
Hepatitis B
Hepatitis C
HIV/AIDS
Malaria
Psittacosis
Staph aureus (drug resistant)
Streptococcus pneumoniae
Syphilis
Trichinosis
Vancomycin Resistant *Enterococcus* (VRE)
Staph. Aureus (VRSA)

Category C
Babesiosis
Campylobacter
Chickenpox (Varicella)
Coccidiomycosis
Cryptosporidiosis
Cyclosporiasis
Giardia
Listeriosis
Lyme Disease
Mumps
Salmonellosis
Shigellosis
Spotted Fever
Tetanus
Toxic Shock Syndrome
Vibriosis

The reporting of nationally notifiable diseases to VIDOH by healthcare providers is required by law in the U.S. Virgin Islands.

Disease Reporting in the USVI

Overview
The reporting of Nationally Notifiable Diseases (NNDs) to VIDOH by healthcare providers is required by law in the USVI. The current list of USVI Notifiable Conditions can be accessed here (left panel).

Diseases are reported using two primary forms, the Notification of Infectious Diseases Form (EPI-1) and the Dengue, Chikungunya, Zika, and Febrile Illness Reporting Form (EPI-2) The EPI-1 form is included on the next page for immediate referral. Additionally, VIDOH-EPI uses disease-specific surveillance and investigation forms for case-based investigation requirements of all NNDs.

What
In addition to NNDs, any outbreaks, exotic diseases, and unusual group expression of disease must be reported. All diseases require the reporting of patient information, including name, age, sex, race/ethnicity, date of birth (DOB), address and estate, telephone number, disease, date of onset, and symptomology. Other required information includes the method of diagnosis, laboratory result (if applicable), date of diagnosis, as well as the name, address, and telephone number of the reporting health care provider.

When
Cases or suspected cases of illness considered to be public health emergencies, outbreaks, exotic diseases, and unusual group expressions of disease must be reported to the VIDOH immediately (Category A). Other diseases for which there must be a quick public health response must be reported within two working days (Category B). All other conditions must be reported within four working days (Category C).

How
Reporting forms can be downloaded from the VIDOH website and are regularly updated. **In case of emergency (Category A, select Category B conditions or major outbreak/incident), reports can be made by telephone to the Territorial Epidemiologist at (340) 626-1654 as indicated in the EPI-1 form instructions.**

Summary
- Disease reporting of notifiable diseases to VIDOH is required by law in the USVI.
- Unusual diseases or outbreaks of any kind should be reported immediately.
- Report diseases by following the instructions in the EPI-1 or EPI-2 forms. These and all investigation forms can be downloaded here.

EPI-1
Revised August 2020

Notification of Infectious Disease Form

Emergency Phone: (340) 626-1654, Territorial Epidemiology Fax: 1-888-400-8620
Fax HIV/STD reports to the Communicable Diseases Division Fax: 1-612-712-7878

This form may be used to ***report suspected cases and cases of notifiable conditions*** in the US Virgin Islands (USVI), listed with their reporting time frames on the current USVI Notifiable Conditions List 2020. In addition, **any outbreak, exotic disease, or unusual group expression of disease** that may be of public health concern should be reported by the most expeditious means available. A Health Department epidemiologist will contact you if further investigation is required.

Source of Information: ☐ Private Physician ☐ Private Laboratory ☐ Hospital ☐ Clinic ☐ School

Date of Report: (mm/dd/yyyy)

Island: ☐ St. Croix ☐ St. John ☐ St. Thomas ☐ Water Island

Name of Physician or Person Reporting

Physician/Reporter Address

Physician/Reporter Phone ( ) - extension

Admitted to Hospital? ☐ No ☐ Yes
Date Admitted:
Date Discharged:

Disease Fatal? ☐ No ☐ Yes
Date of Death:

Parent/Guardian: (if applicable)

Patient Name (Last) **(First)** **(MI)**

Telephone: ( ) -
Other:

Address (indicate ESTATE) City State Zip Code Country

Date of Birth (mm/dd/yyyy) Age

Gender: ☐ M ☐ F ☐ Other

Ethnicity: ☐ Hispanic ☐ Not Hispanic

Race: ☐ Black ☐ White ☐ Asian ☐ Unknown ☐ Other:

*Notes, comments, or additional information such as **pregnancy status (EDD), occupation (food handler), school name/grade, daycare facility, travel history***

Category A -- Report IMMEDIATELY to the USVI Department of Health

SERIOUS PUBLIC HEALTH RISK. Make an IMMEDIATE telephone report to the USVI Department of Health at 626-1654 then send the completed form IMMEDIATELY (within 24 hrs) by fax to 1-888-400-8620. If an immediate report is required after regular working hours, please call 626-1654.

- ☐ Acute Flaccid Myelitis
- ☐ Anthrax
- ☐ Botulism
- ☐ Brucellosis
- ☐ Cholera
- ☐ Coronavirus, novel, including SARS
- ☐ CP-CRE
- ☐ Diphtheria
- ☐ *E. coli* (O157)
- ☐ Encephalitis
- ☐ Enterovirus D-68
- ☐ Foodborne Outbreak
- ☐ *Haemophilus influenzae*
- ☐ Influenza, novel and seasonal
- ☐ Legionnellosis
- ☐ Measles
- ☐ Meningitis
- ☐ Pertussis
- ☐ Plague
- ☐ Poliomyelitis
- ☐ Rabies
- ☐ Rubella
- ☐ Q Fever
- ☐ Smallpox
- ☐ Tuberculosis
- ☐ Tularemia
- ☐ Typhoid
- ☐ Typhus
- ☐ Viral Hemorrhagic Fever, including Ebola
- ☐ Waterborne Outbreak
- ☐ West Nile
- ☐ Yellow Fever

Category B -- Report WITHIN 48 HOURS to the USVI Department of Health

SIGNIFICANT PUBLIC HEALTH RISK. These should be reported within 48 hours to the USVI Department of Health. A completed copy of the form must be faxed to 1-888-400-8620. A telephone report to 626-1654 is only required for those diseases indicated by the (*).

- ☐ Anaplasmosis
- ☐ Chancroid
- ☐ Chlamydia
- ☐ Ciguatera
- ☐ Ehrlichiosis
- ☐ Gonorrhea
- ☐ Hansen's Disease*
- ☐ Hanta Virus Pulmonary Syndrome*
- ☐ Hemolytic Uremic Syndrome
- ☐ Hepatitis A*
- ☐ Hepatitis B
- ☐ Hepatitis C
- ☐ HIV/AIDS
- ☐ Malaria
- ☐ Psittacosis
- ☐ Staph. aureus (drug resistant)
- ☐ Streptococcus pneumoniae
- ☐ Syphilis*
- ☐ Trichinosis

Vancomycin Resistant:
- ☐ *Enterococcus*
- ☐ Staph

Category C -- Report PROMPTLY WITHIN 96 HOURS to the USVI Department of Health

Should be reported promptly to the USVI Department of Health. A completed form must be faxed to 1-888-400-8620.

- ☐ Babebiosis
- ☐ Campylobacter
- ☐ Chickenpox (varicella)
- ☐ Coccidioidomycosis
- ☐ Cryptosporidiosis
- ☐ Cyclosporiasis
- ☐ Giardia
- ☐ Listeriosis
- ☐ Lyme Disease
- ☐ Mumps
- ☐ Salmonellosis
- ☐ Shigellosis
- ☐ Spotted Fever
- ☐ Tetanus
- ☐ Toxic Shock Syndrome
- ☐ Vibriosis

☐ **Other disease, please specify:**

Diagnosis Status
☐ Suspect Case ☐ Confirmed Case

Diagnostic Criteria:
☐ Symptoms ☐ Laboratory

Clinical Information
Treatment Provided? ☐ No ☐ Yes Specify Treatment:

Earliest Symptom Onset Date: (mm/dd/yyyy)

Clinical Symptoms:

Laboratory Results:

Date 1 (mm/dd/yyyy)		Test Name 1		Result 1	
Date 2 (mm/dd/yyyy)		Test Name 2		Result 2	
Date 3 (mm/dd/yyyy)		Test Name 3		Result 3	

Information collected is confidential pursuant to the Health Insurance Portability and Accountability Act of 1996 (HIPAA) and reports will be maintained by the US Virgin Islands Department of Health. All reports other than HIV should be faxed to Dr. Esther Ellis at 718-1508 (Charles Harwood Complex, 3500 Estate Richmond, Christiansted, St. Croix, VI 00820). **HIV/STD reports should be forwarded to the HIV/STD Program at secure fax 1-612-712-7878.** PLEASE NOTE: THE REPORTING OF NOTIFIABLE DISEASES TO THE DEPARTMENT OF HEALTH IS REQUIRED BY LAW IN THE US VIRGIN ISLANDS. Fulfilling this requirement will by no means negate your responsibility to report similar information to other agencies or programs with which you have collaborative agreements.

Disease Surveillance and Trends in the USVI

The National Notifiable Disease Surveillance System (NNDSS) serves as a mechanism for local, state, and territorial health agencies to notify the CDC of cases that present a public health concern. The Virgin Islands National Electronics Disease Surveillance System (VI-NEDSS) Base System (NBS) was implemented in 2014.

Report Specifics

This report provides an overview of the 2021 USVI reported cases by program area. This report excludes cases under the jurisdiction of the Communicable Diseases Division (CDD): sexually transmitted diseases, human immunodeficiency virus, and tuberculosis.

VI-NEDSS

During the COVID-19 pandemic, VIDOH-EPI has worked towards onboarding critical healthcare providers and laboratories in the territory to report notifiable conditions via electronic lab reports (ELR) to ensure timely reporting of NNDs to NEDSS.

While measuring the impact of these implementation efforts will require monitoring of outcomes over time and across multiple diseases, current trends in VIDOH disease-reporting and surveillance can be analyzed via three metrics: 1) USVI-NEDSS use, 2) the number of onboarded direct electronic laboratory reporting partners, and 3) the number of onboarded adjunct electronic laboratory reporting system users.

Since VIDOH-EPI was established in 2014, USVI-NEDSS use has steadily increased. During the COVID-19 pandemic, VIDOH-EPI achieved major advances in data modernization which increased disease reporting and surveillance. All new reporting partners onboarded during 2021 were focused solely on COVID-19 laboratory reporting. This onboarding increase has served as an initial foundation for future multi-disease reporting capacity. Between January 2021 and December 2021, there was a 162.5% increase in the number of private laboratories or local hospitals onboarded to direct ELR reporting. During 2021, adjunct electronic laboratory reporting was made available for a total of 75 local providers for COVID-19 laboratory reporting.

Annellie Gumbs collects specimens for COVID-19 rapid antigen tests during enhanced surveillance efforts at a drive-thru testing site in Saint Thomas, 2021.

Saint Croix VIDOH-EPI team after receiving their first COVID-19 vaccination in December 2020.

Foodborne and Waterborne Diseases Surveillance

For 2021, VIDOH-EPI investigations resulted in six confirmed cases of salmonellosis. Three confirmed cases of legionellosis were identified in USVI residents for 2021, with no travel-associated cases. VIDOH-EPI cooperated with CDC and other state health departments to provide one travel notification for a travel-related, non-USVI case who disembarked from a cruise ship after travel in other states during their suspected exposure window.

General Communicable Diseases Surveillance

Healthcare-Associated Infections (HAI)

VIDOH uses the CDC National Healthcare Safety Network (NHSN) to track healthcare metrics that identify needs and measure progress of HAI prevention efforts in facilities who actively report. In 2021, remote and in-person hospital facility assessments were conducted in response to several infection control concerns.

For 2021, NHSN reports included 25 dialysis events, seven central line-associated bloodstream infections (CLABSI), 10 ventilator-associated events (VAE), seven catheter-associated urinary tract infections (CAUTI), and three surgical site infection (SSI). Of note, one CAUTI and one SSI were caused by carbapenem-resistant Enterobacterales (CRE). Organisms identified contributing to HAIs are: Klebsiella spp., four events; Enterococcus spp., six events; Pseudomonas spp., four events; Enterobacter spp., one event; Staphylococcus spp., one event; Escherichia spp., one event.

Hepatitis Surveillance

Reported 2021 events reflect two confirmed or probable cases of acute Hepatitis A virus infection, 17 confirmed or probable chronic Hepatitis B virus infections, 39 confirmed or probable acute hepatitis C virus infections, along with seven confirmed or probable acute Hepatitis C virus infections.

Influenza Surveillance

VIDOH-EPI reports weekly to the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet) which is used to produce a national weekly influenza surveillance report called FluView. For ILINet, ILI is defined as fever (temperature of 100°F [37.8°C] or greater) and a cough or sore throat without a known cause other than influenza.

In 2021, USVI received seven positive laboratory reports for influenza out of a total of 1091 influenza laboratory test reports.

For questions regarding the Influenza Surveillance Program please call (340) 718-1311 Ext. 3840 or email joy.joseph@doh.vi.gov.

Vaccine Preventable Diseases (VPDs) Surveillance

For a complete list of VPDs click here.

Three VPDs require enhanced surveillance measures: acute flaccid myelitis (AFM), meningococcal disease *(Neisseria meningitidis*), and chickenpox (varicella). For VIDOH, enhanced surveillance includes collecting additional variables to understand the development of these diseases in the community. For 2021, VIDOH-EPI investigated and confirmed one case of varicella.

Other Reportable Conditions

VIDOH-EPI continues to monitor other emerging conditions and syndromes of concern. For 2021, VIDOH-EPI investigated two confirmed cases of Multisystem Inflammatory Syndrome in Children (MIS-C).

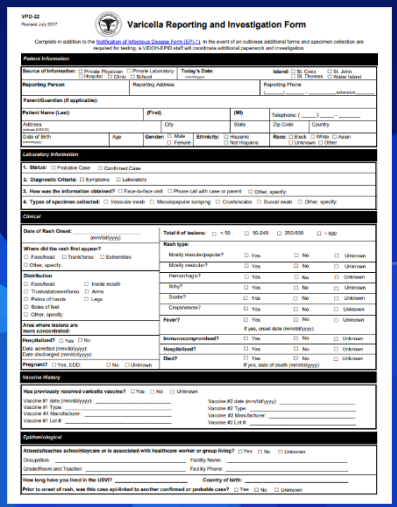
Reported Case Count for General Communicable Diseases

Condition	Cases
Dengue	2 confirmed
Hepatitis A, acute	2 confirmed or probable
Hepatitis B, chronic	17 confirmed or probable
Hepatitis C, chronic or resolved	39 confirmed or probable
Hepatitis C, acute	7 confirmed or probable
Legionellosis	3 confirmed
Lyme Disease	3 travel-associated
Multisystem Inflammatory Syndrome in Children (MIS-C)	2 confirmed
Novel Coronavirus (nCoV)	8,514 confirmed
Salmonellosis (excluding *S. typhi/paratyhi*)	6 confirmed
Varicella (Chickenpox)	1 confirmed
Zika Virus Disease	1 confirmed

Dr. Irene Guendel
Vaccine Preventable Diseases Epidemiologist

"VPD SURVEILLANCE INDICATORS HAVE BEEN USEFUL FOR IDENTIFYING MAJOR PROBLEMS WITH CASE INVESTIGATION AND REPORTING. MOST IMPORTANTLY, GIVEN THE SMALL NUMBER OF CASES OF MOST VPDS NOW REPORTED IN THE USVI, A CRITICAL ISSUE REMAINING IS THE SENSITIVITY OF THE SURVEILLANCE SYSTEM."

Download the varicella investigation form (VPD-22) here.


VPD-22
Varicella Reporting and Investigation Form

Cosme Harrison, MPH
USZPIR Epidemiologist
Epidemiology Division

"VIDOH-EPI WILL CONTINUE TO MONITOR THE DEVELOPMENTAL PROGRESS OF USVI CHILDREN IN THE ZIKA PREGNANCY AND INFANT REGISTRY UNTIL AGE FIVE."

VIDOH-EPID staff and federal partners host the 2021 Pediatric Specialty Clinic at the Maternal Child Health clinic in Saint Thomas, 2021.

Vectorborne and Environmental Diseases

Arboviral refers to viruses that are transmitted by mosquitoes, ticks, or other arthropods. Examples include the Zika, chikungunya, dengue, and yellow fever viruses. VIDOH-EPI uses a specialized database called ArboNET for arboviral surveillance. In addition, cases are also reported into VI-NEDSS through electronic laboratory reports (ELRs).

There were no arboviral outbreaks in the USVI in 2021. A total of two confirmed cases of dengue and one confirmed case of Zika were investigated. There were no confirmed cases of chikungunya. VIDOH-EPI investigated three travel-associated confirmed cases of Lyme disease.

Zika Surveillance and the U.S. Zika Pregnancy and Infant Registry (USZPIR)

Since February 2016, VIDOH-EPI has been working to monitor the effects of maternal Zika infection in children in the USVI. VIDOH continued collaboration with laboratories, hospitals, obstetricians/gynecologists, pediatricians, and other community partners and government agencies to provide services to the community for prevention and care. During 2016–2018 VIDOH tested 3,583 pregnant women. 292 had laboratory evidence of Zika virus. Out of these 292 pregnancies, VIDOH-EPI and the Maternal Child Health Division are following 119 infants born to Zika-positive mothers at 2, 6, 12, 18, 24, 30, 36, 48 and 60 months to monitor development. Data on Zika virus cases are stored in our local ArboNET database and cases among pregnant women and infants are reported to the USZPIR.

After being postponed in 2020, the Pediatric Specialty Clinic was successfully hosted in March 2021 as a follow-up to the work of the 2018 Zika Health Brigade. This clinic expanded eligibility to all children 5 years and younger and was held in partnership with the CDC. Over a two-week period, 176 children were seen for specialty exams in audiology, development, neurology, and ophthalmology. The goal of this clinic was to help ensure children in this age range are on target with developmental milestones and provide linkage to clinical resources within the USVI. One hundred and fifteen children were provided referrals for continued specialty care, with neurology accounting for the largest number of referrals. Furthermore, 64 children were recommended to start or continue speech therapy. VIDOH-EPI will continue to monitor the developmental progress of USVI children in the Zika Pregnancy and Infant Registry until age five.

For questions regarding the Zika Surveillance and the U.S. Zika Pregnancy and Infant Registry (USZPIR) please call (340) 774-7477 ext. 5645 or email cosme.harrison@doh.vi.gov.

Hurricane Cooperation Agreement Projects

Leptospirosis Surveillance

After the emergence of leptospirosis post-hurricanes Irma and Maria, VIDOH commenced a series of investigations during 2019-2020 to characterize the presence of Leptospira spp., the pathogenic bacteria that cause leptospirosis. The results, published in 2021, indicated a seropositivity of 37.6% with varying serogroups identified in animals examined. These data show that livestock in USVI harbor pathogenic Leptospira bacteria and could play a role in the zoonotic cycle of leptospirosis.

Similarly, we carried out a cross-sectional study to investigate Leptospira spp. exposure and carriage in the small Indian mongoose (*Urva auropunctata*) population that is prevalent across all three major islands. We successfully isolated and identified Leptospira spp. in mongooses through different methods, highlighting the potential role of mongooses as a wildlife reservoir of leptospirosis. Consequently, mongooses could be a source of Leptospira spp. infections for other wildlife, domestic animals, and humans.

Rabies Surveillance

Rabies is a viral disease that affects the nervous system of humans and other mammals. Mongooses, a nonnative species, are a known reservoir of rabies virus in the Caribbean region. VIDOH-EPI carried out a cross-sectional study of mongooses at 41 field sites on STX, STT, and STJ during 2019 and 2020. This study, published in 2021, determined the absence of both rabies virus by antigen testing and rabies virus exposure by antibody testing in mongoose populations on all three islands.

USVI is the first Caribbean jurisdiction to determine freedom-from rabies for its mongoose populations with a robust cross-sectional study. Ongoing surveillance activities will determine if other domestic and wildlife populations in USVI are rabies-free.

For questions regarding these projects, please email hannah.cranford@doh.vi.gov.

VIDOH-EPID staff and federal partners host the 2021 Pediatric Specialty Clinic at the Maternal Child Health clinic in Saint Croix, 2021.

Deployed EIS Officers carry out mongoose biosurveillance efforts in St. Thomas, 2020.

Dr. Valerie Mac provides on-site technical assistance to staff at the Saint John Community Vaccination Center, 2021.

Rachel Conhoff records abattoir employee information during a follow-up visit where Dr. Valerie Mac offered serology testing in Saint Croix, 2021.

The Epidemic Intelligence Service in USVI

Dr. Valerie Mac is now in her second year as the VIDOH-EPI Epidemic Intelligence Service Officer (EISO). In 2021, she continued to collaborate with local NGOs, private medical providers, scientists from other federal agencies, and CDC deployers for COVID-19 response activities. Dr. Mac provided technical assistance for the implementation of best practices for Community Vaccine Centers in STX and STJ, as well as investigated numerous COVID-19 clusters across diverse settings.

In addition, she led an international deployment team to the British Virgin Islands (BVI) to provide technical assistance for the implementation of COVID-19 rapid testing and rapid electronic results reporting at ports of entry and community settings. As a result, USVI and BVI partnered to expand access to COVID-19 vaccination in USVI for adolescents living in BVI while successfully navigating strict international travel requirements. Over the course of two months, this partnership resulted in the completion of a successful vaccination mission where over 50 BVI adolescents traveled to USVI to complete their COVID-19 vaccination primary series. In another travel-related project, Dr. Mac utilized data from the USVI Department of Tourism's Travel Portal to design and implement a project to describe the prevalence of falsified lab reports submitted to the mandatory Travel Portal system. Of 85,597 laboratory reports, 182 (0.21%) were flagged for review for falsification concerns. Of these 182 reports, 30 (16.5%) reports were confirmed as valid, 118 (64.8%) reports remained unverified because of non-response from the issuing laboratory, and 34 (18.7%) reports were verified as having falsified collection dates, personal or sample identifiers, or test results.

Dr. Mac also led a *Brucella suis* field investigation over six months for STX abattoir workers who had been exposed during work duties, led several Legionnaires' disease field investigations, and presented findings and guidance on the prevention of Legionnaires' disease to the public at various community events.

At the end of 2021, she worked with fellow EISOs and the CDC Dengue Branch in Puerto Rico to design a dengue serosurvey and health outreach program for school-aged children to be implemented in 2022.

COVID-19 Pandemic Epidemiological Response, 2021

VIDOH-EPI is proud to have led the USVI response to the unprecedented COVID-19 pandemic during 2020 and 2021.

Collectively we:

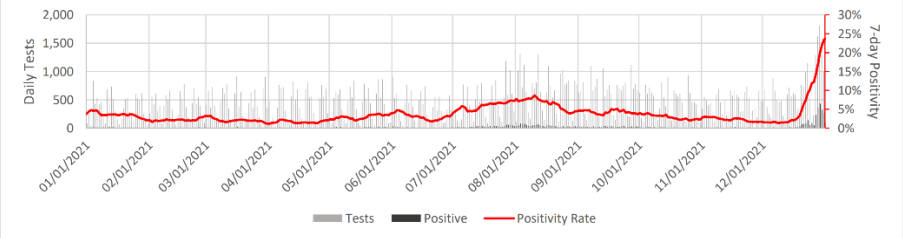
- Responded to 26,000 hotline calls in 2021, with a total of 40,139 calls from March 5th, 2020, through December 31st, 2021.

- After completing over 200,000 tests, VIDOH-EPI detected a total of 8,514 positive cases during 2021.

<u>2021 COVID-19 case demographics:</u>

- Sex:
  - 3,712 (44%) male.
  - 4,768 (56%) female.
  - 34 (0.4%) unknown sex.
- Jurisdiction:
  - 4,214 (50%) detected in STT and WI, with 31 fatalities.
  - 3,985 (47%) detected in STX, with 31 fatalities.
  - 315 (3%) detected in STJ, with 4 fatalities.
- Age:
  - Majority of cases among individuals 30-49 years.
  - Median age of 34 years.

In 2021, we continued efforts to contain and mitigate outbreaks caused by the SARS-Cov-2 B.1.617.2 (Delta) and SARS-Cov-2 B.1.1.529 (Omicron) variants. After the Delta variant peak in August 2021, the rate of positive tests in the USVI remained steady from September 2021 until the beginning of December 2021 when the Omicron variant was identified in USVI. The incidence of positive tests spiked in mid-December 2021 (figure).



COVID-19 Surveillance in Schools

To support the safe return of in-person classes at USVI schools during 2021, VIDOH commenced targeted surveillance at schools throughout all three major islands:

- The first school testing event took place on January 7th, 2021.
- A total of 306 testing events took place.
- Overall, a total of 7,321 tests were administered with a 0.27% positivity rate.
  - A total of 2,413 tests were administered in the STX district with a 0.29% positivity rate.
  - A total of 4,908 tests were administered in the STT/STJ district with a 0.26% positivity rate.

VIDOH will continue to work with the USVI Department of Education and private schools to conduct accurate and timely surveillance.

Commissioner Justa Encarnacion and Dr. Esther Ellis discuss the COVID-19 pandemic in weekly programming, Saint Croix, 2021.

The first ferry in the USVI-BVI COVID-19 vaccination mission traveled from Tortola to Saint John with over 50 adolescents seeking COVID-19 vaccination, 2021.

Justa Encarnacion
Health Commissioner
Virgin Islands Department of Health

"THANK YOU TO ALL OF OUR REPORTING PROVIDERS! ONLY YOU CAN HELP US MONITOR DISEASE TRENDS IN OUR COMMUNITY AS WE STRIVE FOR A HEALTHIER US VIRGIN ISLANDS."

Scientific Publications & Presentations

1. Woodworth KR, et al. **A Preparedness Model for Mother-Baby Linked Longitudinal Surveillance for Emerging Threats**. Matern Child Health J. 25(2):198-206 (2021)

2. Prakalapakorn SG, et al. **Ocular Findings and Visual Function in Children Examined during the Zika Health Brigade in the US Virgin Islands**, March 2018. Trop Med Infect Dis. 6(2):66 (2021)

3. Cranford H, et al. **Exposure and Carriage of Pathogenic Leptospira in Livestock in St. Croix, U.S. Virgin Islands**. Trop Med Infect Dis. 6(2):85 (2021)

4. Browne S, et al. **Determination of freedom-from-rabies for small Indian mongoose populations in the United States Virgin Islands**, 2019-2020. PLoS Negl Trop Dis. 15(7):e0009536 (2021)

5. Cranford H, et al. **Mongooses (*Urva* auropunctata) as reservoir hosts of Leptospira species in the United States Virgin Islands**, 2019-2020. PLoS Negl Trop Dis. 15(11):e0009859 (2021)

6. Council of State and Territorial Epidemiologists (CSTE) Annual Conference 2021. **Prevalence of *E. coli* in Household Cistern Water in the U.S. Virgin Islands**. Cranford H, et al. Session Format: Virtual Oral Presentation. (June 2021)

KNOW YOUR REPORTING TOOLS!

- Epidemiology Division's website.
- General surveillance forms at VIDOH-EPI general surveillance forms.
- Vaccine preventable diseases investigation forms at VPD surveillance forms.
- Job aids for clinicians on collecting the correct specimens for enhanced surveillance of vaccine preventable diseases at specimen guidance.

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