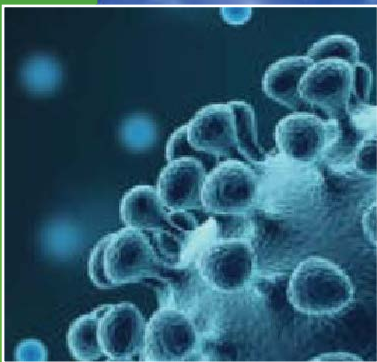
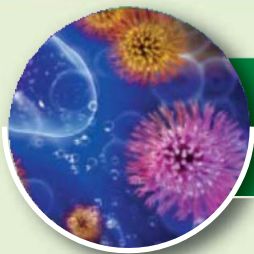


REPORT ON INFECTIOUS DISEASE 2013-2017

Montgomery County, Maryland





Report on Infectious Disease, 2013-2017

Montgomery County, Maryland

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Report on Infectious Disease, 2013-2017

Montgomery County, Maryland

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Report on Infectious Disease, 2013-2017

Montgomery County, Maryland

HEALTH OFFICER'S MESSAGE

Dear Residents:

Disease surveillance is a fundamental component of public health practice. Our task is to disseminate this information in a clear, digestible manner, so that the data can be used to drive practice innovation, policy analysis, preventative methods, health promotion messages, and planning activities related to public health.

This report highlights the infectious disease trends in Montgomery County. Of particular note, the county has experienced an increase in sexually transmitted infections (e.g. gonorrhea, chlamydia) that mirror state and national trends, and a rise in both active and latent tuberculosis cases. Additionally, this report highlights Department of Health and Human Services programs and efforts that play a significant role in combatting infectious diseases through disease surveillance, prevention and control.

Sincerely,

Travis Gayles, MD, PhD
County Health Officer



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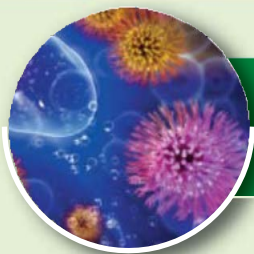
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Report on Infectious Disease, 2013-2017

Montgomery County, Maryland

EXECUTIVE SUMMARY

Overall, Montgomery County performs better than state and national averages related to measuring the burden of infectious disease. A closer examination of the overall averages, however, reveals a number of conditions with increasing trends, and demonstrated disparities by race/ethnicity, age, sex, and geographic area that warrant further analysis. It is critical to highlight these areas, to better target efforts and resources to meet the evolving needs of a changing population in the County. The major findings of infectious diseases and conditions examined in this report are summarized below.

Demographics and Social Determinants

- (1) The County's population is becoming more diverse over time; the percentages of NH-Black and Hispanic residents have increased while the NH-White population is decreasing.
- (2) In 2016 an increasing percentage of families are living in poverty in the County; however, the County's overall level (4.7%) is lower than Maryland's (6.8%) and much lower than that of the U.S. (11.0%); the Hispanic and NH-Black groups had the highest levels.

Reportable Diseases (e.g. Salmonellosis, Vibriosis, Legionellosis, Pertussis, Lyme Disease, etc.)

- (1) The County has comparable or lower rates of most reportable diseases than Maryland.

Tuberculosis

- (1) The County has higher rates of Tuberculosis than Maryland and the U.S. over the past 5 years.
- (2) Asian and PI residents have the highest TB rates, as compared to other groups. Residents ages 25-44 have the highest TB rates, followed by ages 20-24.

Sexually Transmitted Infections

- (1) Though consistently lower than the Maryland and the U.S., the sexually transmitted infections (chlamydia, gonorrhea, and syphilis) in the County have increasing trends.
- (2) While females have higher rates of chlamydia, males have higher rates of gonorrhea and syphilis for sexually transmitted infections. NH-Blacks have the highest rates of sexually transmitted infections than other groups.
- (3) Residents aged 20-24 have the highest rates of chlamydia and gonorrhea, followed by ages 15-19. Residents aged 25-44 have the highest syphilis rates, followed by ages 20-24.

HIV

- (1) The County has lower rates than Maryland but higher than the U.S. over the years with decreasing trend.
- (2) Males have higher HIV rates, NH-Blacks have the highest HIV rates.

DHHS Programs

DHHS programs within Communicable Disease and Epidemiology play an important role in disease surveillance, control, and prevention of infectious diseases serving Montgomery County residents. These programs work closely with state and federal agencies to reduce disease burdens and improve population health in the County.

INTRODUCTION

Montgomery County is the most populous county in Maryland with a population estimate of over 1.6 million in 2017 from the U.S. Census; it also has the highest percentage (29.2%) of residents over 25 years of age who hold post-graduate degrees. In 2011, it was ranked by *Forbes* as the 10th richest in the country, with a median household income of \$92,213 [1]. Montgomery County has a very diverse population and there is an increasing trend towards becoming more diverse over time. In 2017, there were 43.8% Non-Hispanic White, 18.3% Non-Hispanic Black, 15.4% Asian/Pacific Islander, and 19.6% Hispanic or Latino based on the estimate from U.S. Census. Of the County's population, 32.6% were born outside the U.S.

Montgomery County has had the highest overall health outcomes ranking in Maryland since 2014, based on the County Health Rankings by the Robert Wood Johnson Foundation [2]. However, ongoing efforts are needed to make improvements in the areas of access to health care, health inequities, and unhealthy behaviors. Though doing better than the state average and other jurisdictions in most health outcomes, there is an increasing trend related to the burden of infectious disease over time in the county. This report provides an overview of most common reportable communicable diseases and disease burden in Montgomery County, compared to Maryland and the U.S. for the period 2013-2017. It also includes information on programs within DHHS that provide services to county residents with infectious disease in terms of types of services and clients served. Most of these programs are in the Division of Communicable Disease and Epidemiology within Public Health Services.

Reportable Disease Surveillance

A system for collecting information on the occurrence of communicable diseases is one of the most important functions of public health. Systematic, timely communicable disease surveillance allows us to calculate fluctuations in disease rates so that we can identify and control outbreaks quickly. This system, known as reportable disease surveillance (a component of public health surveillance), has grown and evolved in the United States since colonial times. In 1741, the then-colony of Rhode Island passed a law requiring tavern keepers to report contagious diseases. During the nineteenth century, the sanitary movement and awareness of microbes as disease-causing agents led to several state-level initiatives that require reporting of communicable diseases. By 1925, following the 1918-1919 influenza pandemic, all states had begun participating in national disease reporting [3].

How are diseases selected for surveillance?

Conducting public health surveillance costs time and money; therefore, criteria are needed for deciding which diseases should be reportable. These criteria can be broken into three broad categories:

Public health importance of the problem

- ☐ How common the condition is (incidence, prevalence)?
- ☐ Severity, including long term effects
- ☐ Mortality rate
- ☐ Socioeconomic impact
- ☐ Communicability (how easily it is transmitted)
- ☐ Potential for an outbreak
- ☐ Public perception and concern
- ☐ International requirements

Ability to prevent, control, or treat the problem

- ☐ Preventability
- ☐ Availability of control measures and treatment

Capacity of a health system to implement control measures for the health problem

- ☐ Speed of response
- ☐ Economics
- ☐ Availability of resources
- ☐ What surveillance of this event requires [4]

Reportable disease surveillance relies on health care providers and clinical laboratories to notify public health agencies when they suspect a patient has a reportable disease. In Maryland, reportable diseases should be reported directly to the county health departments. A list of reportable diseases at the state and national levels is available in Appendix A.

This report is organized into three major sections: (1) the summary of infectious disease burden by year, sex, race/ethnicity, and age; (2) DHHS program services and clients, and (3) the appendices. Here are the features of this report:

- ☐ A section on prevention is included to illustrate the importance of prevention at different levels to reduce disease burden.
- ☐ Comparison of disease rates by sex, race/ethnicity, age (where appropriate), and geographic areas are included to illustrate the disparities of risks associated with disease burden.
- ☐ Trends in disease burden over time are examined by disease and condition, to illustrate the effectiveness of prevention and intervention programs.
- ☐ Comparisons of disease rates between sub-county areas (i.e. Zip Codes) and the county overall through Geographic Information System (GIS) mapping are available to identify potential risks of diseases associated with different life styles and possible environmental/occupational exposures.
- ☐ Comparison of disease rates between the County, Maryland and U.S. are made where appropriate.

- ☐ Information from the 2015 Maryland Behavioral Risk Factor Surveillance System (BRFSS) and 2016 Maryland Youth Risk Behavior Survey (YRBS) is included to provide information on risk behaviors and prevalence pertinent to health outcomes.
- ☐ Information from the Healthy People 2020 is included to provide a benchmark for the progress made and areas for ongoing efforts.
- ☐ Technical notes are included in the appendices to provide information on methodological issues.
- ☐ List of reportable diseases and conditions in Maryland is provided in the appendices.
- ☐ Sources of additional information are included in the appendices.

Department of Health and Human Services

The Department of Health and Human Services is responsible for public health and human services that help address the needs of our community's most vulnerable children, adults and seniors. DHHS has more than 130 programs and delivers services in more than 20 locations. Additionally, services are provided in 205 public schools. DHHS's core services protect the community's health, protect the health and safety of at-risk children and vulnerable adults, and address basic human needs including food, shelter and clothing. The five main service areas of DHHS include Aging and Disability Services; Behavioral Health and Crisis Services; Children, Youth and Family Services; Public Health Services and Services to End and Prevent Homelessness. Additionally, the Office of Community Affairs provides direct services through several programs. DHHS has more than 1,700 employees and provides services to more than 120,000 clients annually (one in every eight residents).

Office of Planning and Epidemiology

DHHS Public Health Services includes Cancer Screening Programs, Communicable Diseases and Emergency Preparedness, Community Health Services, Health Care for the Uninsured, Planning and Epidemiology, Licensure and Regulatory Services, and School Health Services.

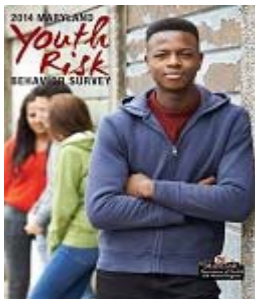
The Office of Planning and Epidemiology serves as the expert in planning and analytic epidemiology within DHHS and is responsible for community health needs assessment, program evaluations, disease surveillance and outbreak investigations, health statistics and data management, epidemiology and biostatistics, ongoing development and maintenance of a population data warehouse, and special research projects in collaboration with internal and external partners and academic institutions.

PREVENTION

Many types of health conditions may be prevented, and considerable progress continues to be made to improve the quality of life and survival for people with these conditions. Prevention strategies are based on the natural history of disease development, and are categorized into three levels of intervention.

Primary prevention – is to limit the occurrence of health conditions by controlling exposure to risk factors or increasing an individual’s resistance to them (e.g., through physical exercise). The first step is to identify the relevant exposures and to assess their impact on the risk of developing disease in the population. For example, consuming recommended fruits and vegetables and exercising may help reduce cholesterol and prevent cardiovascular diseases. For infectious diseases, immunization is the most familiar and important example of primary prevention. However, vaccines are not available for all infectious diseases. Other examples of primary prevention include pre- and post-exposure prophylaxis. This refers to prevention methods for people who are either at high risk of becoming exposed to an infection (pre-exposure), or who are believed to have already been exposed to an infectious disease. The key difference between prophylaxis and immunization is that while immunizations offer long-term protection by working with the body’s immune system, prophylaxis can be thought of as preventive measures or medicines that stop an infection that may soon happen or that is in its early, pre-symptomatic stages. Prophylaxis alone does not give lasting immunity. In this report, examples of diseases that can be prevented using these strategies will be described.

This report includes county-specific information from the 2016 Behavioral Risk Factor Surveillance System (BRFSS) and 2016 Youth Risk Behavior Survey (YRBS) whenever possible and appropriate.



This icon indicates data from the Maryland 2016 Youth Risk Behavior Survey (YRBS), a survey of Maryland youth to assess risk behaviors and attitudes pertinent to health outcomes.

* Some results of the survey are limited by low response rates. Although the demographic profile of respondents correlated well with the sample’s characteristics, the results may be considered representative of the respondents only.



This icon indicates data from the Maryland Behavioral Risk Factor Surveillance System (BRFSS) survey in 2016, a survey of Maryland residents to assess risk behaviors and prevalence pertinent to health outcomes.

Secondary prevention – refers to detection of diseases at an early stage, when intervention is more effective than at the time of usual diagnosis and treatment. Early detection and intervention can reduce or eliminate the complications related to the condition, including death. Many infectious diseases are acute, meaning they progress rapidly from exposure to infection to disease, offering little time to intervene if primary prevention has not taken place. Other infectious diseases progress slowly and may have few or no symptoms in the early stages. For these diseases, special public health efforts are needed to identify people at increased risk through screening and testing. Examples of diseases that fall into this category include certain sexually transmitted infections and tuberculosis, and specific methods for the prevention of these diseases will be described later in this report.

Tertiary Prevention – aims at improving the prognosis and quality of life of affected individuals by offering them the best available treatment and rehabilitation programs. In infectious disease, an example of tertiary prevention would be programs to support people living with HIV.

The goal of prevention is to reduce the associated morbidity and mortality. It is important to set up long-term objectives for achieving these goals through various prevention and health promotion activities. Through comparing results with Healthy People 2020, a program of a nationwide health-promotion and disease-prevention goals set by the United States Department of Health and Human Services, it provides information on progress made and areas for ongoing efforts. Objectives from the Healthy People 2020 are included in this report whenever possible and appropriate.



This icon indicates goals of Healthy People 2020 from the CDC National Center for Health Statistics.

Within the area of infectious disease and public health, disease prevention is closely tied to disease control and intervention measures. The schematic below shows how these concepts interrelate (Fig 1). While primary, secondary and tertiary prevention are concepts that apply across human health conditions, whether infectious or non-infectious, the prevention and control of infectious diseases also can be thought of as a continuum that begins with the environment and ends with human disease. Interventions can target many places along this continuum; the most effective depends on the disease and the specific circumstances surrounding the disease event.

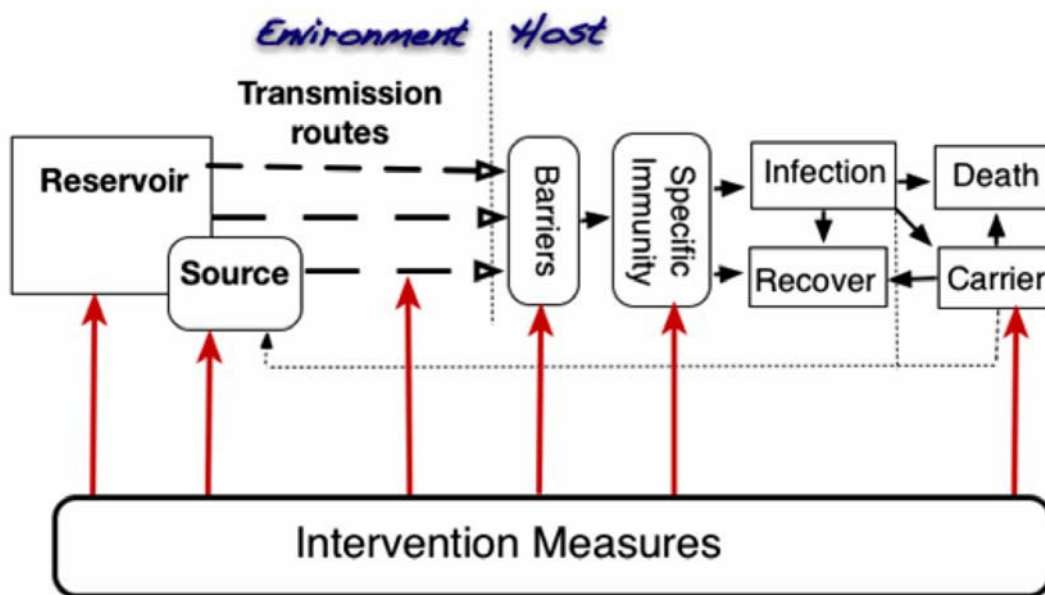
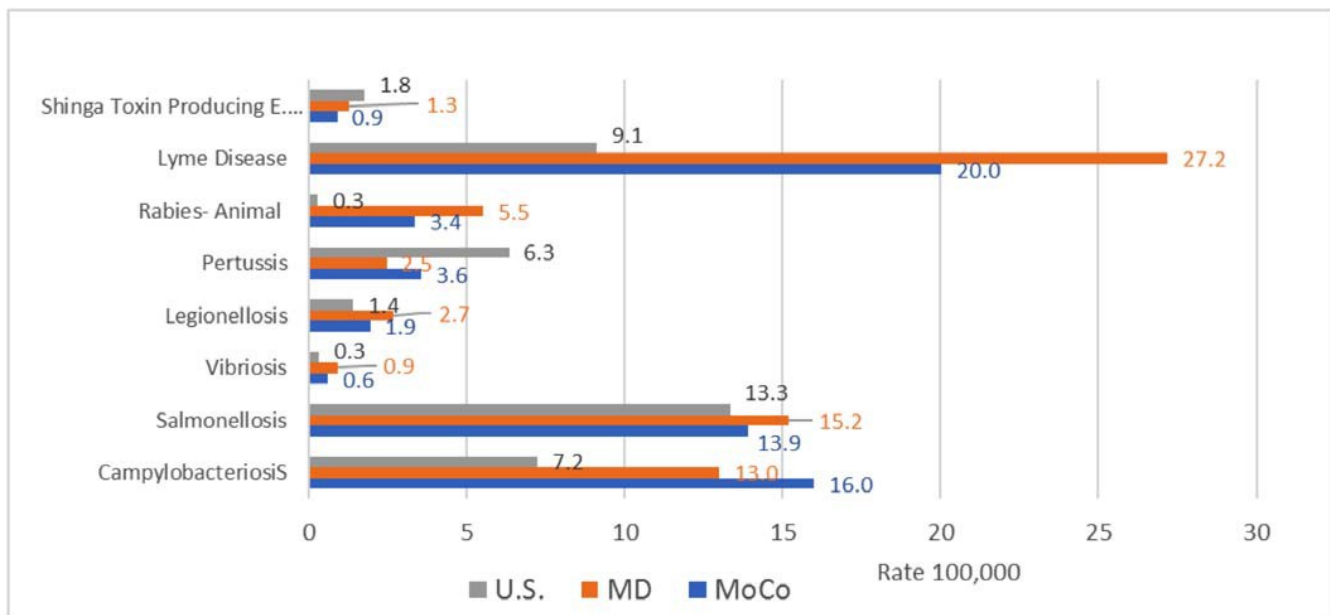


Fig. 1. Public Health Interventions [5]

SUMMARY OF INFECTIOUS DISEASES

Reportable Diseases

Fig 2. Selected Reportable Diseases, Montgomery County, Maryland, and the U.S, 2013-17



Tuberculosis

Fig. 3. Incidence Rates, Tuberculosis, Montgomery County, Maryland, and U.S.*, 2013-17

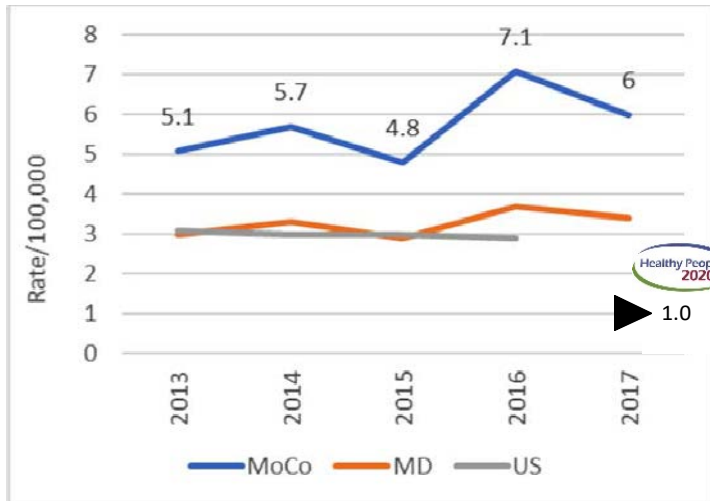


Fig 4. Incidence by Sex, Tuberculosis, Montgomery County, 2013-17

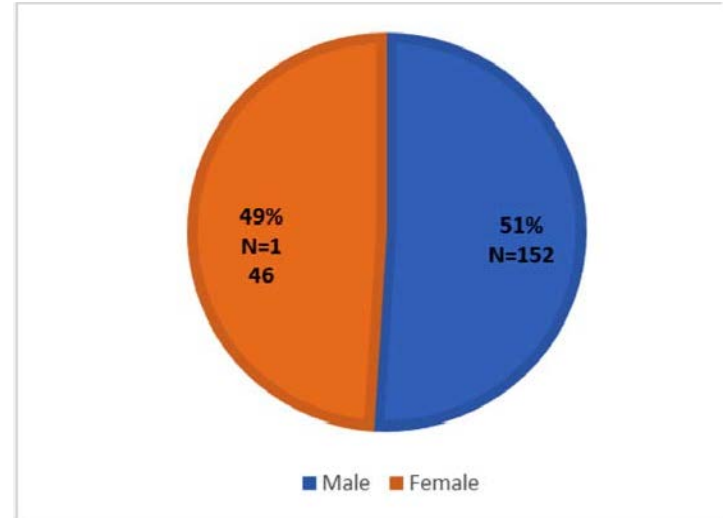


Fig 5. Incidence by Race/Ethnicity, Tuberculosis, Montgomery County, 2013-17

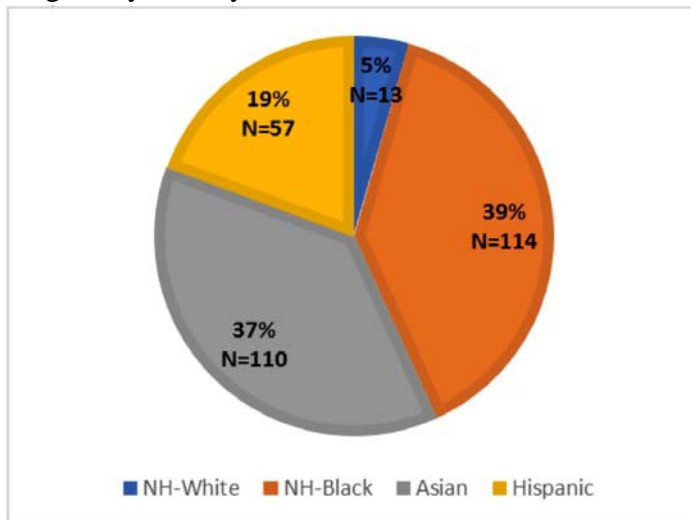
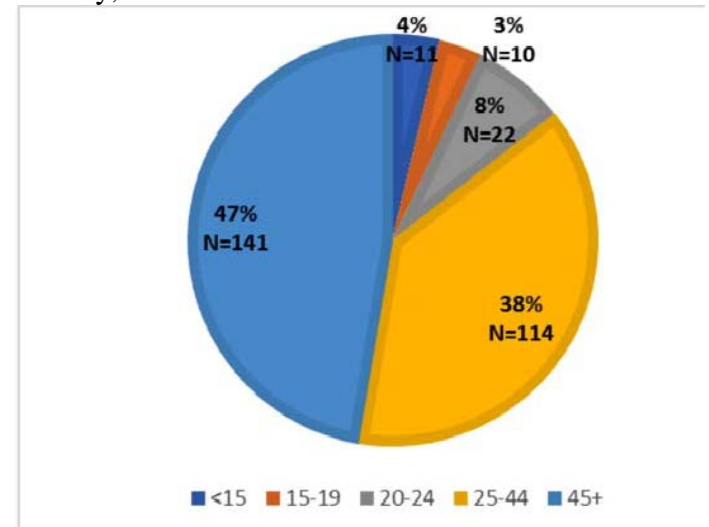


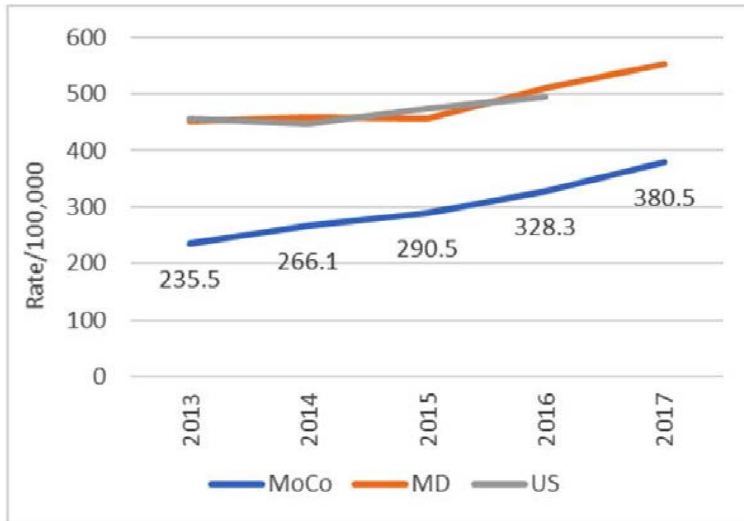
Fig 6. Incidence by Age, Tuberculosis, Montgomery County, 2013-17



Sexually Transmitted Infections

Chlamydia

Fig. 7. Incidence Rates, Chlamydia, Montgomery County, Maryland, and U.S.*, 2013-17



*U.S. 2017 data were not available at the time of report preparation

Fig 8. Incidence by Sex, Chlamydia, Montgomery County, 2013-17

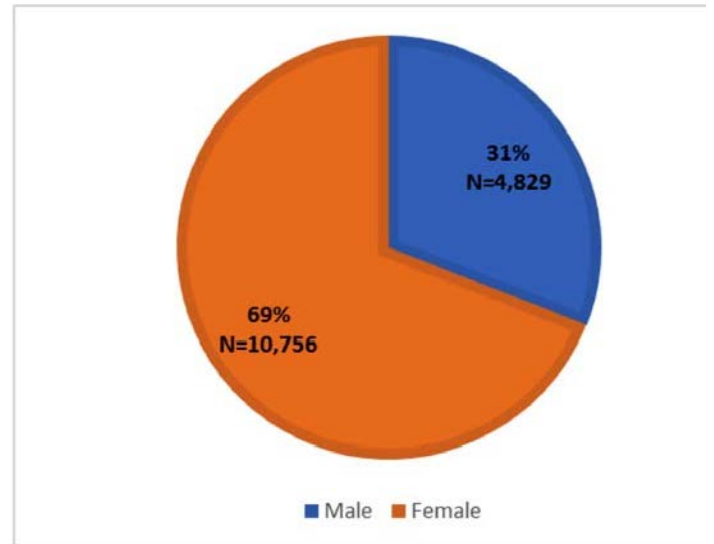


Fig 9. Incidence by Race/Ethnicity, Chlamydia, Montgomery County, 2013-17

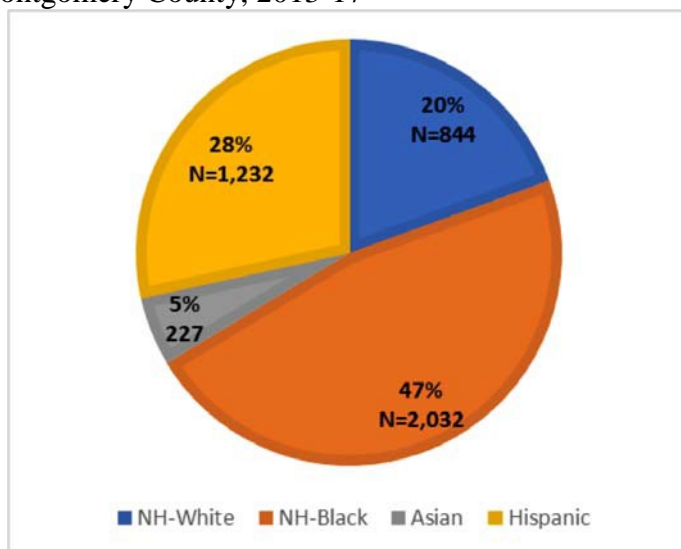
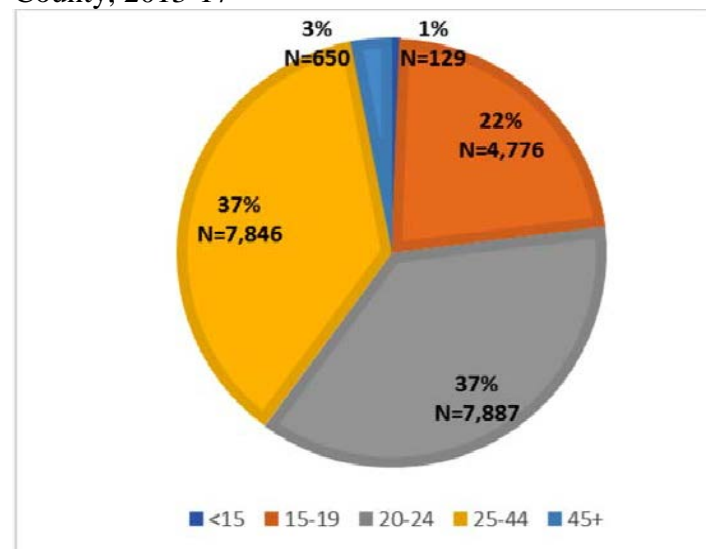
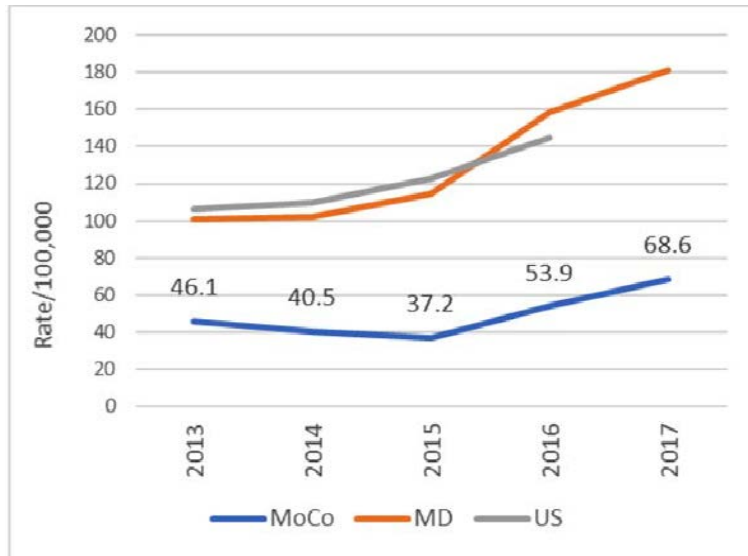


Fig 10. Incidence by Age, Chlamydia, Montgomery County, 2013-17



Gonorrhea

Fig. 11. Incidence Rates, Gonorrhea, Montgomery County, Maryland, and U.S.*, 2013-17



*U.S. 2017 data were not available at the time of report preparation

Fig 12. Incidence by Sex, Gonorrhea, Montgomery County, 2013-17

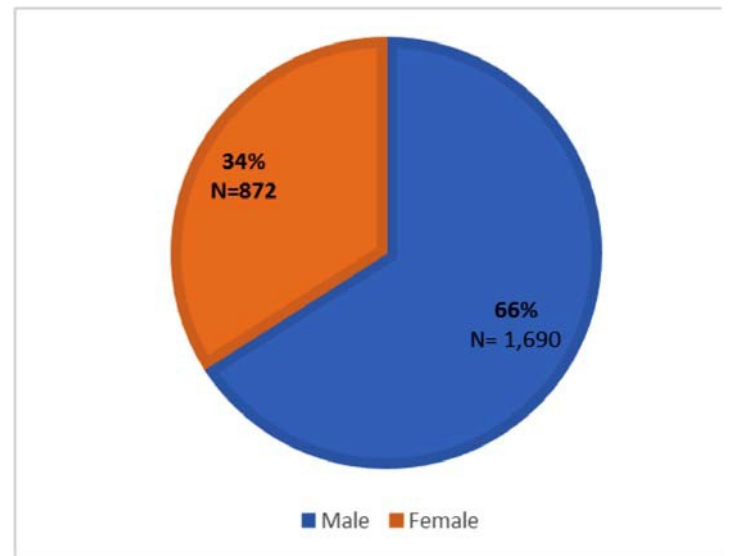


Fig 13. Incidence by Race/Ethnicity, Gonorrhea, Montgomery County, 2013-17

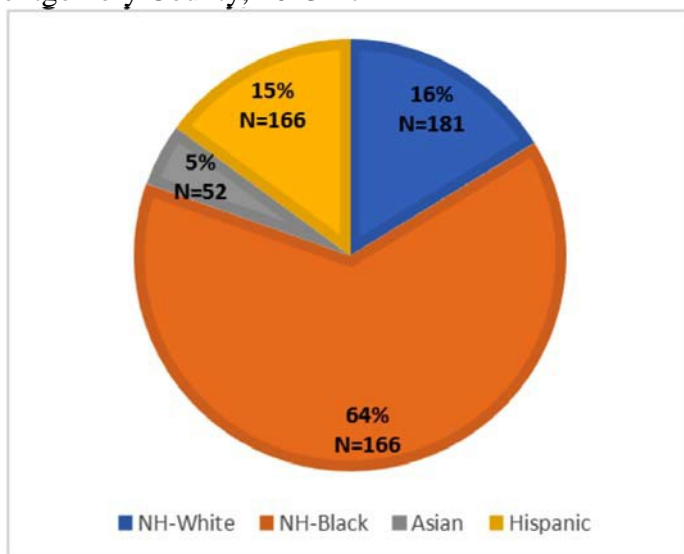
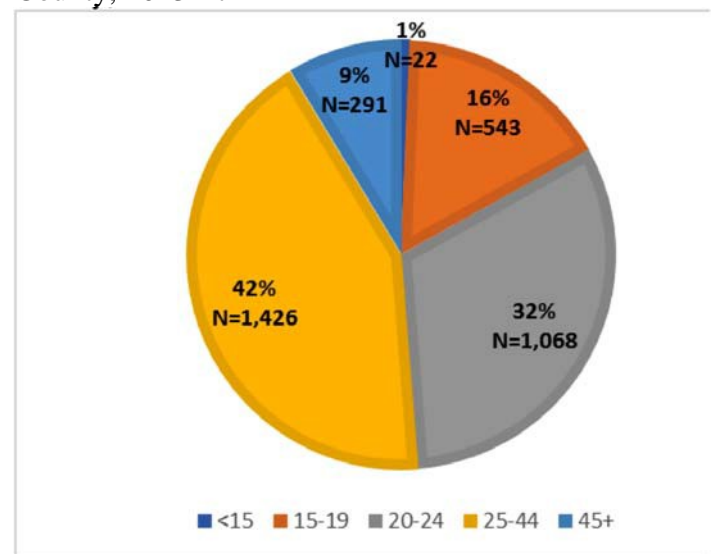
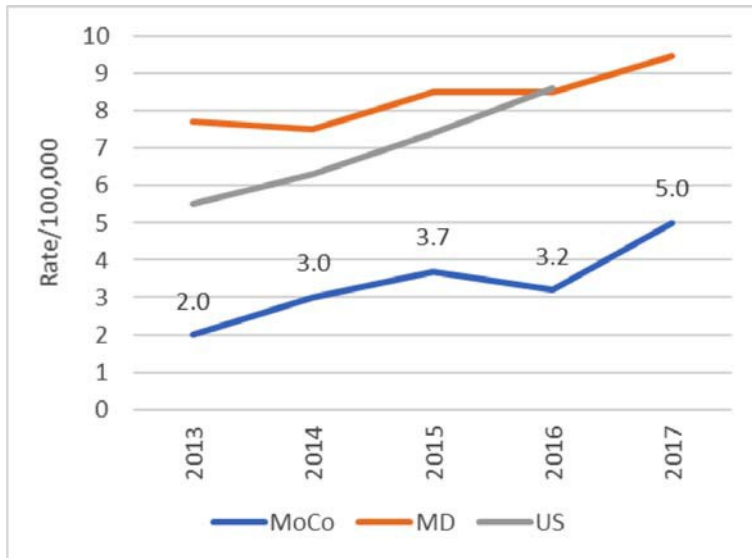


Fig 14. Incidence by Age, Gonorrhea, Montgomery County, 2013-17



SYPHILIS

Fig. 15. Incidence Rates, Syphilis, Montgomery County, Maryland, and U.S.*, 2013-17



*U.S. 2017 data were not available at the time of report preparation

Fig 16. Incidence by Sex, Syphilis, Montgomery County, 2013-17

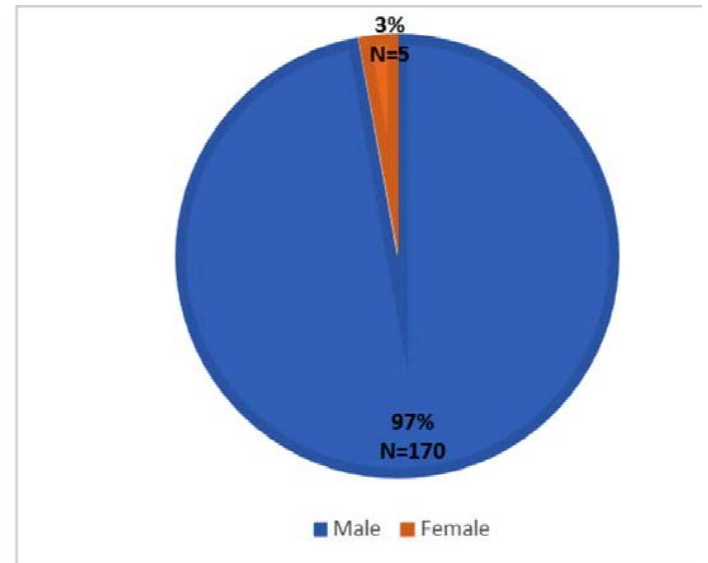


Fig 17. Incidence by Race/Ethnicity, Syphilis, Montgomery County, 2013-17

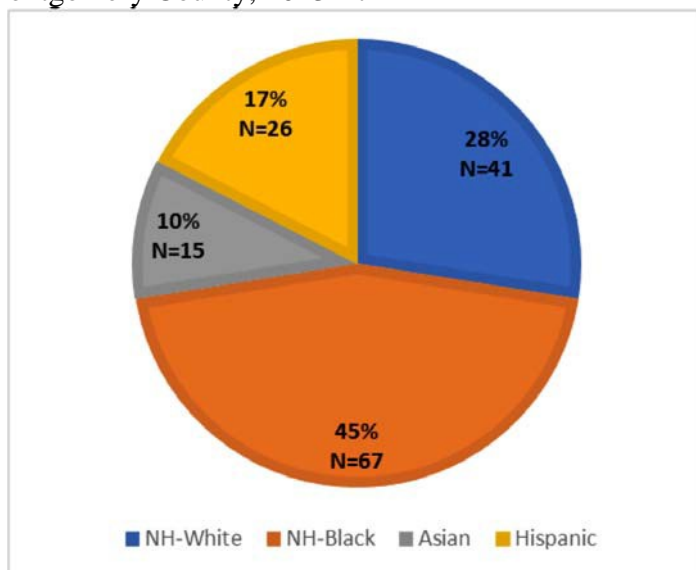
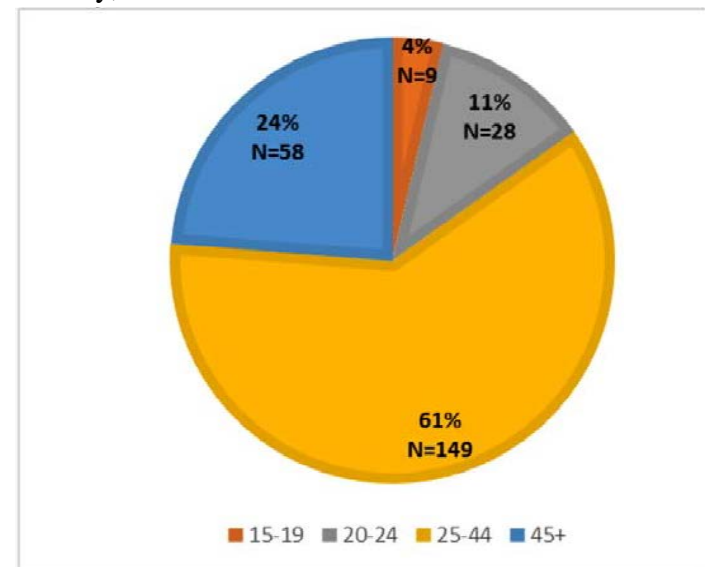
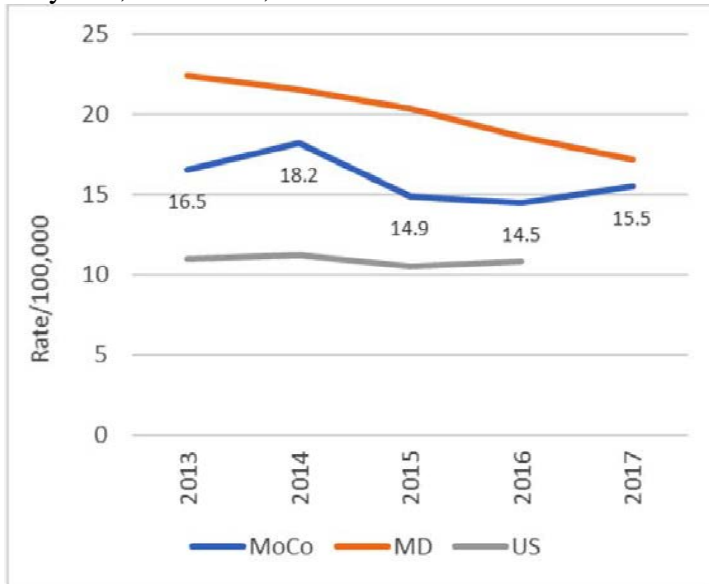


Fig 18. Incidence by Age, Syphilis, Montgomery County, 2013-17



HIV

Fig. 19. Incidence Rates, HIV, Montgomery County, Maryland, and U.S.*, 2013-17



*U.S. 2017 data were not available at the time of report preparation

Fig. 20. Incidence by Sex, HIV, Montgomery County, 2013-17

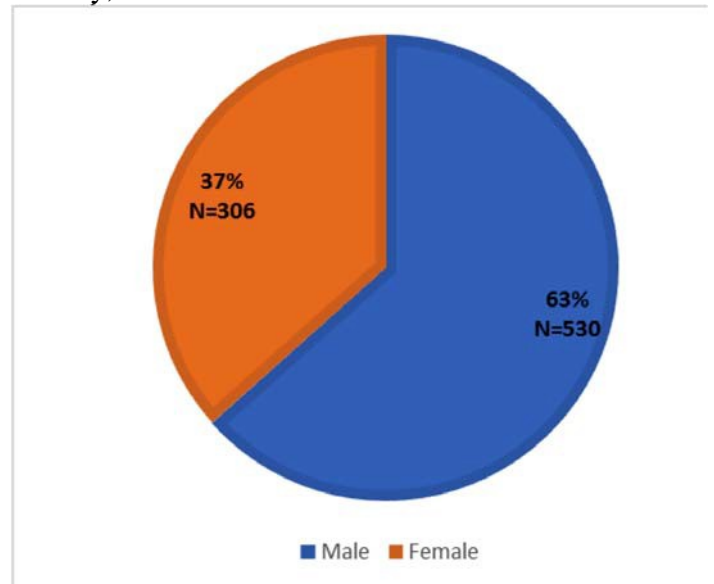


Fig. 21. Incidence by Race/Ethnicity, HIV, Montgomery County, 2013-17

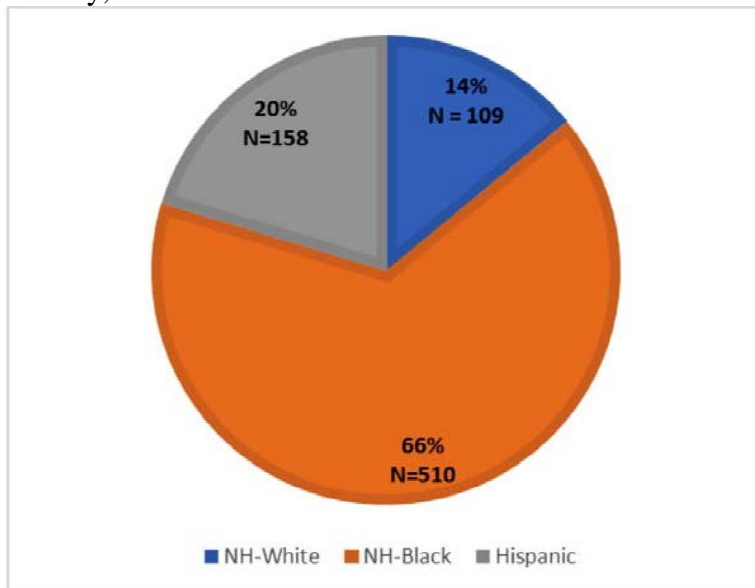
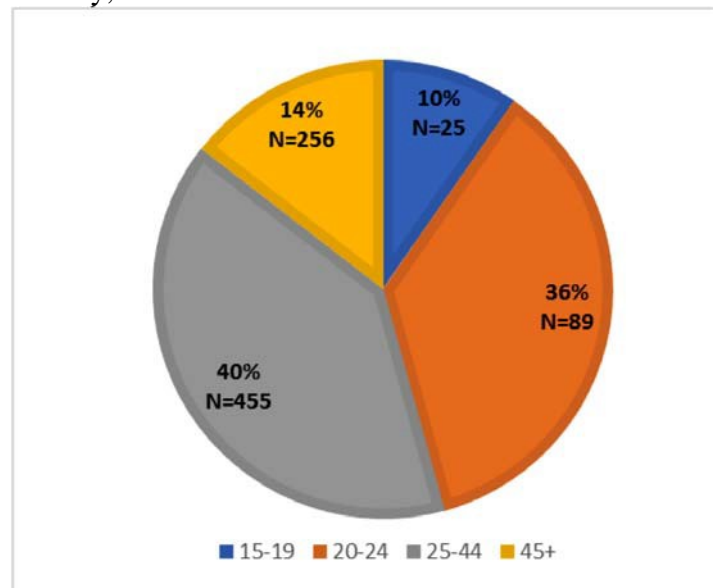


Fig. 22. Incidence by *Age, HIV, Montgomery County, 2013-17



*ages of patients at the time of diagnosis

II.

Demographic and Social Determinants



Demographic and Social Determinants

The demographic composition of a population has a great impact on health. Changes in population size, age, race and ethnicity affect the health care resources needed, the cost of care provided, and the conditions associated with each population group. Risks associated with health conditions vary across population subgroups with different demographics, along with disease burden. Thus, it is important to examine disease burden and health status of a population by demographic factors. Socioeconomic status {SES} is a combined total measure of an individual's economic and social position in relation to others, based on [income](#), [education](#), and occupation. SES is well known to be associated with the health of a population. The combinations and interplaying relationships of demographic, SES, and health care access play a crucial role in determining the health of a population.

Demographics

- In 2017, the County's population was over 1.05 million (Table 1).
- The sex distribution in the county is consistent over time and is similar to that of Maryland and the U.S. (Table 1).
- The county's population is aging over time; the age distribution of the county is similar to that of Maryland and the U.S. (Table 1).
- The county's population is getting more diverse over time; both the NH-Black and Hispanic populations have increased while the NH-White population is decreasing (Table 1).

Table 1. Percent Population Estimates by Selected Characteristics, Montgomery County, Maryland, and U.S., 2013-17

		2013	2014	2015	2016	2017		
		MoCo	MoCo	MoCo	MoCo	MoCo	MD	US
Total		1,058,810						
Gender	Male	48.2	48.2	48.2	48.4	48.3	48.5	49.2
	Female	51.8	51.8	51.8	51.6	51.7	51.5	50.8
Age Group	< 5	6.5	6.6	6.5	6.4	6.3	6.1	6.1
	5-17	17.1	17.0	17.0	17.0	16.9	16.2	16.5
	18-34	21.5	21.3	21.2	20.9	20.8	22.8	23.3
	35-64	41.7	41.4	41.3	41.1	41.0	40.0	38.5
	65+	13.3	13.7	14.1	14.5	14.9	14.9	15.6
Race/Ethnicity	NH-White	46.7	45.8	44.7	44.5	43.8	50.9	60.7
	NH-Black	17.0	17.4	17.6	17.8	18.3	29.7	12.5

Asian/PI	14.2	14.7	14.9	14.8	15.4	6.6	5.6
Hispanic	18.3	18.7	19.0	19.1	19.6	10.1	18.1

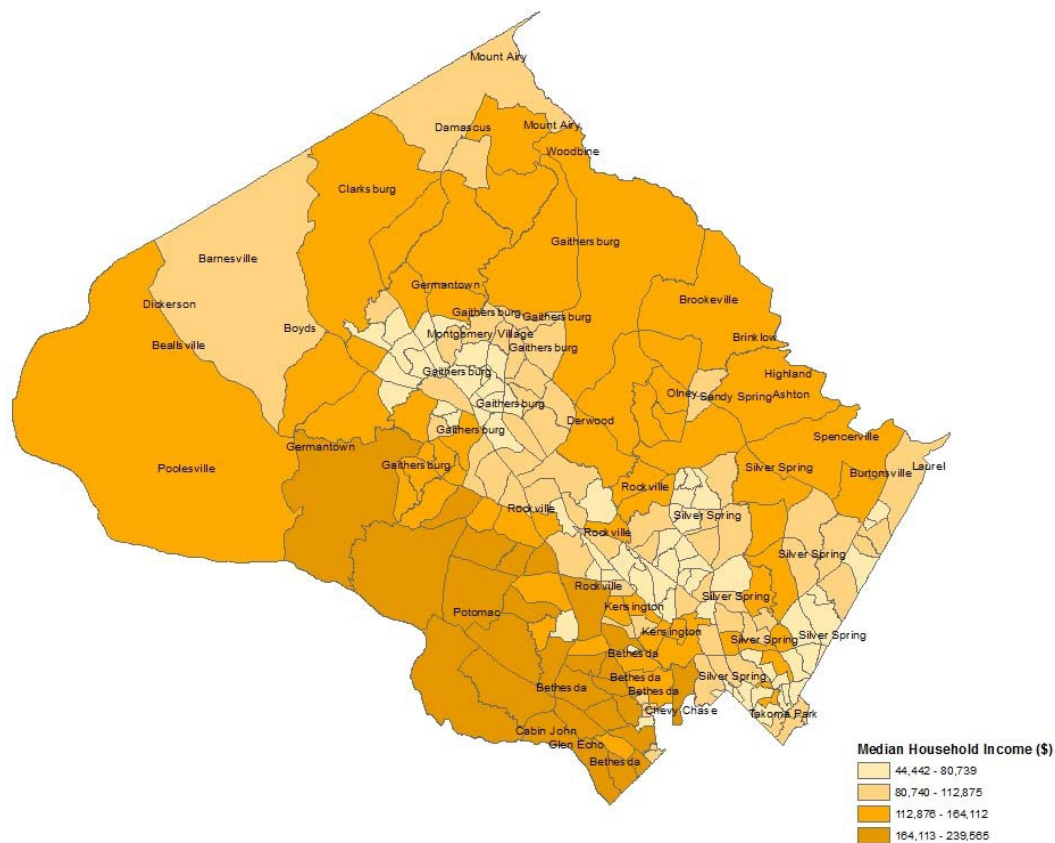
Social Determinants

- There is an increasing trend of percent families below poverty level in the county over time (Table 2).
- Among population subgroups, Asian/PI and Hispanic groups have increasing trends of percent families below poverty level, while NH-Black has decreasing trend; NH-Black and Hispanic groups have much higher percent than NH-White and Asian/PI (Table 2).
- The overall percent families below poverty level in the county is lower than that in Maryland and much lower than the U.S. (Table 2).

Table 2. Percent Families Below Poverty Level by Race/Ethnicity, Montgomery County, Maryland, and U.S., 2012-16

	2012	2013	2014	2015	2016		
	MoCo	MoCo	MoCo	MoCo	MoCo	MD	US
All	4.4	4.5	4.5	4.6	4.7	6.8	11.0
NH-White	1.9	2.0	1.8	1.8	1.8	4.0	6.9
NH-Black	9.5	9.6	9.3	8.8	8.9	11.6	22.3
Asian/PI	4.0	4.2	4.8	4.7	5.0	5.7	8.9
Hispanic	8.3	9.0	8.7	9.2	9.1	11.5	20.9

Map 1. Median Household Income by Census Tract, Montgomery County, 2016



- The overall unemployment rate in the county has decreased over time and is consistent across all race/ethnicity groups (Table 3).
- The unemployment rate in the county is lower than that of Maryland and the U.S. (Table 3).
- Among race/ethnicity groups, NH-Black and Hispanic groups have higher rates of unemployment than other population subgroups (Table 3).

Table 3. Unemployment Rate by Race/Ethnicity, Montgomery County, Maryland, and U.S., 2012-16

	2012	2013	2014	2015	2016		
	MoCo	MoCo	MoCo	MoCo	MoCo	MD	US
All	6.2	6.3	6.5	6.1	5.8	6.7	7.4
NH-White	4.3	4.5	4.5	4.2	4.0	5.0	5.9
NH-Black	10.8	10.8	11.4	10.3	9.9	10.2	13.3
Asian/PI	4.7	4.5	4.5	4.6	4.3	4.7	5.7
Hispanic	8.3	8.4	8.1	7.8	7.3	6.5	8.7

- The overall percent of individuals with college education or higher in the county has increased over time and is consistent across all race/ethnicity groups (Table 4).
- The percent of individuals with college education or higher in the county is much higher than that in Maryland and the U.S. and is consistent across all race/ethnicity groups (Table 4).
- Among race/ethnicity groups, NH-White and Asian/PI groups have higher percentages of college education or higher than other population subgroups (Table 4).

Table 4. Percent Individuals with College Degree or Higher by Race/Ethnicity, Montgomery County, Maryland, and U.S., 2012-16

	2012	2013	2014	2015	2016		
	MoCo	MoCo	MoCo	MoCo	MoCo	MD	US
All	59.1	59.2	59.2	59.7	58.1	38.4	30.3
NH-White	68.3	69.0	69.5	70.4	70.7	43.3	33.8
NH-Black	42.2	42.0	42.2	42.1	43.4	27.8	20.0
Asian/PI	64.3	65.0	66.0	66.9	67.5	62.9	52.1
Hispanic	27.8	24.9	25.8	23.0	24.6	20.9	15.3

II.

Infectious Diseases in Montgomery County



Infectious Diseases in Montgomery County

Chapter I: Reportable Diseases

Enteric Disease

Enteric diseases cause gastrointestinal symptoms such as diarrhea and vomiting and may be accompanied by fever. Many enteric diseases are spread by contaminated food, but most have more than one way they can be transmitted, such as from poor handwashing (fecal-oral transmission), from animals (also called zoonotic transmission) or from contaminated drinking or recreational water. Many enteric diseases are reportable because of the increased risk for outbreaks. As the U.S. food supply has become less local, with foods coming from all over the country and around the world, the potential for widespread outbreaks affecting hundreds or thousands of people has grown. Therefore, the need to monitor enteric disease cases to rapidly identify outbreaks has become increasingly important. All of Maryland's jurisdictions participate in CDC's Foodborne Disease Active Surveillance Network (FoodNet) [6]. Among other benefits, participation in FoodNet requires that members conduct individual case investigations of enteric diseases in persons with laboratory confirmed conditions, yielding rapid and detailed information about how infected persons may have acquired their illnesses. This enables public health workers to stop transmission to others more quickly and halt outbreaks in their initial stages. Maryland is one of only ten states, as well as several counties in other states, that participate in FoodNet.

The Licensing and Regulatory Services Program (L&R) of DHHS works closely with staff at Communicable Disease and Epidemiology to identify and control illnesses potentially associated with food establishments. In addition to inspecting restaurants, L&R are also responsible for ensuring public pools are adequately maintained; transmission of enteric diseases in pools is also a public health concern. Results from food establishment inspections are available online, and more information is available in the Resources section.

"It's probably not the last thing you ate"

When public health workers conduct investigations and interview people who have tested positive for a reportable illness, one of the most important pieces of information they collect is the day cases began having symptoms, or *onset date*. This allows the calculation of the *incubation period*. An incubation period is a likely range between when a person became exposed to a disease and when symptoms began, which varies from disease to disease. In many people's minds, foodborne illnesses are a type of "food poisoning," which implies a short interval between ingestion of an agent and symptoms. Here we are discussing enteric infections, which may have been ingested in food or acquired another way, that need a minimum period of several hours to make a person sick, and in many cases several days or over a week. People naturally think back to their last meal when trying to figure out what made them sick, but it is

helpful to remember that the incubation period for enteric infections is typically many hours or days, and that not all enteric illnesses are caused by food.

Campylobacteriosis

Campylobacteriosis (infection with *Campylobacter* bacteria) is one of the most common enteric bacterial illnesses worldwide, including the US. Cross-contamination from raw poultry is thought to be the most common way people are exposed. Transmission of the *campylobacter* bacteria is fecal-oral, through ingestion of contaminated food that was inadequately cooked, mishandled, or through direct contact with animals. Reservoirs of campylobacter are animals **such as cattle, puppies, kittens, swine, sheep, rodents and birds. Commonly recognized** exposures include: handling or eating undercooked/raw poultry, meat, unpasteurized (raw) milk or dairy products; drinking contaminated and inadequately treated water; and having contact with animals, especially young animals with diarrhea.

To prevent campylobacteriosis, avoid eating undercooked poultry and unpasteurized dairy products. Thoroughly clean cutting boards and counters used for raw meat or poultry to prevent contamination of other foods. Wash hands after handling animals, bird feces, or raw meat, particularly poultry. While possible, person-to person transmission is uncommon [7].

Salmonellosis

Salmonellosis (infection with *Salmonella* bacteria) is also a common enteric bacterial illness and is found throughout the world. Most human cases result from contaminated food. Common exposures include contaminated eggs, unpasteurized milk, poultry and produce. Healthy animals, especially reptiles, chickens, cattle, dogs and cats, can carry *Salmonella* without illness and be a direct source for human infection. Person-to-person transmission can occur.

For prevention, use proper food handling and personal hygiene practices, including thorough handwashing after contact with animals. Prevent contact between young children or persons with weakened immune systems and reptiles, farm animals, or birds.

Table 5. Enteric/Foodborne Conditions of Infectious Disease by Year, Montgomery County, 2013-17

	2013	2014	2015	2016	2017	2013-17	
Enteric Condition	N	N	N	N	N	N	Rate
Amebiasis	5	7	2	15	12	41	0.8
Botulism	2	1	1	1	0	5	0.1
Campylobacteriosis	160	157	137	164	198	816	16.0
Cholera	0	0	0	0	1	1	0
Cryptosporidiosis	6	5	3	6	17	37	0.7
Cyclosporiasis	0	0	0	1	11	12	0.2
Giardiasis	55	87	73	49	5	269	5.3
Hemolytic Uremic Syndrome, Post Diarrheal	2	0	1	1	0	4	0.1
Hepatitis A	10	9	5	6	5	35	0.7
Isosporiasis	0	0	0	0	0	0	0
Salmonellosis other than Typhoid Fever	146	118	171	150	124	709	13.9
Shiga-Toxin Producing <i>E. Coli</i>	8	3	11	12	12	46	0.9
Shigellosis	17	29	25	19	25	115	2.3
Typoid Fever-Acute	4	3	1	0	5	13	0.3
Typoid Fever-Carrier	0	0	0	0	0	0	0
Vibriosis (non cholera)	2	4	7	7	11	31	0.6
Yersiniosis	3	1	0	3	32	39	0.8
Foodborne Condition							
Botulism	2	1	1	1	0	5	0.1
Epsilon Toxin (<i>C. perfringens</i>) Associated Illness	0	0	0	0	0	0	0.0
Listeriosis	9	2	2	3	6	22	0.4
Staphylococcal Enterotoxin B Illness	0	0	0	0	0	0	0
Trichinosis	0	0	0	0	0	0	0
Vibriosis (non cholera)	2	4	7	7	11	31	0.6

Fig. 23. Incidence Rates, Campylobacteriosis, Montgomery County, Maryland, 2013-17

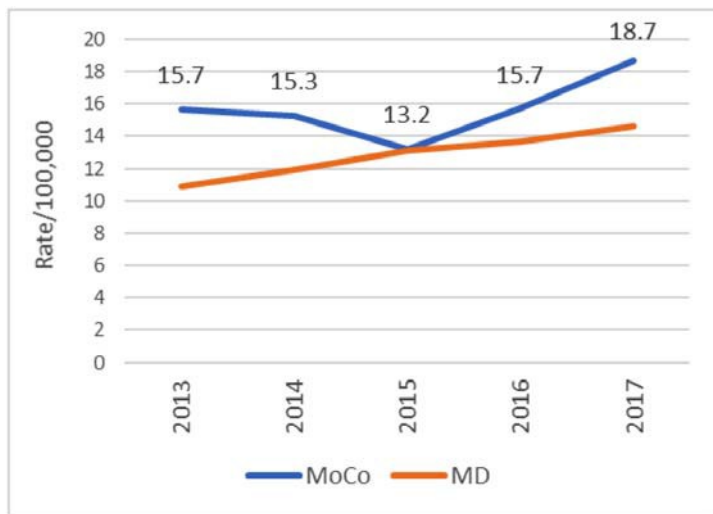


Fig. 24. Incidence Rates, Salmonellosis, Montgomery County, Maryland, and U.S.*, 2013-17



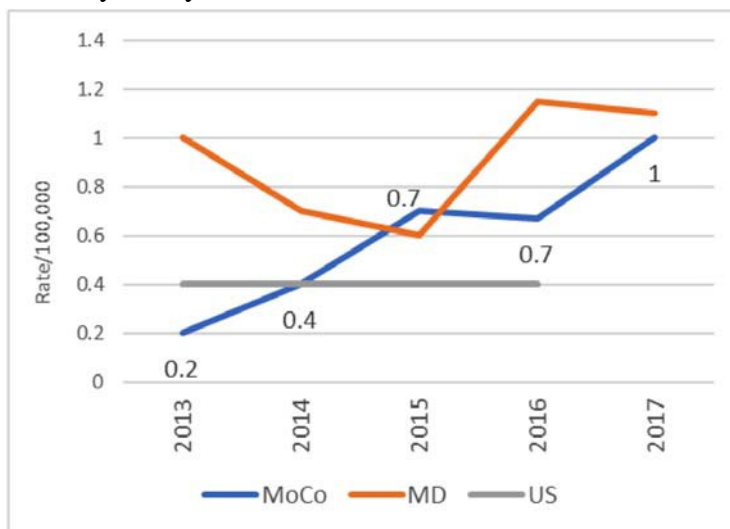
*2017 data were not available at the time of report preparation

- Campylobacteriosis had an increasing trend in Montgomery County, the rate in the county was consistently higher than for Maryland (national rates were not available from CDC for comparison) (Fig. 23). Much of this difference can be attributed to the higher frequency of international travel in Montgomery County residents compared to those statewide; many Montgomery County campylobacter cases report traveling internationally during their incubation periods.
- Salmonellosis rates fluctuated over time in Montgomery County. The county rate was consistently lower than that of Maryland and the U.S. (Fig. 24).

Vibriosis

Vibriosis means infection with bacteria in the genus *Vibrio*. Cholera is a member of this genus but is not found normally in the US. Locally acquired *Vibrio* infections are a special concern in Maryland because these bacteria are found here in ocean and brackish waters and can cause infection via shellfish and while swimming.

Fig. 25. Incidence Rates, Vibriosis, Montgomery County, Maryland, and U.S.*, 2013-17



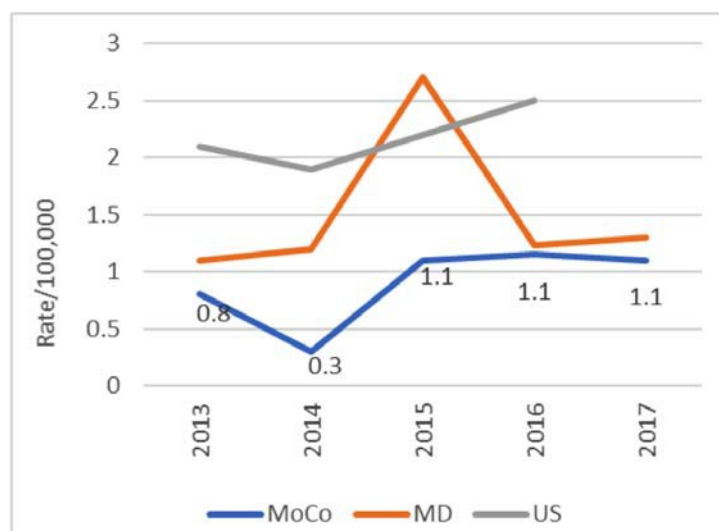
*2017 data were not available at the time of report preparation

- Vibriosis rates in Montgomery County fluctuated over time and were lower than Maryland but higher than the U.S. (Fig. 25). This is may be due to Montgomery County's position in the state: while it does not have a coast, its residents are probably more likely than the national average to have exposure to seawater and seafood.

Shiga Toxin Producing *Escherichia Coli* infection (STEC)

STEC refers to strains of the widespread *E. coli* bacteria that can make shiga toxin and can cause serious kidney problems. STEC can live in cattle without producing any symptoms and is excreted in the animal's feces. Cattle feces (and less commonly, sheep and deer) can then contaminate meat, produce, and water. Infected people can also transmit the bacteria if they do not practice good hand hygiene.

Fig. 26. Incidence Rates, Shiga Toxin Producing E. Coli, Montgomery County, Maryland, and U.S.*, 2013-17



*U.S. 2017 data were not available at the time of report preparation

- STEC infection rates fluctuated over time in Montgomery County; the rates were consistently lower than in Maryland and the U.S. (Fig. 26).

Respiratory Infections

Respiratory infections are a group of conditions that infect the airways, causing symptoms such as coughing, sneezing, and sore throat. Pneumonia is another presentation of respiratory infection. From a public health perspective, the reason to group these diseases is that they are typically acquired through the same route of transmission; namely through contact with the droplets, aerosols, and respiratory secretions that are produced by infected persons and animals. Influenza is perhaps the most familiar serious respiratory infection. It is not included in this section because while a special system for influenza surveillance exists in the US, it is not a reportable disease in most situations.

Legionellosis

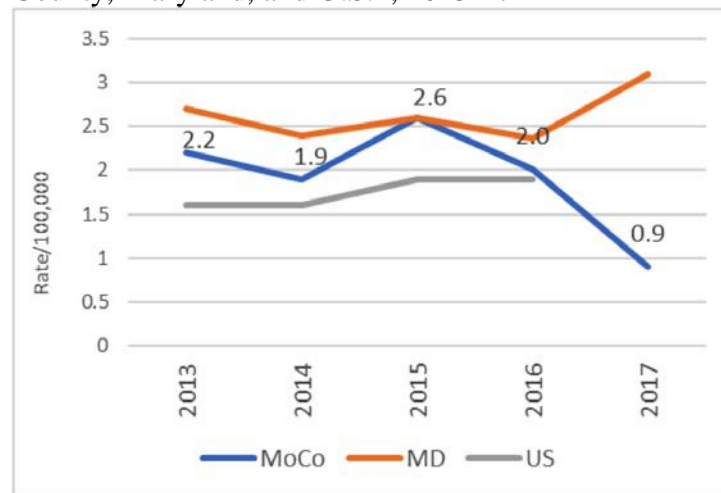
Legionellosis is an infection caused by *Legionella pneumophila*, a bacterium that is widespread in fresh, untreated water. It does not cause serious disease unless it is aerosolized and then inhaled. Once inhaled, it can cause pneumonia. Sources of aerosolized water include industrial water-cooling towers, home humidifiers that are not properly disinfected, and even home water supplies; as the bacteria can grow in pipes and then be inhaled via droplets produced during water usage such as handwashing and showering. Legionellosis is not transmissible person to

person. It is a public health concern because of the potential for widespread infection via aerosols that can be carried long distances on air currents and also because outbreaks associated with institutions such as hospitals and long-term care facilities are known to occur.

Table 6. Respiratory Conditions of Infectious Disease by Year, Montgomery County, 2013-17

	2013	2014	2015	2016	2017	2013-17	
Respiratory Condition	N	N	N	N	N	N	Rate
Diphtheria	0	0	0	0	0	0	0
H. Influenzae-Invasive Disease	18	13	8	19	24	82	1.6
Influenza Novel A Virus Infection	0	0	0	0		0	0
Legionellosis	22	20	27	21	9	99	1.9
Pertussis	40	72	32	23	15	182	3.6
Pneumonia-Hospitalized	0	0	0	1	0	1	0
Healthcare Worker							
SARS	0	0	0	0	0	0	0
Strep pneumoniae - Invasive Disease	46	49	36	47	53	231	4.5

Fig. 27. Incidence Rates, Legionellosis, Montgomery County, Maryland, and U.S.*, 2013-17



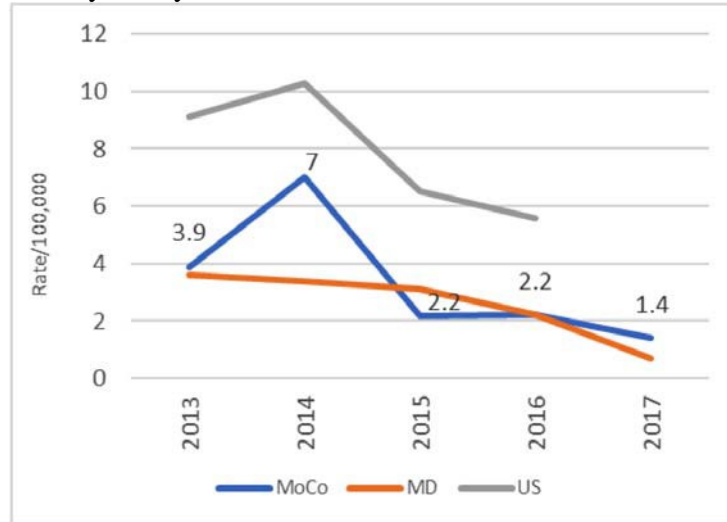
*U.S. 2017 data were not available at the time of report preparation

- Legionellosis rates fluctuated in Montgomery County over time. The rates were consistently lower than in Maryland but higher than the U.S. (Fig. 27).

Pertussis

Pertussis is a potentially serious, vaccine-preventable bacterial respiratory infection. It is a public health concern because it can spread easily from person to person and can be fatal to infants.

Fig. 28. Incidence Rates, Pertussis, Montgomery County, Maryland, and U.S.*, 2013-17

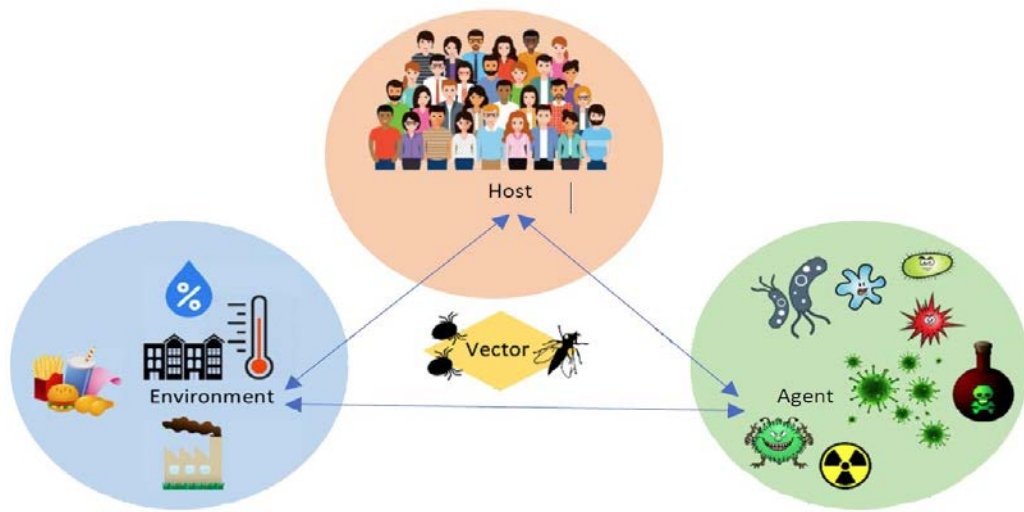


*U.S. 2017 data were not available at the time of report preparation

- Pertussis had a decreasing trend in Montgomery County, the rates were consistently higher than in Maryland but lower than the U.S. (Fig. 28).

Vector-Borne and Zoonotic Diseases

Public health workers often place infections that are spread by mosquitoes, ticks, and other arthropods in the category of vector-borne disease. Related to this concept are zoonotic diseases, those that are spread by larger animals (vertebrates) to humans. These categories are related because humans most often become infected with these diseases while they are outside, and because of the importance of ecological factors in understanding these diseases. The epidemiologic disease triad illustrates how vectors, hosts, agents (pathogens) and the environment interact.



Lyme Disease

About Lyme Disease

- ❑ Lyme disease is the most common tickborne disease in Maryland and the United States.
- ❑ Lyme disease is caused by the bacterium *Borrelia burgdorferi*.

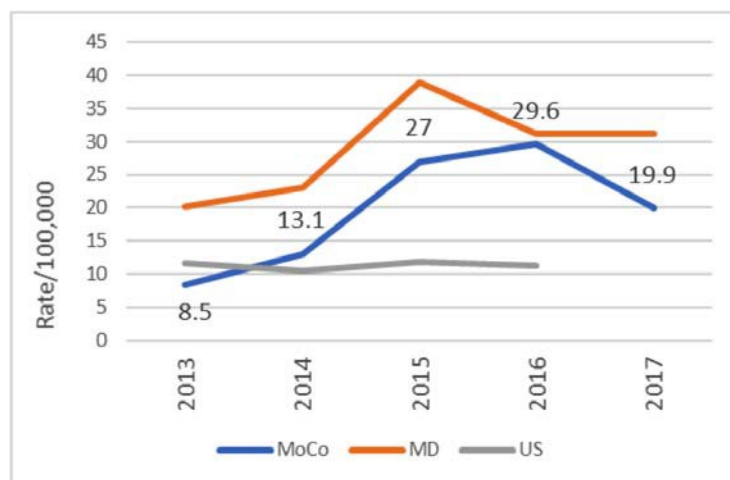
Transmission of Lyme Disease

- ❑ Lyme disease is transmitted by the bite of infected blacklegged ticks (*Ixodes scapularis*, sometimes called deer tick).
- ❑ In most cases, ticks must be attached for at least 24 hours before the Lyme disease bacterium can be transmitted.
- ❑ Most human infections of Lyme disease are caused by immature ticks, called nymphs. They are difficult to see due to their size (less than 2mm) and feed during the spring and summer months. Adult ticks can also transmit the Lyme disease bacteria, but they are much larger and are more likely to be discovered and removed before they have had time to transmit the bacteria.

Keep ticks off

- ❑ Ticks are most active from late spring through early fall.
- Insect repellent containing 20–30% DEET is recommended to prevent tick bites.
- ❑ Repellents with up to 30% DEET can safely be used on children over 2 months of age.
- ❑ Treat clothes with permethrin (do not use permethrin directly on skin).
- ❑ Long pants and long sleeves help keep ticks off skin, tucking pant legs into socks and shirts into pants keeps ticks on outside of clothing.
- ❑ Light colored clothing lets you spot ticks more easily.
- ❑ Talk to your veterinarian about tick control products for your pets.
- ❑ When enjoying the outdoors, avoid wooded or brushy areas with tall grass and leaf litter and walk in the center of trails.
- ❑ Check yourself, your kids and your pets daily for ticks when spending time in tick habitat.
- ❑ Bathe or shower as soon as possible (within two hours) after coming indoors to wash off ticks.

Fig. 29. Incidence Rates, Lyme Disease, Montgomery County, Maryland, and U.S.*, 2013-17



*U.S. 2017 data were not available at the time of report preparation

- Lyme disease infection rates fluctuated over time in Montgomery County, the rates were consistently lower than in Maryland but higher than the U.S. (Fig. 29).

Malaria

Malaria is a parasitic disease that is spread to humans by the bite of infected mosquitoes. Symptoms are flu-like, and include chills, fever, muscle aches and tiredness. If not quickly treated, malaria infection can lead to severe illness and even death. *Plasmodium falciparum* is the type of malaria that most often causes severe illness and is found most commonly in sub-Saharan Africa. People who grow up in areas where malaria is widespread often develop partial immunity to malaria that wanes with time. There is no vaccine against malaria. People traveling to areas with malaria transmission should take antimalarial drugs to prevent infection.

Although malaria is not spread by mosquitoes in Maryland or Montgomery County, many Montgomery County residents travel to areas with malaria where they become infected before returning home. Montgomery County has higher rates of disease than the state; this is thought to be because the county has a large community of people who immigrated from Africa. As part of the reportable disease investigation, cases are asked about travel to foreign countries. Of the 248 persons for whom we have travel information, 241 (97%) traveled to Africa prior to illness, often to visit their home countries. This pattern is also reflected in the numbers when they are broken down by race: of 250 malaria cases for whom we have race information in Montgomery County between 2013-2017, 206 (82%) were Black or African American. While we do not know how often Montgomery County residents travel to each foreign country (and therefore cannot calculate the risk of infection by country), we do know the countries that Montgomery County malaria cases traveled to most often between 2013-2017. The top five are: Cameroon (48 cases), Sierra Leone (37), Nigeria (32), Ghana (17), and Cote d'Ivoire (15). These numbers do not include infected county residents who were tested or treated outside of the United States, the true number of cases is therefore probably higher.

County residents who grew up in Africa who return for visits may be unaware of the risk of malaria infection for former inhabitants or realize that malaria can be life-threatening. Although they may have had partial immunity while living in Africa, they can now become very ill during a visit home. As with all visitors to areas with malaria, especially those with *Plasmodium falciparum*, it is important for them to take anti-malarial drugs and avoid mosquito bites. To learn more about protecting yourself against malaria, see the Resources section.

Fig. 30. Malaria Cases, Montgomery County and Maryland, and Montgomery County by Race/Ethnicity, 2013-17

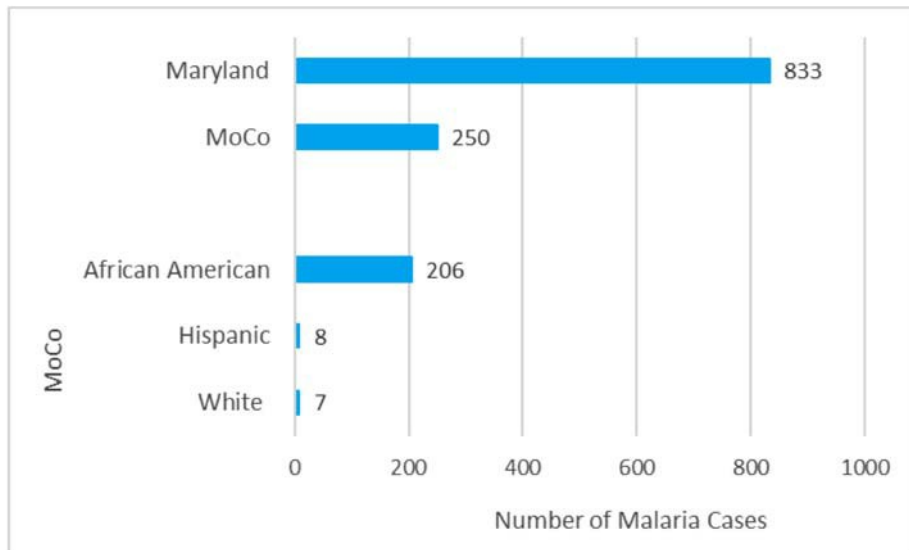


Table 7. Vector/Zoonotic Conditions of Infectious Disease by Year, Montgomery County, 2013- 17

	2013	2014	2015	2016	2017	2013-17	
Vector Borne Conditions	N	N	N	N	N	N	Rate
Anaplasmosis	0	1	1	0	1	3	0.1
Babesiosis	0	0	0	2	0	2	0
Chikungunya	-	24	6	164	0	194	3.8
Coccidioidomycosis	2	3	1	0	0	6	0.1
Dengue Fever	5	1	3	1	3	13	0.3
Ehrlichiosis	2	1	1	1	0	5	0.1
Lyme Disease	86	135	280	309	211	1021	20.0
Malaria	43	47	37	56	67	250	4.9
Spotted Fever Rickettsiosis	0	1	0	0	11	12	0.2
Viral Hemorrhagic Fever	0	0	0	0	0	0	0
West Nile Virus Symptomatic Infections	2	1	7	1	3	14	0.3
Yellow Fever	0	0	0	0	0	0	0
Zika virus infection/Disease	-	-	-	45	50	95	1.9
Zoonotic Conditions							
Animal Bites	737	-	995	1051	1,099	3882	76.2
Anthrax	0	0	0	0	0	0	0
Brucellosis	0	0	1	0	2	3	0.1
Coccidioidomycosis	2	3	1	0	0	6	0.1
Glanders	0	0	0	0	0	0	0
Hantavirus Infection	0	0	0	0	0	0	0
Hantavirus Pulmonary Syndrome	0	0	0	0	0	0	0
Leptospirosis	0	0	0	0	0	0	0
Plague	0	0	0	0	0	0	0
Psittacosis	0	0	0	1	0	1	0
Q Fever	0	0	0	0	0	0	0
Rabies-Animal	33	40	42	29	27	171	3.4
Rabies-Human	0	0	0	0	0	0	0
Tularemia	0	0	0	0	0	0	0

Rabies and Animal Bites

Rabies is a preventable viral disease of all mammals that is transmitted by the bite of a rabid animal. Rabies is nearly always fatal once symptoms appear. The virus attacks the nervous system and affects the brain and spinal cord. In Maryland, rabies is most frequently found in wildlife, most commonly raccoons, foxes, skunks, and bats. Domestic animals, including livestock, are also at risk, and cats are the most frequently identified rabid domestic animal.

To Prevent Rabies

- ☐ Vaccinate your dogs, cats and ferrets regularly.
- ☐ Do not let pets roam free.
- ☐ Enjoy wildlife from a distance.
- ☐ Teach children to stay away from animals they do not know.
- ☐ Cover garbage cans securely and do not leave pet food outside.
- ☐ Prevent bats from entering your home.

Animal bite reporting is required to ensure that individuals who are potentially exposed to rabies via a bite from an infected animal are adequately assessed for risk and receive appropriate prophylaxis if indicated.

Report bites and other animal exposures to Montgomery County Disease Control (240) 777-1755, Animal Services Division (240) 773-5925, or police (Emergency Communications Center: (301) 279-800).

Fig. 31. Incidence Rates, Rabies in Animals, Montgomery County, Maryland, and U.S.*, 2013-17



*U.S. 2017 data were not available at the time of report preparation

- ☐ Rabies infection rates in animals fluctuated over time in Montgomery County; the rates were consistently lower than in Maryland but higher than the U.S. (Fig. 31).

Table 8. Laboratory Confirmed Animal Rabies, Montgomery County and Maryland, 2013-17

	2013		2014		2015		2016		2017	
Species	MoCo	MD	MoCo	MD	MoCo	MD	MoCo	MD	MoCo	MD
Bat	9	50	10	79	20	118	15	104	2	40
Cat	1	24	0	18	0	20	1	27	1	33
Cow	0	0	0	0	0	0	0	1	0	1
Dog	0	1	0	0	0	1	0	0	0	0
Fox	2	33	1	27	1	19	2	17	2	10
Groundhog	0	10	2	5	0	1	0	5	1	8
Raccoon	19	234	26	192	18	167	9	154	21	139
Skunk	0	19	1	21	2	14	1	26	0	9
Beaver	0	0	0	0	0	0	1	1	0	0
Deer	0	0	0	0	1	1	0	0	0	0
Horse	0	0	0	0	0	1	0	0	0	0
Opossum	0	0	0	0	0	0	0	0	0	2
Not Stated	2	4	0	2	0	0	0	0	0	0
Total	33	375	40	344	42	342	29	335	27	242

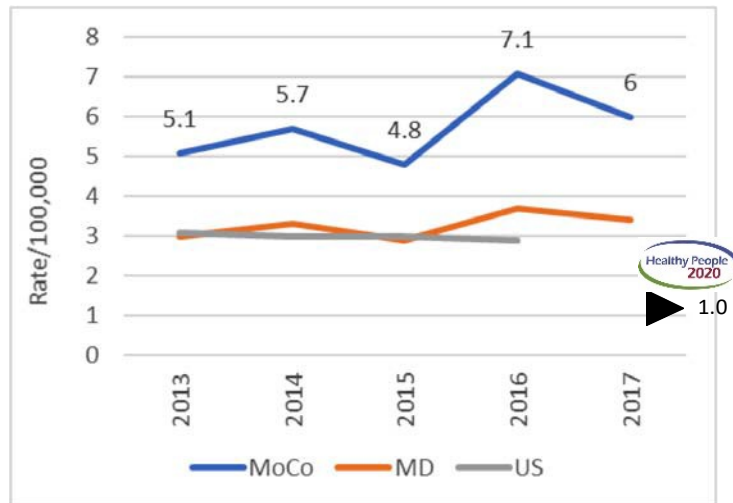
Chapter II: Tuberculosis

- Tuberculosis rates fluctuated over time in Montgomery County; the rates were consistently higher than Maryland and the U.S. (Fig. 32). The TB Control Program in the county started to report latent TB cases to the state for surveillance as of July 2018 as mandated, of which 10% are estimated to become active TB cases.
- Among population subgroups, Asian had the highest tuberculosis rates, followed by NH-Black, Hispanic, and NH-White; males have higher rates than females (Fig.33).
- Age 25-44 had the highest Tuberculosis rates, followed by age 20-24, and age 45+ (Fig. 34).

Table 9. Incidence of TB by Sex and Race/Ethnicity, Montgomery County, 2013-17

	Year					
	2013	2014	2015	2016	2017	2013-17
Total Number of Cases	52	59	51	75	63	300
Gender						
Male	24	33	22	31	42	152
Female	28	25	28	44	21	146
Race/Ethnicity						
NH-White	3	2	4	4		
NH-Black	18	24	21	25	26	114
Asian	22	20	15	31	22	110
Hispanic	7	11	9	15	15	57

Fig 32. Incidence Rates, Tuberculosis, Montgomery County, Maryland, and the U.S, 2013-17



*U.S. 2017 data were not available at the time of report preparatio

Fig. 33. Incidence Rates by Sex and Race/Ethnicity, Tuberculosis, Montgomery County, 2013-17

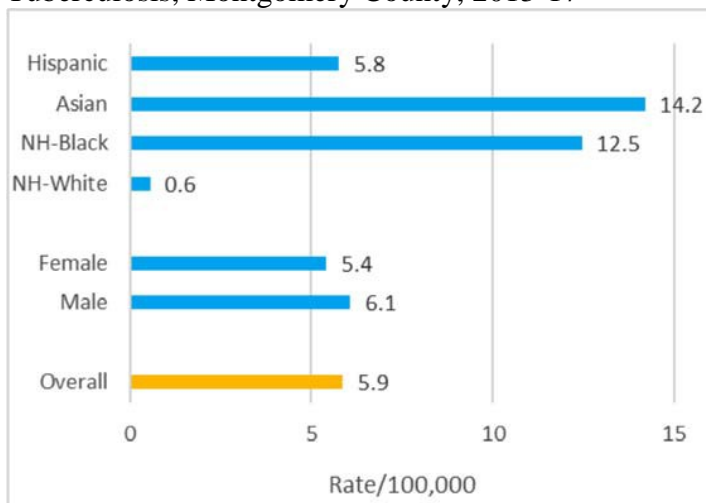
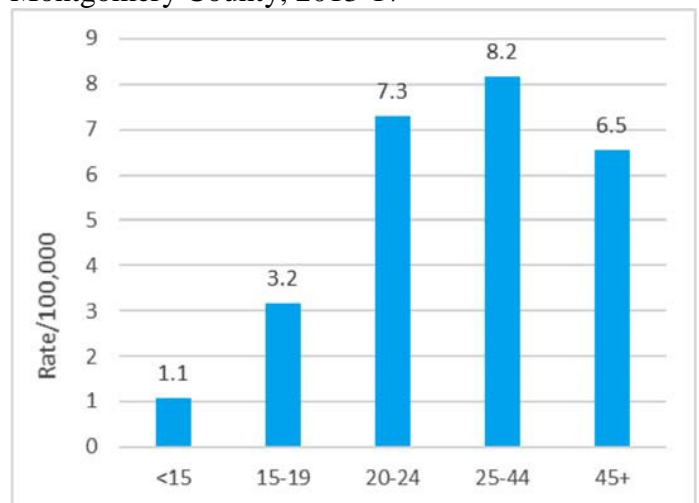


Fig. 34. Incidence Rates by Age, Tuberculosis, Montgomery County, 2013-17



Chapter III: Sexually Transmitted Infections (STI)

Chlamydia

Chlamydia is a common STID that can infect both men and women. It can cause serious, permanent damage to a woman's reproductive system. This can make it difficult or impossible for her to get pregnant later on. Chlamydia can also cause a potentially fatal ectopic pregnancy (pregnancy that occurs outside the uterus).

Gonorrhea

Gonorrhea is an STI that can infect both men and women. It can cause infections in the genitals, rectum, and throat. It is a very common infection, especially among young people ages 15-24 years.

Expedited Partner Therapy (EPT) is:

- The practice of providing antibiotic therapy to the sex partners of persons diagnosed with sexually transmitted infections (STIs) without an intervening medical evaluation.
- Intended to reduce the likelihood of repeat infection in the index patient and prevent the further spread of infection.
- A valuable option for treating partners who are unlikely or unable to seek medical care.
- Not a mandatory practice.
- Not intended to replace traditional partner notification and management.
- Legally permissible in most states.

In Maryland, EPT for chlamydia or gonorrhea may be prescribed or dispensed by the following health care providers in accordance with their current scopes of practice:

- licensed physicians;
- authorized physician assistants;
- advanced practice registered nurses, and;
- certain RNs in Local Health Departments.

Table 10. Sexually Transmitted Infections by Year, Montgomery County, 2013-17

	2013	2014	2015	2016	2017	2013-17	
STI Condition	N	N	N	N	N	N	Rate
Chlamydia	2,393	2,737	3,015	3,428	4,029	15,602	306.1
Chancroid	0	0	0	0	0	0	0
Gonorrhea	472	417	386	563	726	2,564	50.3
Syphilis-Congenital (per 100,000 live births)	1	2	1	0	1	5	0.1
Syphilis-Primary and Secondary	20	31	38	33	53	175	3.4

Syphilis

Syphilis is divided into stages (primary, secondary, latent, and tertiary), with different signs and symptoms associated with each stage. A person with primary syphilis generally has a sore or sores at the original site of infection. These sores usually occur on or around the genitals, around the anus or in the rectum, or in or around the mouth. These sores are usually (but not always) firm, round, and painless. Symptoms of secondary syphilis include skin rash, swollen lymph nodes, and fever. The signs and symptoms of primary and secondary syphilis can be mild, and they might not be noticed. During the latent stage, there are no signs or symptoms. Tertiary syphilis is associated with severe medical problems. A doctor can usually diagnose tertiary syphilis with the help of multiple tests. It can affect the heart, brain, and other organs of the body.

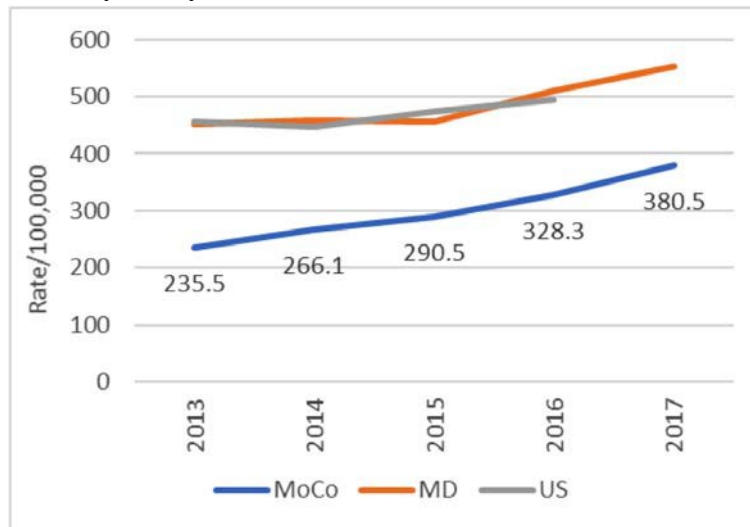
An infected baby may be born without signs or symptoms of disease. However, if not treated immediately, the baby may develop serious problems within a few weeks. Untreated babies can have health problems such as cataracts, deafness, or seizures, and can die.

Table 11. Incidence of Sexually Transmitted Infections by Sex and Race/Ethnicity, Montgomery County, 2013-17

	Gender		Race/Ethnicity				Total
	Male	Female	NH-White	NH-Black	Asian	Hispanic	
Chlamydia	4,829	10,756	844	2,032	227	1,232	15,602
Gonorrhea	1,690	872	181	714	52	166	2,564
Syphilis-Primary and Secondary	170	5	41	65	15	26	175

- Chlamydia infection rates increased over time in Montgomery County; however, the rates in the county were consistently lower than in Maryland and the U.S. (Fig. 35).
- Among population subgroups, NH-Black had the highest chlamydia infection rates, followed by Hispanic, NH-White and Asian; females had higher rates than males (Fig. 36).
- Ages 20-24 had the highest chlamydia infection rates, followed by ages 15-19, and ages 25-44 (Fig. 37).

Fig. 35. Incidence Rates, Chlamydia, Montgomery County, Maryland, and U.S.*, 2013-17



*U.S. 2017 data were not available at the time of report preparation

Fig. 36. Incidence Rates by Sex and Race/Ethnicity, Chlamydia, Montgomery County, 2013-17

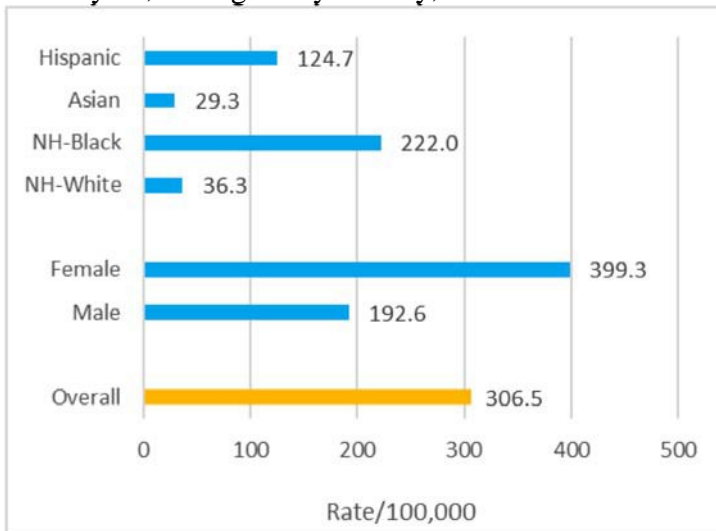
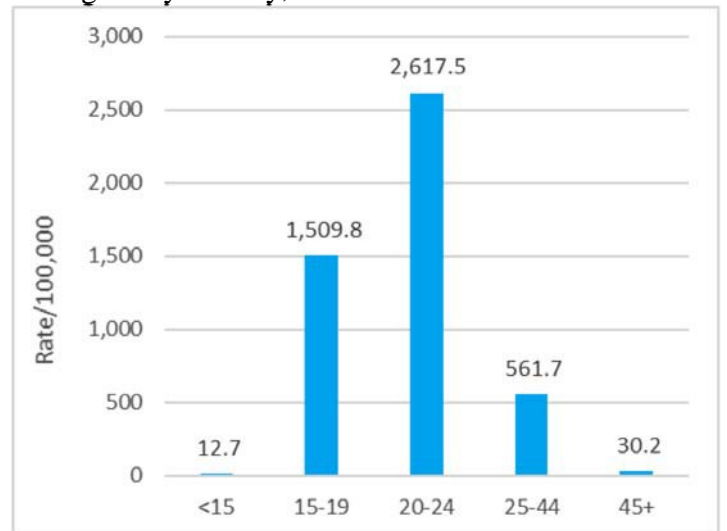
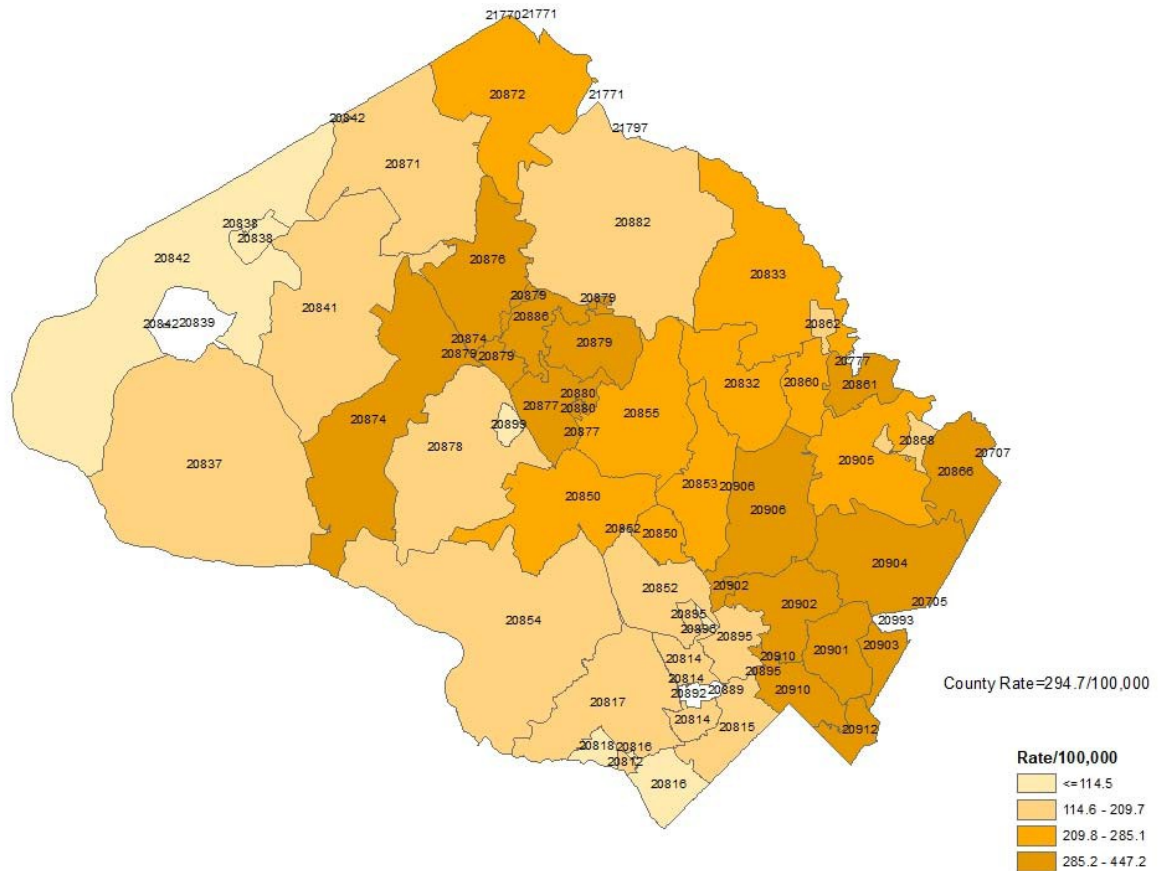


Fig. 37. Incidence Rates by Age, Chlamydia, Montgomery County, 2013-17

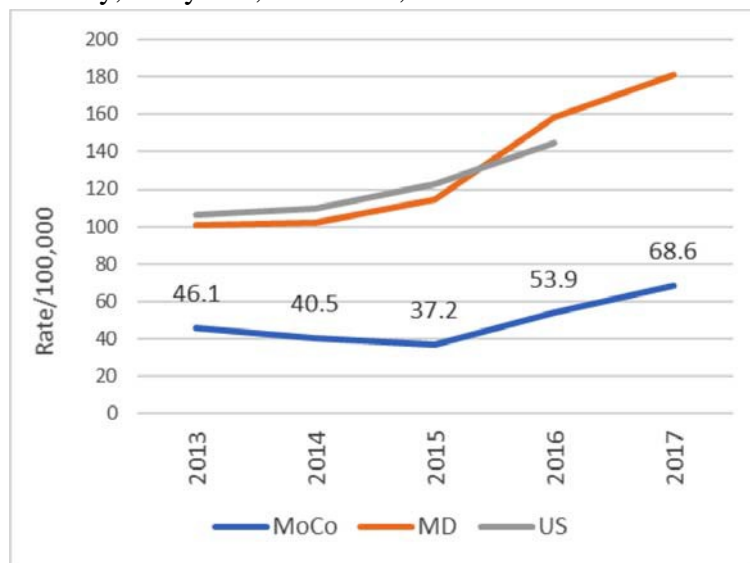


Map 2. Incidence Rates by Zip Code, Chlamydia, Montgomery County, 2013-17



- Gonorrhea infection rates had an overall increase over time in Montgomery County, similar to that in Maryland and the U.S.; however, the rates in the county were consistently lower than Maryland and the U.S. (Fig. 38).
- Among population subgroups, NH-Black had the highest gonorrhea rates, followed by Hispanic, NH-White and Asian; males have higher rates than females (Fig. 39).
- Age 20-24 had the highest gonorrhea rates, followed by age 15-19, and age 25-44 (Fig. 40).

Fig. 38. Incidence Rates, Gonorrhea, Montgomery County, Maryland, and U.S.*, 2013-17



*U.S. 2017 data were not available at the time of report preparation

Fig. 39. Incidence Rates by Sex and Race/Ethnicity, Gonorrhea, Montgomery County, 2013-17

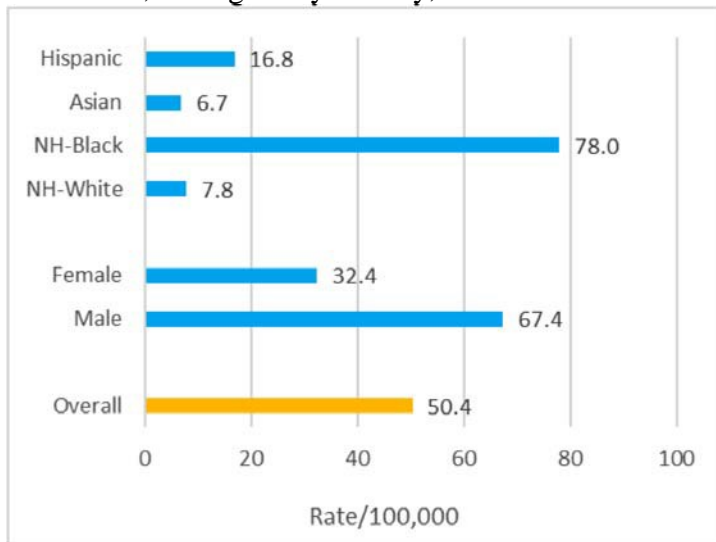
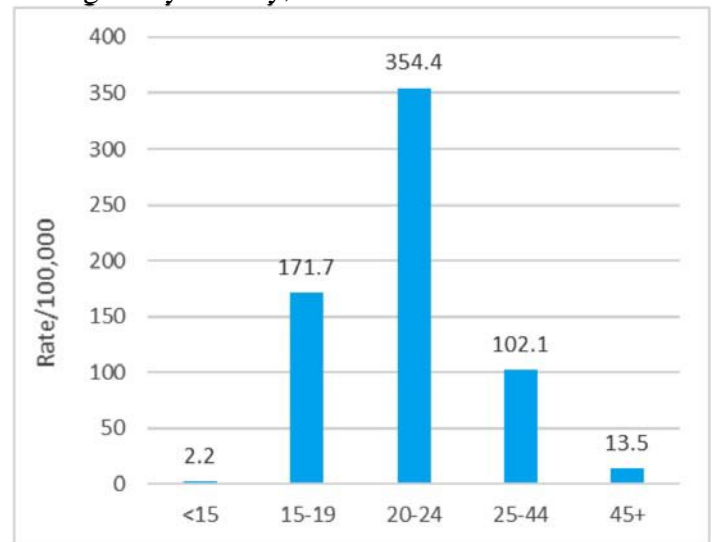
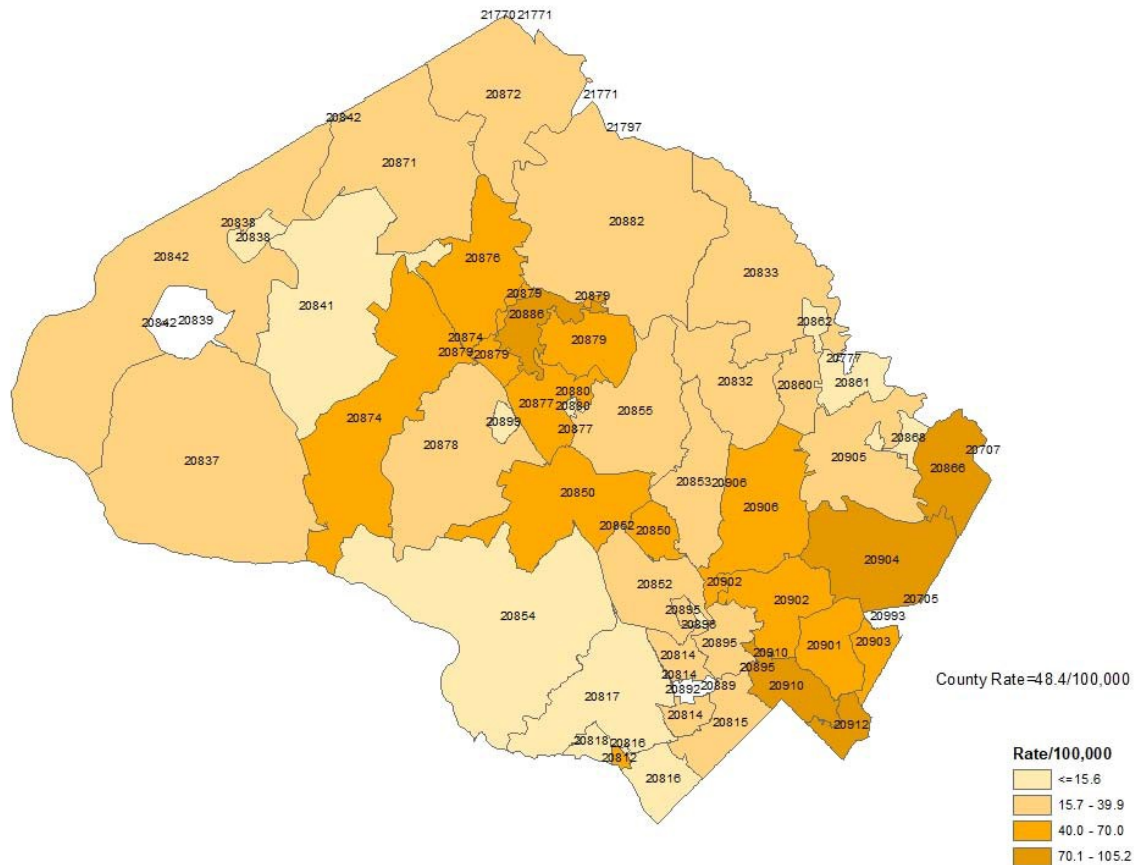


Fig. 40. Incidence Rates by Age, Gonorrhea, Montgomery County, 2013-17

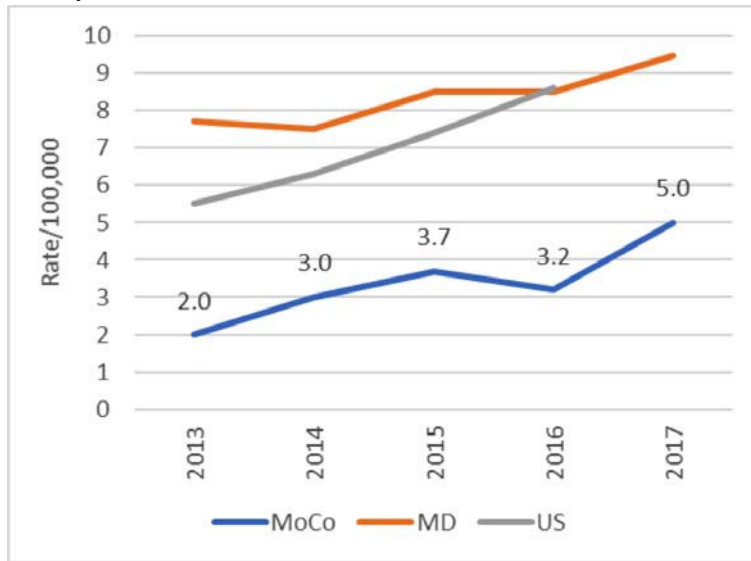


Map 3. Incidence Rates by Zip Code, Gonorrhea, Montgomery County, 2013-17



- Syphilis infection rates increased over time in Montgomery County, similar to those in Maryland and the U.S.; however, the rates in the county were consistently lower than Maryland and the U.S. (Fig.41).
- Among population subgroups, NH-Black had the highest syphilis infection rates, followed by Hispanic, Asian and NH-White; males had much higher rates than females (Fig. 42).
- Ages 25-44 had the highest syphilis rates, followed by age 20-24, age 45+, and age 15-19 (Fig. 43).

Fig. 41. Incidence Rates, Syphilis, Montgomery County, Maryland, and U.S.*, 2013-17



*U.S. 2017 data were not available at the time of report preparation

Fig. 42. Incidence Rates by Sex and Race/Ethnicity, Syphilis, Montgomery County, 2013-17

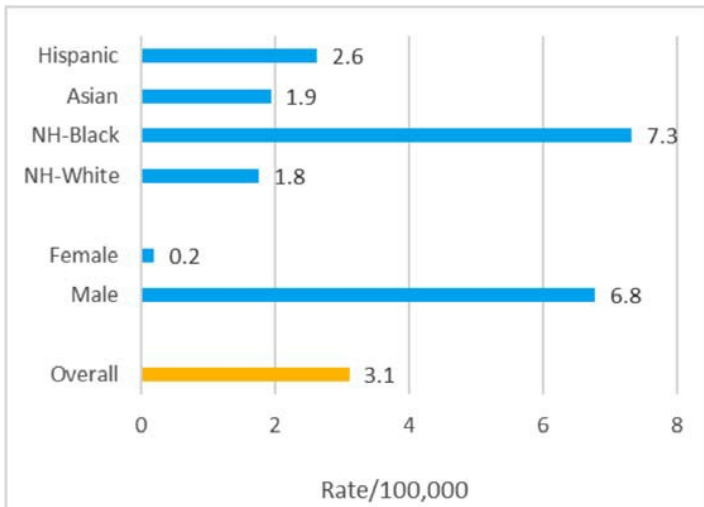
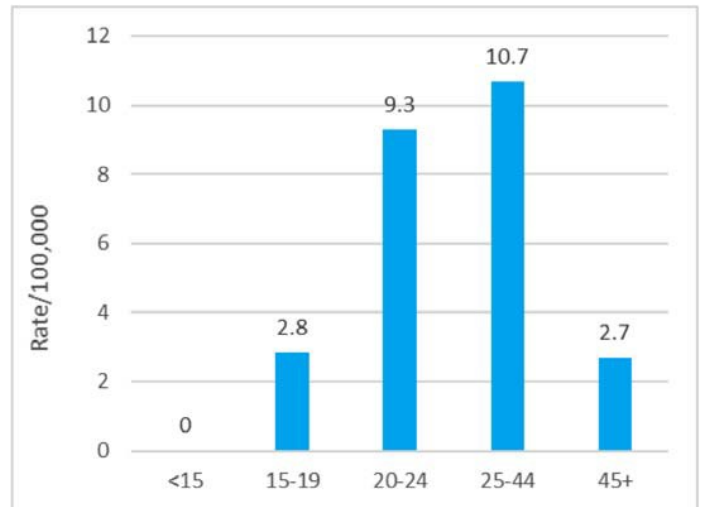
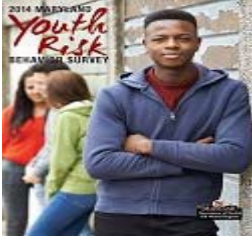


Fig. 43. Incidence Rates by Age, Syphilis, Montgomery County, 2013-17





- 21.9% (18.8%-25.3%) of high school students ever had sexual intercourse in Montgomery County vs. 31.8% (30.7%-32.8%) in Maryland.
- 4.3% (3.4%-5.3%) of high school students had sexual intercourse with 4 or more persons in life in Montgomery County vs. 7.7% (7.3%-8.1%) in Maryland.
- 39.0% (32.8%-45.6%) of high school students did not use a condom during last intercourse in Montgomery County vs. 43.1% (41.7%-44.5%) in Maryland.



- 251.9 new Gonorrhea cases per 100,000 female population 15-44 yrs old
- 194.8 new Gonorrhea cases per 100,000 male population 15-44 yrs old
- 1.3 new Syphilis cases per 100,000 female population
- 6.7 new Syphilis cases per 100,000 male population

Chapter IV: HIV

- Without treatment with HIV medicines, HIV infection advances in stages, getting worse over time.
- The three stages of HIV infection are (1) acute HIV infection, (2) chronic HIV infection, and (3) acquired immunodeficiency syndrome (AIDS).
- There is no cure for HIV infection, but HIV medicines (called antiretrovirals or ARVs) can slow or prevent HIV from advancing from one stage to the next. HIV medicines help people with HIV live longer, healthier lives. HIV medicines also reduce the risk of HIV transmission (the spread of HIV to others).

Table 12. Incidence of HIV by Sex and Race/Ethnicity, Montgomery County, 2013-17

		Year				
		2013	2014	2015	2016	2017
Total Number of Cases		167	181	155	159	164
Gender						
	Male	96	122	107	87	118
	Female	71	59	48	72	46
Race/Ethnicity						
	NH-White	19	33	20	14	20
	NH-Black	109	98	86	110	98
	Hispanic	30	35	36	24	34

- HIV rates decreased over time in Montgomery County, similar to those in Maryland and the U.S.; the rates in the county were consistently lower than Maryland but higher than the U.S. (Fig. 44).
- Among population subgroups, NH-Black had the highest HIV rates, followed by Hispanic, and NH-White; males had higher rates than females (Fig. 45).

Fig. 44. Incidence Rates, HIV, Montgomery County, Maryland, and U.S. *, 2013-17

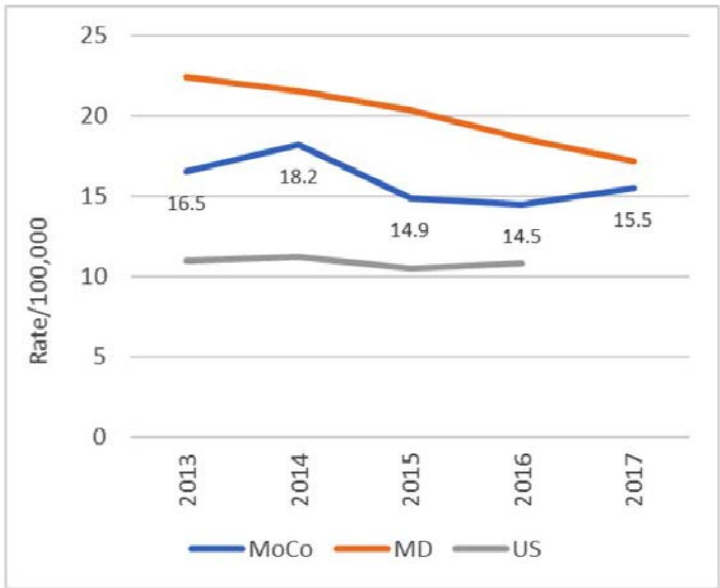
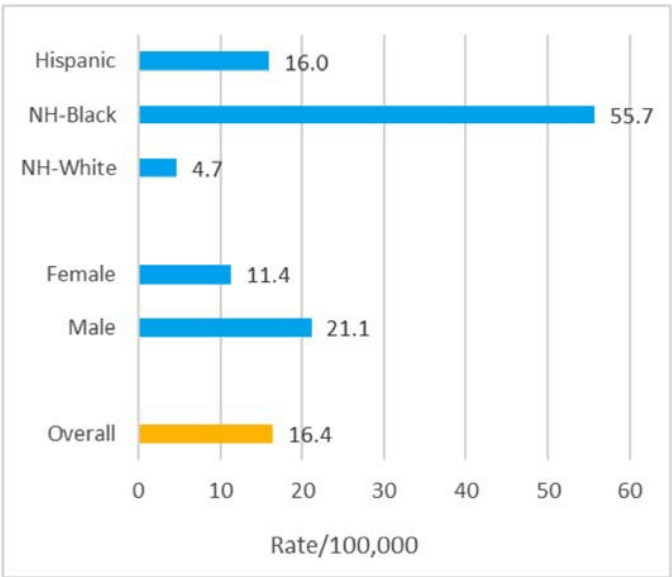


Fig. 45. Incidence Rates by Sex and Race/Ethnicity, HIV, Montgomery County, 2013-17



Chapter V: Immunization

- Maryland had higher coverage rates for all required childhood immunizations than the U.S.; data at the county level are not available (Table 13).
- Maryland had lower coverage rates for HPV immunization among adolescents aged 13-17 years old than the U.S. since 2014; data at the county level are not available (Table 14).
- Among population subgroups, Hispanic group had the highest coverage for adolescent HPV immunization, followed by NH-Black, Asian, and NH-White (Table 14).

Table 13. Immunization Coverage for Selected Vaccines by Age 24 Months, Maryland and U.S., 2014

	3+DTaP	3+Polio	1+MMR	3+Hib	3+HepB	1+Var	3+PCV	1+HepA	Rotavirus	Combined 3-vaccine series
MD	96.9±2.9	96.8±2.9	94.5±3.3	96.9±2.9	92.4±4.0	92.6±4.4	93.3±4.7	86.2±5.7	81.9±6.6	81.5±7.1
us	94.0±0.8	92.5±0.9	89.5±1.0	91.9±0.9	90.9±0.9	88.9±1.0	92.1±0.9	81.6±1.2	71.7±1.6	78.5±1.3

Table 14. Coverage with ≥1 HPV Vaccine for Adolescents Aged 13-17 Years, Maryland and U.S., 2014-16

		2013	2014	2015	2016
MD		45.7 (44.3-47.1)	50.6 (49.3-52.0)	56.1 (54.9-57.4)	60.4 (59.2-61.6)
US	All	42.0 (34.5-49.8)	52.3 (45.3-59.1)	60.3 (53.7-66.7)	64.5 (58.1-70.5)
	NH-White				54.7 (53.3-56.1)
	NH-Black				65.9 (62.6-69.2)
	Asian				62.5 (55.9-69.1)
	Hispanic				69.8 (66.7-72.9)

- Source: National Immunization Survey (NIS), Center for Disease Control and Prevention
<https://www.cdc.gov/vaccines/imz-managers/coverage/nis/child/index.html>

III.

DHHS Programs and Services





- 49.9% (95% CI: 46.6-53.2) adults age 18+ have flu vaccination in last 12 months in Montgomery County, as compared to 43.8% (95% CI: 42.5-45.0) in Maryland.

DHHS Programs and Services

Programs within DHHS in Communicable Disease and Epidemiology provide services on infectious disease control and prevention to residents and communities in the county. These programs include Disease Control, Public Health Emergency and Preparedness and Response, Tuberculosis Control, Sexually Transmitted Diseases and HIV, and Immunization. They play a vital role in control and prevention of infectious diseases in Montgomery county. More detailed information on services provided and clients served by these programs are described below.

Disease Control Program

Communicable disease surveillance, prevention and control are the core activities of the Montgomery County Disease Control Program. Disease Control staff ensure the early implementation of infection control measures and facilitate specialized laboratory testing at the Maryland Department of Health Public Health Laboratory. State public health labs perform a variety of tests and subtyping that allow the detection of events such as foodborne outbreaks, rabies in animals, as well as tests for rare or emerging diseases that hospital and commercial diagnostic labs do not have the capacity to perform. More information about public health laboratories can be found in References.

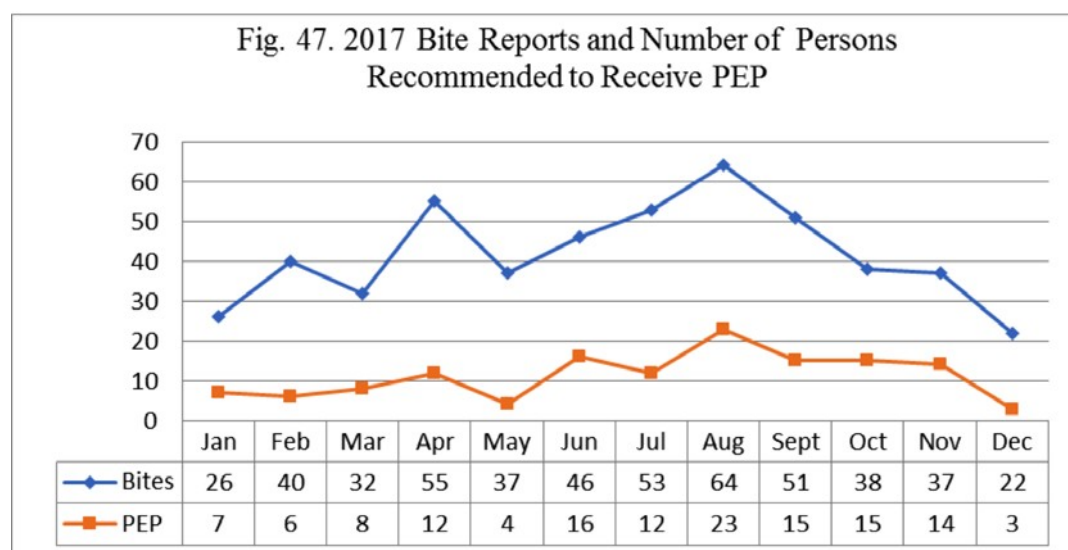
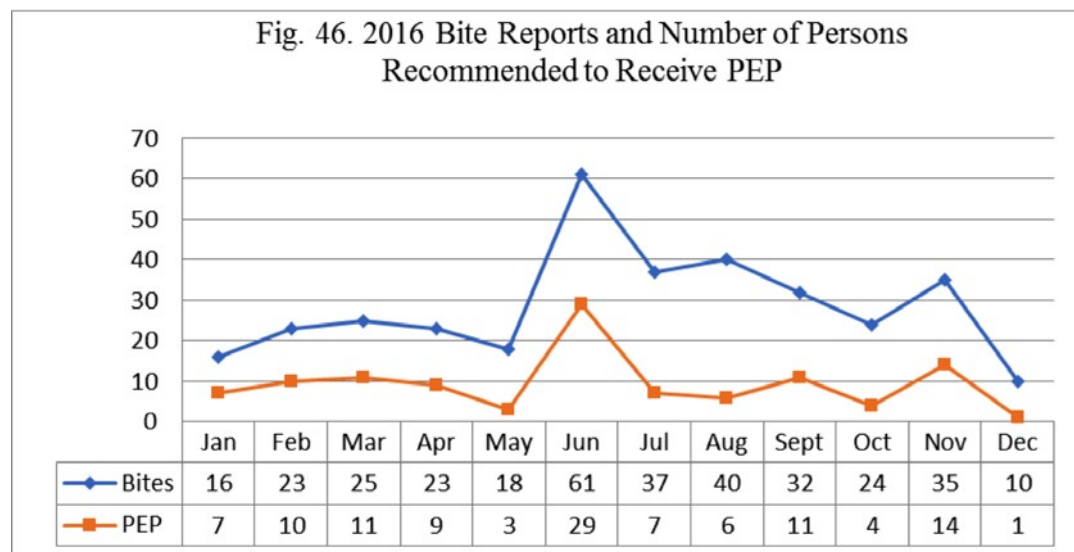
Each year the Disease Control program investigates hundreds of reports of suspected communicable diseases in partnership with Maryland Department of Health (MDH), Maryland Public Health Laboratory Services, Montgomery County Police Department Animal Control Services, Montgomery County Licensure and Regulatory Services, six hospital emergency departments, public and private schools, child care centers, and long-term care facilities. These reports can be classified as outbreak investigations or single cases of reportable diseases. Outbreaks may be of reportable or non-reportable diseases; the fact that multiple cases have occurred makes them a public health concern.

In 2017, 1,130 reportable disease cases were investigated. Thirty-three percent were gastrointestinal illnesses (food borne illnesses), 40% were tick borne diseases, 5% were mosquito borne diseases, and 5% were vaccine preventable diseases.

Assessing the need for rabies post-exposure prophylaxis (PEP) among persons bitten by animals is a specialized area of expertise that is administered by the Disease Control Program. In consultation with Maryland Department of Health and the bite victim's health care providers, the program gives expert advice to ensure that county residents receive personalized assessments regarding their need for PEP. The program provides education and 24-hour consultation to

emergency room physicians about post-exposure prophylaxis (PEP) administration sites and 14-day schedule.

In 2017, 27 animals tested positive for rabies; 501 county residents were assessed for exposure to rabies and 135 were referred to county emergency rooms for post-exposure prophylaxis.



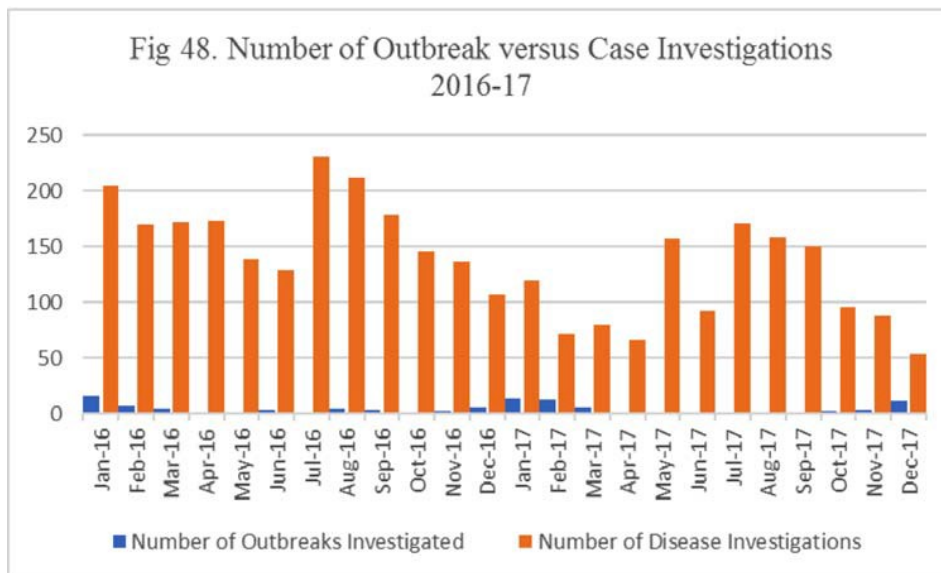
These graphs compare the number of humans bitten by animals reported to the Disease Control program 2016-2017 and the number of people who were deemed to need post-exposure prophylaxis based on a variety of factors, including whether the animal was tested for rabies, circumstances of the bite, and the availability of the animal for observation, among other considerations. Reasons for fluctuations in the number of animal bites per month are related to the frequency with which humans interact with animals; therefore summer months show

somewhat higher numbers of bites. Note that these statistics come from a number of bite scenarios and not all the animals were available for rabies testing. Of note is that each reported bite required meticulous, laborious follow up on the part of the Disease Control program, and most bites were preventable.

Outbreaks

Disease outbreaks are defined as clusters of an illness that occur in a similar time or place, with case numbers above expected. Suspected outbreaks of any disease should be immediately reported to the Montgomery County Disease Control Staff who will verify the existence of the outbreak; investigate to determine the causative agent; facilitate specimen collection and laboratory testing; and recommend appropriate infection control measures to limit the spread of disease. Working closely with the Maryland Department of Health, the Disease Control program may step up efforts to find persons associated with an outbreak, a practice known as active surveillance.

In 2017 the Disease Control Program investigated 44 infectious disease outbreaks of which 82% were in long term care facilities and 11% were pre-school settings. In keeping with 2017 case findings, 48% were gastrointestinal illness and 32% were influenza or influenza-like illness.



Public Health Emergency Preparedness and Response

The Montgomery County Public Health Emergency Preparedness and Response Program (PHEPR) has the delegated responsibility to develop, maintain, enhance, and coordinate the capabilities for responding to public health threats and other emergencies on behalf of the Public Health Services (PHS) of the Montgomery County Department of Health and Human Services (DHHS). DHHS is the lead agency for Emergency Support Function (ESF) #8 – Health and Medical, with PHEPR providing operational and subject matter support to the County’s Emergency Management Group (EMG).

PHEPR is located within the Communicable Disease and Epidemiology Division (CD&E) of PHS. Previously, PHEPR was called the Bioterrorism program.



PHEPR sustains and improves readiness through a continuous cycle of planning, practice, response, and evaluation activities.

PHEPR coordinates with public health, health care, and other county partners to evaluate plans and procedures following real-life incidents and simulated exercises to garner lessons learned that will improve future response efforts.

Established partnerships are essential to the success of emergency preparedness and response efforts. PHEPR continually engages in outreach and coordination with public and private sector partners within the County, the State, and the National Capital Region to facilitate effective, collaborative responses to man-made or natural public health threats and emergencies.

PHEPR conducts public health surveillance activities to effectively monitor, prepare for, and respond to potential public health emergencies related to disease outbreaks or other biological threats in the county. To improve disease detection capabilities, PHEPR also conducts daily review of pre-diagnostic, syndromic data. Public health surveillance is possible through

partnerships and routine communications with DHHS' Disease Control and School Health Services, the Maryland Department of Health, neighboring health departments, the National Capital Poison Center, and a coalition of health care facilities across the county, state, and region.

Planning – High Impact Infectious Disease Threats

Public health emergency preparedness in Montgomery County focuses on a range of threats including biological, chemical, radiological, terrorism, and natural disasters. Biological incidents can be a naturally occurring outbreak such as a pandemic or epidemic or can be the result of an accidental or intentional release of a biological pathogen.

PHEPR is tasked with coordinating the development of agency plans and capacities to respond to large scale epidemics and pandemics as well as bioterrorism agents and other emerging pathogens that are rarely seen in the United States. High-priority agents include organisms that pose a risk to national security because they:

- ☐ can be easily disseminated or transmitted from person to person;
- ☐ result in high mortality rates and have the potential for major public health impact;
- ☐ might cause public panic and social disruption; and
- ☐ require special action for public health preparedness.

Table 15. Category A Bioterrorism Diseases. Causative agents are in parentheses.

Category A agents are the highest priority, followed by Categories B and C (not shown, see references for more information).

[Anthrax](#) (*Bacillus anthracis*)

[Botulism](#) (*Clostridium botulinum* toxin)

[Plague](#) (*Yersinia pestis*)

[Smallpox](#) (variola major)

[Tularemia](#) (*Francisella tularensis*)

[Viral hemorrhagic fevers](#), including

[Filoviruses](#) (*Ebola*, *Marburg*)

[Arenaviruses](#) (*Lassa*, Machupo)

Since 2001, Montgomery County has responded to public health threats that include anthrax, SARS, Ebola, and H1N1 influenza.

Planning – Public Health Emergency Capabilities

PHEPR organizes emergency planning and operational response capability to align with the 15 public health preparedness capabilities as outlined by the *CDC's Public Health Preparedness Capabilities: National Standards for State and Local Planning*.

Table 16. Public Health Preparedness and Emergency Response Capabilities

Preparedness Domain	Public Health Emergency Response Capability
Biosurveillance	Public Health Surveillance and Epidemiological Investigation
	Public Health Laboratory Testing
Community Resilience	Community Preparedness
	Community Recovery
Incident Management	Emergency Operations Coordination
Information Management	Emergency Public Information and Warning
	Information Sharing
Countermeasures and Mitigation	Medical Materiel Management and Distribution
	Medical Countermeasure Dispensing
	Non-Pharmaceutical Interventions
	Responder Safety and Health
Surge Management	Mass Care
	Medical Surge
	Volunteer Management
	Fatality Management

Medical Countermeasures Dispensing

The anthrax attacks in 2001 raised awareness of the importance of public health and medical capabilities necessary to counter the effects of bioterrorist attacks and other large-scale biological threats. Through partnerships with the CDC, MDH, and a large number of public and private agencies within Montgomery County, PHEPR has engaged in significant planning and preparedness activities focused on quickly distributing and dispensing emergency medical countermeasures (MCMs) to help prevent the spread of disease. MCMs include medications, medical devices, and personal protective equipment used to prevent illness or death from intentional or unintentional exposures to chemical, biological, radiological, or nuclear threats.

One of greatest challenges that we prepare for is the ability to mass dispense medications to the *entire* local population within 48 hours of awareness of an incident.

Training

PHEPR organizes numerous trainings throughout the year to prepare governmental and community partners for their roles and responsibilities in emergency response to a large scale or

emerging infectious disease. Examples of such training and exercise activities in recent years include:

- ☐ Epidemiological and foodborne illness investigation training for County staff and volunteer surge staff
- ☐ Personal protective equipment (PPE) and respirator fit-testing for clinical response staff
- ☐ Incident Command System trainings for response staff
- ☐ Operations training for medical countermeasure dispensing through PODs

Exercises, Evaluation and Improvement Planning

PHEPR evaluates agency response during real world events and preparedness exercises in accordance with national standards set forth by the U.S. Government in its Homeland Security Exercise and Evaluation Program (HSEEP). Based on these standards, exercises are designed and evaluated to identify strengths and areas for improvement in a jurisdiction's emergency response capabilities, and to recommend corrective actions for improvement planning to enhance these response capabilities.

Table 17. Exercises Involving Public Health Response Capabilities, Montgomery County, MD, 2016-18

Date	Exercise	Capability
2018, May	No-notice emerging infectious disease drill (functional)	Public Health Surveillance and Epidemiological Investigation; Information Sharing
2018, May	Mass casualty terrorism incident (regional full scale; county-wide command post)	Emergency Operations Coordination; Medical Surge; Mass Care; Information Sharing
2017, Nov	Mass vaccination clinics (full scale)	Medical Countermeasure Dispensing; Emergency Operations Coordination
2017, Oct	Emerging infectious disease/Ebola (state and regional tabletop)	Responder Safety and Health; Community Preparedness; Medical Surge; Information Sharing; Non-Pharmaceutical Interventions
2017, June	Mass fatality incident (state tabletop)	Fatality Management
2017, May	Emerging infectious disease (tabletop)	Public Health Surveillance and Epidemiological Investigation; Information Sharing; Non-Pharmaceutical Interventions; Public Information and Warning
2017, May	Severe weather/flood response (command post)	Information Sharing; Emergency Operations Coordination
2016, Nov	Mass vaccination clinics (full scale)	Medical Countermeasure Dispensing; Emergency Operations Coordination
2016, Apr	Complex coordinated attack (full scale)	Emergency Operations Coordination; Medical Surge; Mass Care; Information Sharing
Ongoing	Staff notification and activation drills	Emergency Operations Coordination; Public Information and Warning

Ongoing	Communication system testing; radios (weekly); web-EOC (monthly); Satellite phones (quarterly)	Information Sharing; Emergency Operations Coordination;
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Additionally, PHEPR participants in local and regional assessments of community health vulnerabilities and operational readiness to respond to public health emergencies to identify areas for improvement planning. Based on these evaluation and improvement activities, PHEPR may reallocate its resources and efforts to pursue recommended corrective actions.

Public Health Response Activations

PHEPR supports both planned events and emergency incidents by activating one or more of the ESF#8 emergency response capabilities. PHEPR has coordinated the county's emergency response to significant local public health threats, including Ebola virus (2016), H1N1 (2013), West Nile virus (2003), and anthrax attacks (2001).

Full Activations include response to significant public health incidents or other incidents that require a multi-agency response, organization of response under the Incident Command System, and/or activation of the county's Public Health Operations Center. Examples include response to large infectious disease exposures or outbreaks, epidemics, or pandemics, or incidents causing mass casualties or threatening health and medical infrastructure.

Partial Activations include activation of one or two public health capabilities or response plans to support any community incident, including support to the County Emergency Management Group (EMG) or the County Emergency Operations Center (EOC). Examples include: monitoring and information sharing between public health and healthcare partners and the rest of the EMG during a weather emergency or planned National Special Security Event (i.e. Presidential Inauguration); medical surge support during an emergency shelter response; or coordination of agency resources to an ongoing disease outbreak.

Table 18. Public Health Activations, Montgomery County, Maryland, 2016-18

Date	Incident	Capabilities Activated	Activation Level
2016			
Jan-Dec	Zika Virus	Surveillance and disease control; public information & warning; information sharing; public health team deployments	Full
Aug	Piney Branch Road Apartment Fire	Medical surge support in emergency shelters	Partial
Nov	Potomac Oil Spill	ESF#8 Monitoring and information sharing	Partial
Dec	Resource Recovery Facility Fire	EMG activation; public information and warning	Partial
Jan-Dec	Zika Virus	Surveillance and disease control; public information and warning; information sharing	Partial
2017			
Jan	Presidential Inauguration	EOC activation; monitoring and information sharing	Partial
Mar	Severe Weather Event, High Wind/Thunderstorms	ESF#8 Monitoring and information sharing	Partial
Mar	Severe Weather Event, Nor'easter/Snow Storm	ESF#8 Monitoring and information sharing	Partial
Jun	Hepatitis A Exposure Investigation	Activation of surge epidemiology team to conduct rapid contact investigation and disease control	Partial
Jul	Condo Water Main Break	Medical surge support in emergency shelters	Partial
Jul	Severe Weather Event, Rain Storm/Flooding	ESF#8 Monitoring and information sharing	Partial
Oct	Pooks Hill Road Apartment Fire	Medical surge support in emergency shelters	Partial
2018			
Jan-Jul	Legionella Outbreak	Epidemiological investigation and disease control	Partial
Feb	Monroe Street Apartment Fire	Medical surge support in emergency shelters	Partial
Mar	Severe Weather Event, Snow Storm	ESF#8 Monitoring and information sharing	Partial
May	Measles Case and Exposures	Epidemiology and disease control; public information and warning	Partial
Jul	Severe Weather Event, Hospital Flooding/Power Loss	Medical surge support; information sharing	Partial
Jul-Aug	Rabies Exposure and Investigation	Epidemiology and disease control	Partial

Early Detection of Infectious Diseases

PHEPR supports DHHS public health surveillance efforts through the uses of ESSENCE (Electronic Surveillance System for the Early Notification of Community-based Epidemics), a web-based syndromic surveillance system designed for the early detection of disease outbreaks, suspicious patterns of illness, and public health emergencies. ESSENCE collects de-identified data from emergency department visit chief complaints, over-the-counter medication sales, school absenteeism, and poison center calls. The system applies statistical tools to this pre-diagnostic data to **detect, monitor, and characterize unusual activity for further public health investigation or response.**

This system is also used by state and local health departments and nationally by the Centers for Disease Control and Prevention (CDC):

- ☐ Maryland Public Health Preparedness and Situational Awareness (PHPSA) Reports
- CDC's National Syndromic Surveillance Program (NSSP)

The near real-time data ESSENCE offers is a unique advantage for public health surveillance by improving situational awareness and responsiveness to hazardous events and disease outbreaks. By using **automated data acquisition and generation of statistical signals**, continual monitoring of threat and disease indicators is possible. Biosurveillance using ESSENCE is optimized in our county by the establishment and maintenance of communication channels within Montgomery County programs, as well as with Maryland, Virginia, and DC biosurveillance teams, and with local, state and regional hospital partners.

Public health surveillance using ESSENCE may be directed toward early detection and post-event case identification for:

- ☐ Potential agents of bioterrorism including anthrax, tularemia, plague, botulism, and smallpox
- ☐ Outbreaks and pandemics (Enterovirus D68, H1N1 and other influenzas, Norovirus, Zika, Ebola)
- ☐ Other emerging infectious diseases
- ☐ Routine surveillance and trend analysis (influenza-like illnesses (ILIs), heat/cold-related illness, other conditions of interest)
- ☐ Enhanced surveillance for mass gatherings (Inauguration, Papal visit, protests) or events with public health impact (severe weather, tracking mass casualties)
- ☐ Case identification in natural and man-made disasters, injuries (falls, bicycle-related injuries, drownings), drug overdoses, chronic conditions

ESSENCE use in Montgomery County includes daily review of alerts as well as evaluation of information gathered during enhanced surveillance periods. System alerts produced in ESSENCE trigger clinical analysis of data details for emergency department visits, categories of over-the-counter pharmacy sales, and school absenteeism. This may prompt investigation, enhanced monitoring, or spot reporting in collaboration with public health and community

partners. This data is supplemental to other public health surveillance systems including, but not limited to, reportable conditions/diseases, outbreak investigations, population and healthcare surveys, and environmental monitoring.

The Montgomery County PHEPR program produces a weekly Public Health Preparedness and Situational Awareness Report distributed to County leadership and hospital partners. Spot reports may be sent when conditions of concern arise.

ESSENCE Alerts are produced within syndrome categories, representing clinical manifestations of illness. Approximate number of alerts for all age groups combined are summarized below.

Table 19. ESSENCE Alerts Evaluated by Syndrome (Age groups combined), Montgomery County, MD, 2015-17

Syndrome	2015	2016	2017
Botulism-like Illness	16	26	24
Fever	35	29	46
Gastrointestinal	39	42	35
Hemorrhagic Illness	21	29	22
Localized Lesions	33	25	25
Lymphadenitis	34	29	29
Neurological	31	21	22
Rash	31	24	32
Respiratory	45	29	53
Severe Illness/Death	27	31	35
Influenza-like Illness	47	46	49
Opioid--related	30	20	25
Injuries	56	28	25
Weather-related, heat	22	30	28
Weather-related, cold	19	16	14
Totals	492	425	464

Alerts are also received and reviewed by age-groupings to increase detection sensitivity. With an average of 1,864 age-grouped alerts per year, Montgomery County's ESSENCE program reviews more than 2,300 total syndromic alerts each year, averaging more than six alerts per day.

2017-18 Influenza Surveillance and Response

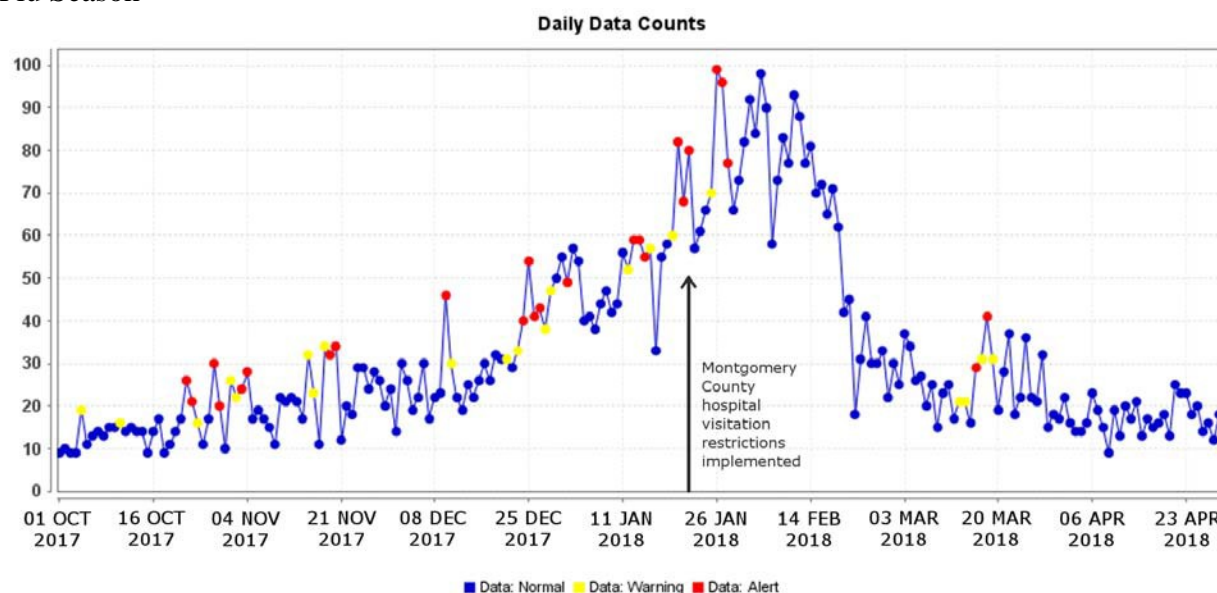
DHHS monitors influenza-like illnesses (ILI) in Montgomery County through emergency department visits, over-the-counter sales, and school absenteeism reports. The 2017-2018 flu season, defined as Oct 1-April 30, saw significant increases in illness data from previous seasons and was the first season to be classified across the United States as a high severity *across all age groups* since the CDC began this classification system in 2003.

Table 20. Emergency Department Visits for ILI by Flu Season, 2012-18

Flu Season	Emergency Department Visits for ILI	Peak Month
2017-2018	6994	January - 1822
2016-2017	5273	February - 1171
2015-2016	4913	December - 932
2014-2015	7016	December - 1614
2012-2013	3819	January - 1180

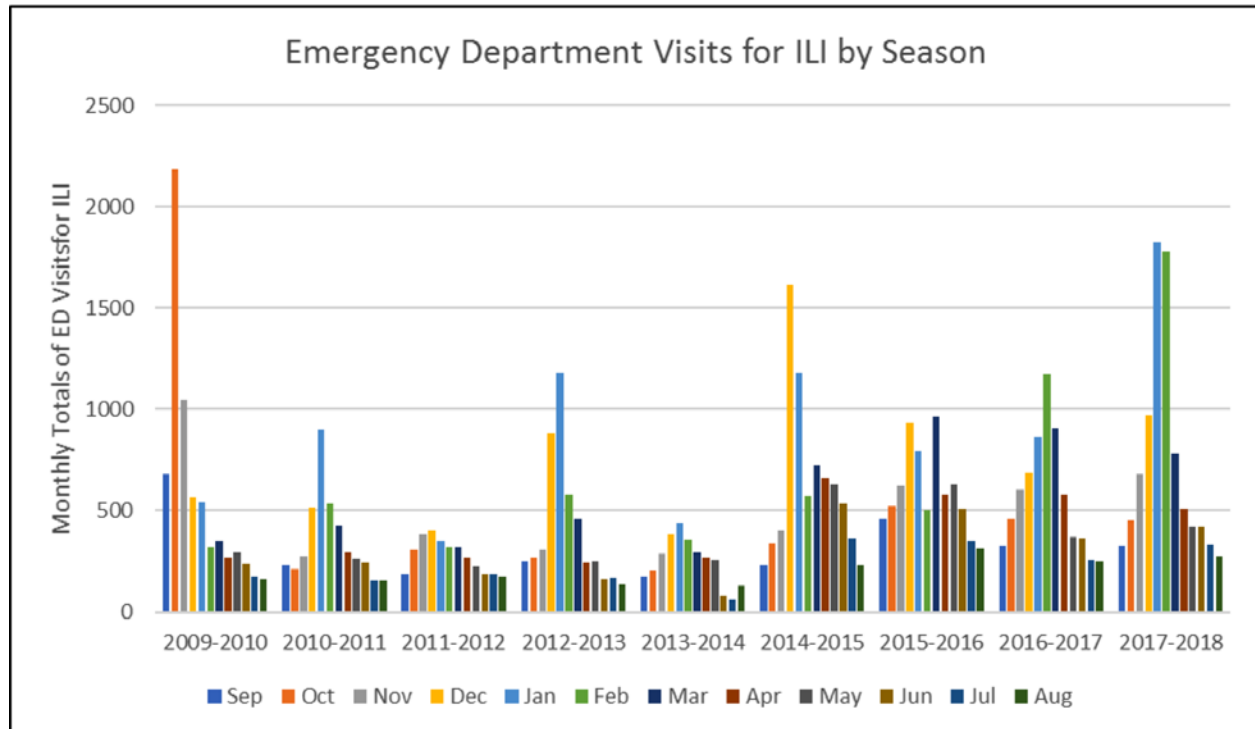
After reviewing consolidated county data for influenza-like illnesses, as provided in weekly ESSENCE reports, the Montgomery County hospitals decided in February of 2018 to implement stricter visitor restrictions to protect patients and staff and requested DHHS to issue related media alerts and public messaging from the County's health officer.

Fig 49. Daily Counts of Emergency Department Visits for ILI, Montgomery County, 2017-18 Flu Season



Data from Maryland ESSENCE

Fig 50. Monthly Counts of Emergency Department Visits for Influenza-Like Illness, Montgomery County, 2009-18

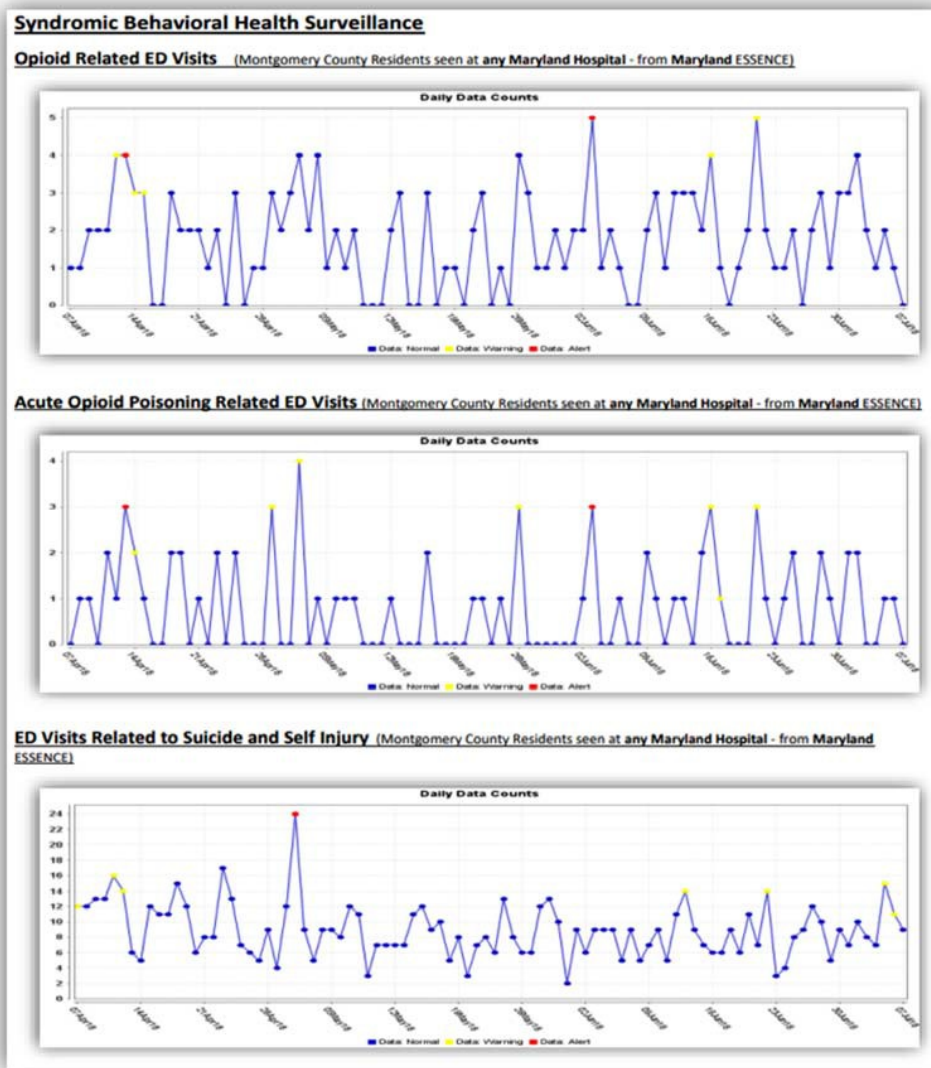


Opioid Overdose Surveillance

Following the noted rise in opioid-related overdoses and deaths across Maryland and the United States and the 2017 declaration of a public health emergency by the Governor, DHHS adopted increased surveillance activity of opioid use in Montgomery County. In collaboration with Behavioral Health and Crisis Services and the Johns Hopkins Applied Physics Lab, PHEPR developed ESSENCE queries to collect Opioid-related, Acute Poisoning, and Self Injury-related emergency department visit data.

The use of ESSENCE collected emergency department data has improved surveillance information from a two-month delay to *near real-time availability*. This information is now shared with Behavioral Health and Crisis Services and other DHHS officials in the weekly report.

Fig 51. Behavioral Health Syndrome Surveillance, Montgomery County, MD, April-June 2018



Tuberculosis Control

Tuberculosis (TB) is a disease caused by *Mycobacterium tuberculosis* (*M. tuberculosis*). It typically affects the lungs and can affect any other part of the body such as lymph nodes, bones and joints, the brain and other organs. TB can be spread through the air when a person coughs, laughs, sneezes or sings. If treated effectively, most people can be cured of TB; If not treated properly, people can develop drug-resistant forms of TB or it can lead to death. TB remains one of the globe's deadliest diseases with an estimate of infection in one third of the world's population.

Although TB has consistently declined in the United States over the past several years, it is still a problem. TB control efforts must be maintained. A strong public health infrastructure and commitment will support overall TB control and elimination efforts. Latent TB infection, in addition to TB disease cases, is reported to the Maryland Center for Tuberculosis Control and Prevention (CTBCP) for surveillance as mandated by Code of Maryland Regulations (COMAR) effective July 2018.

Montgomery County accounts for approximately 32.6% of the foreign-born population in the state of Maryland. It is estimated that 20% of the county population comes from countries with a high prevalence of tuberculosis resulting in the unique demographic of tuberculosis among county residents. While the number of TB cases has decreased at the national level, Montgomery County continues to have fifty or more cases annually. While Montgomery County accounts for approximately 17% of Maryland's population, it accounts for approximately 30% of the state's cases 2017. In calendar year 2017 there were 63 confirmed cases of TB in Montgomery County, approximately 97% of whom were foreign-born. This is equivalent to an incidence rate of 6.0 cases per 100,000 population. In comparison, Maryland had an incidence rate of 3.4 per 100,000 in 2017 [8].

About the Program

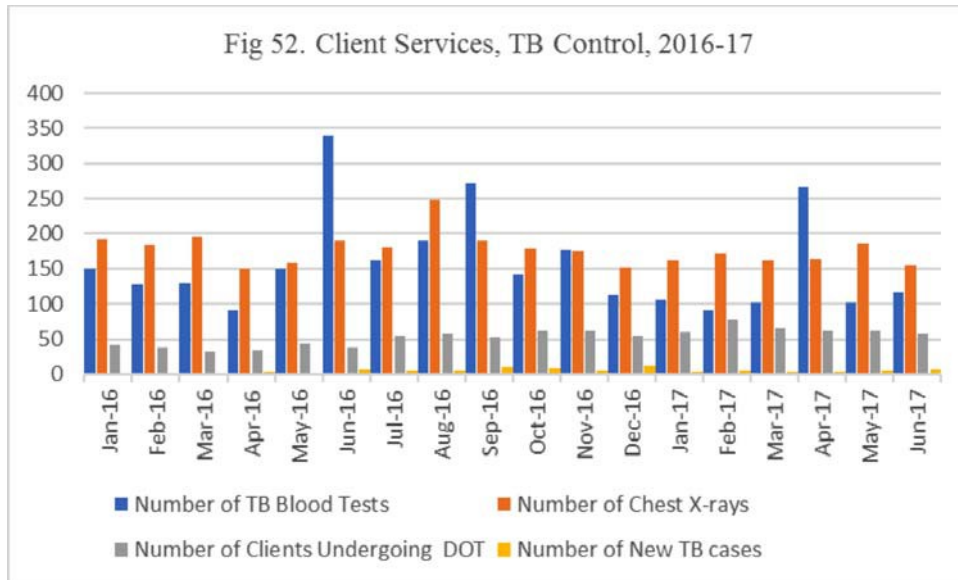
Role

1. Early identification and treatment of TB disease cases in Montgomery County
2. Prevention of future TB cases by providing prophylaxis treatment for TB infection

Services

1. Oversight of TB disease cases in Montgomery County
2. Diagnosis, treatment and case management of active TB and TB infection.
 - Ongoing medical evaluation and management
 - Ongoing nursing assessment and case management

- Each client is assigned to a physician, registered nurse and community service aide
 - On-site radiography (digital imaging)
 - On-site and external radiography interpretation and reporting
 - On-site phlebotomy services
 - On-site negative pressure exam and sputum specimen collection rooms. Negative pressure is an infection control technology that is used to minimize the risk of disease transmission in clinical settings.
3. Medication dispensing
 4. Directly Observed Therapy (DOT) (onsite, community, video)
 - Standard of care
 - Individuals with TB take medication daily for at least six months. In most cases, a TB program staff member observes them taking their medication daily to ensure medication adherence and observe for response to treatment. This can be done in the clinic, worksite, home, community setting and electronically.
 - Individuals are closely monitored for problems or side effects related to the medication.
 5. Targeted testing and screening (identification of TB infection)
 - Individuals at high risk to develop TB disease are screened and tested. People at high risk include those who share the same breathing space with someone who has TB disease, people born in countries where a lot of people have TB, people who live in congregate settings such as correctional facilities and nursing homes, people with certain medical conditions and those with weakened immune systems.
 6. Consultation with community health facilities and providers.
 7. Close screening and evaluation of persons with TB disease to active TB cases.
 8. Onsite and collaborative community contact screening and evaluation (i.e. long-term care facilities and schools).
 9. Community referrals



Intake Referrals

The Tuberculosis Control Program receives patient referrals from the following types of health care providers and situations:

- Hospitals
- Community health care facilities
- Community providers
- CDC notification of suspect TB cases, known as “Class B waivers”. These involve persons new to the U.S. with abnormal chest X-rays, previous history of treatment, being HIV positive, a recent TB contact or having a latent infection prior to entry.
- Self-referrals. Montgomery County residents with questions and concerns about tuberculosis symptoms, exposure and general information may contact the program for assistance.

Montgomery County TB Program at a Glance: 2017

- ☐ 63 confirmed TB disease cases.
- ☐ 37 cases were the pulmonary form, meaning that the lungs were affected, 16 cases extrapulmonary tuberculosis was diagnosed, meaning the infection was found outside the lungs. In 10 cases the infections were categorized as pulmonary/extrapulmonary, meaning the infection was in both the lungs and other parts of the body. This is important because the site of infection affects how easily it is spread to others, treatment, and other considerations. Over the past five years, approximately half of tuberculosis cases have had pulmonary involvement.

- ❑ Two hundred latent TB infections were identified during TB Program clinic screenings. This is significant because the identification of latent infections is important in decreasing the reservoir of potential future cases of active disease. Providing prophylaxis (medicine that prevents active disease) to individuals with latent infection may significantly reduce the chance for progression to TB disease. Because persons with TB are at special risk for also having HIV, HIV testing is offered to all patients placed on TB drugs.
- ❑ 100% of TB cases were placed on Directly Observed Therapy (DOT).
- ❑ The TB Program participated in a Video Directly Observed Therapy study in 2015. Our program is one of the first two jurisdictions to successfully implement asynchronous vDOT for TB treatment in Maryland and 30% of clients receiving treatment for active TB received vDOT since its implementation. With the use of vDOT a public health worker no longer has to physically be with a TB patient to ensure compliance, thus freeing large amounts of resources that can be used in other public health efforts.
- ❑ Two hundred latent TB infections were identified during clinic screenings. This is significant because the identification of latent infections is important in decreasing the reservoir or potential future cases of active disease. Providing prophylaxis (medicine that prevents active disease) to individuals with latent infection may significantly reduce the chance for progression to TB disease.
- ❑ 1391 TB blood tests were performed
- ❑ 1763 chest x-rays were performed
- ❑ 260 homeless shelter clearances were provided
- ❑ Over 6,120 individuals were served (school and immigration as well as medical consultation, treatment for latent TB infection (TLTBI), DOT and treatment of active TB).

Sexually Transmitted Disease and HIV Program

HIV Program

Montgomery County's HIV Program provides a comprehensive system of care that includes primary medical care and essential support services for residents, 18 years and older, living with HIV who are uninsured, underinsured or with Maryland Medical Assistance insurance plans.

The HIV Program has been in operation since 1991 with Ryan White funding through the U.S. Senate enactment of The Ryan White Comprehensive AIDS Resources Emergency (CARE) Act, which since 2009 is known as the Ryan White HIV/AIDS Treatment Extension Act. This Federal legislation was enacted to address the unmet health needs of People Living with HIV/AIDS (PLWHA).

Montgomery County's HIV Program has adopted the primary goals of the Nation's HIV/AIDS Strategy for the United States: Updated to 2020. These are: 1. Reducing New HIV Infections; 2. Increasing Access to Care and Improving Health Outcomes for People Living with HIV; 3. Reducing HIV -Related Disparities and Health Inequities.

Montgomery County has adopted the following Vision Statement of the Maryland Department of Health:

Montgomery County, Maryland will become a place where new HIV infections are rare and when they do occur, every person, regardless of age, gender, race/ethnicity, sexual orientation, gender identity, or socio-economic circumstance, will have unfettered access to high quality, life-extending care, free from stigma and discrimination.

With the addition of Ryan White funding in 1991, Montgomery County's HIV Program, in operation since 1988, has expanded to its present level of 32 staff representing seven professional disciplines to provide state-of-the-art medical care, case management and support services to the indigent, uninsured and under- insured residents of suburban Maryland living with HIV/AIDS. To date Montgomery County has provided services to over 3600 county residents living with HIV/AIDS. Montgomery County's HIV Program is the only program in the county which provides expert HIV/AIDS care to indigent residents and continues to initiate care for approximately 120 new and returning to care clients each year.

The HIV populations we serve in the program are vulnerable county residents with multiple medical and psychosocial needs. Our expert and culturally competent staff address the needs of our diverse and predominately foreign-born population through a comprehensive, multidisciplinary model. Lack of adequate care can lead to drug resistance, illness and increased risk of transmission of the virus, posing a real public health threat.

Ryan White Care Act Funding Sources

District of Columbia Department of Health, HIV/AIDS, Hepatitis, STD and TB Administration (HAHSTA)

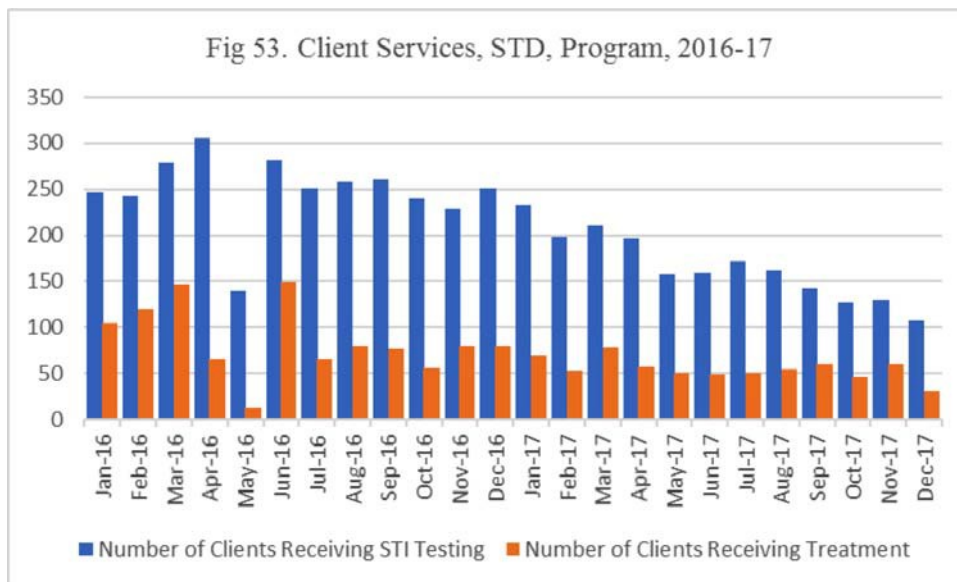
Prince Georges County Health Department, Suburban Maryland Ryan White Part A Administrative Agency

Maryland Department of Health, Prevention and Health Promotion Administration, Infectious Disease Prevention and Health Services Bureau

STD Services

In 1985, the County's STD Clinic relocated to the Dennis Avenue Health Center in Silver Spring where a combined HIV/STD Program was established. HIV Testing, HIV Partner Notification, and linkage to care for positives became part of STD Services.

Clinical services for testing and treatment of STD's include HIV testing and linkage to care, Pre-exposure Prophylaxis (PrEP) care and treatment, HIV/STD Prevention Services, Education and HIV testing in non-clinical settings, partner services for reportable STD's and Data to Care to support linkage to care for persons deemed out of care by MDH surveillance



Screening Tests

Gonorrhea

Chlamydia

Syphilis

HIV

Hepatitis B

Herpes culture only

PrEP Clinic

Screening and related treatment visits: \$60

Sliding scale fee available

Maryland Medical insurance plans accepted

No cost for Rapid Testing

No cost for individuals under 21

No cost for testing and treatment for contacts

Immunization Program

The Immunization Program in partnership with the Maryland Vaccines for Children (VFC) Program provide all routinely recommended vaccines, free of cost, to children 18 years old and younger who are uninsured, under-insured or Maryland Medicaid eligible. Immunization clinics are located throughout the County in community health centers, school-based health centers, and the Montgomery County Public Schools (MCPS) International Enrollment Center. Vaccines are administered according to CDC's Advisory Committee on Immunization Practice (ACIP) recommendations; under the direction of the Montgomery County Health Officer.

The Immunization Program has a robust influenza prevention plan for county residents and DHHS employees. Partnerships include School Health Services, Universities at Shady Grove (USG), and the Montgomery County Office of Occupational Medical Services (OMS).

- ☐ School located seasonal flu vaccine clinics for children age 18 and under.
- ☐ Mass vaccination seasonal flu vaccine clinics at USG; all ages welcome. The clinic model uses nursing students and pharmacy students as vaccinators; 72 vaccinators administer 600 flu shots in 3.5 hours. Many in the community look forward to this annual family event.
- ☐ A mandatory employee flu shot policy for Public Health Services employees working in certain clinical settings.

The Immunization Program is dedicated to keeping Montgomery County infants and toddlers on track with their immunizations. The Immunization Program in partnership with Women, Infants and Children (WIC) review participants' immunization records, send reminders, and provide education to help babies stay up-to-date with all age appropriate immunizations.

The Immunization Program provides outreach to county residents and health care providers with education materials about vaccine facts vs. myths.

Contact Us:

Dennis Avenue Health Center

2000 Dennis Avenue, Silver Spring, MD 20902

Phone numbers:

Main Number/Security 240-777-1814

Immunization Program 240-777-1050

Disease Control Program 240-777-1755

HIV Client Services 240-777-1869

STD Services 270-777-1760

Public Health Preparedness 240-777-3038

Tuberculosis Control 240-777-1800

Dental Clinic 240-777-1737

Conclusion

Overall, Montgomery County had lower disease burden on infectious disease than Maryland and the U.S., however disparities existed among population subgroups by sex, race/ethnicity, age, and geographic area. Montgomery County has the most diverse population in Maryland and is becoming more diverse over time. The infectious disease burden, as well as health care utilization and costs associated with changing demography, social determinants, and health care access are expected to be impacted exponentially. It is therefore critical to monitor and evaluate population health and services provided by DHHS programs on an ongoing basis to anticipate ongoing and future challenges. Efforts and resources should be targeted and allocated to address the findings of this report.

Montgomery County has consistently higher rates of Tuberculosis than Maryland and the U.S. over the years, possibly due to the much higher Asian population and immigrants in the county. Though consistently lower than the Maryland and the U.S., the sexually transmitted infections (chlamydia, gonorrhea, and syphilis) in the county have increasing trends. For HIV, Montgomery County has lower rates than Maryland but higher than the U.S. over the years with decreasing trend.

Sex

While females have higher rates of chlamydia, males have higher rates of gonorrhea and syphilis for sexually transmitted infections. Females also have higher HIV rates.

Race/Ethnicity

Asian have the highest TB rates, followed by NH-Blacks, as compared to other groups. NH-Blacks have the highest rates of sexually transmitted infections (chlamydia, gonorrhea, and syphilis) than other groups, NH-Blacks also have the highest HIV rates.

Age

Residents aged 25-44 or older have the highest TB rates, followed by ages 20-24. Residents aged 20-24 have the highest rates of chlamydia and gonorrhea, followed by ages 15-19. Residents aged 25-44 have the highest syphilis rates, followed by ages 20-24.

Geographic Variations

Geographic variations of infectious diseases and conditions are presented by zip code, due to the limitation that data for smaller geographical units are not available.

The risks of health conditions vary by sex, race/ethnicity, age, and geographic area for population subgroups. Information presented in this surveillance report can be used to target intervention efforts for population subgroups at high risk of disease morbidity and mortality, to evaluate services provided by DHHS programs, and to better plan and allocate resources. An important use of surveillance data is to monitor trends following the initiation of prevention programs in order to evaluate their effectiveness.












This report is strengthened by the use of data from multiple sources that provide a more comprehensive picture of disease burden and population health than would a single source, as well as by examining the disease burden in the county by population subgroups and geographic areas and services provided by DHHS programs for better allocating resources and targeting intervention. Ongoing efforts are being made to further enhance data variety and quality for population health surveillance. Consumer and provider education is a critical component of disease prevention and health promotion. This can be accomplished through the dissemination of population health statistics and prevention information at professional meetings and conferences. Pamphlets and brochures with information on disease prevention and health promotion can be provided to patients and clients at providers' offices. This information can also be made available through traditional and online media.

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Appendix A: Reportable Diseases and Conditions in Maryland

https://phpa.health.maryland.gov/IDEHSharedDocuments/ReportableDisease_HCP.pdf

-  An outbreak of a disease of known or unknown etiology that may be a danger to the public health
A single case of a disease or condition not otherwise included in §C of this regulation, of known or unknown etiology, that may be a danger to the public health or an unusual manifestation of a communicable disease in an individual
-  Acquired immunodeficiency syndrome (AIDS)
Amebiasis (*Entamoeba histolytica*)*
Anaplasmosis (*Anaplasma phagocytophilum*)
-  Animal bites *
-  Anthrax (*Bacillus anthracis*)
-  Arboviral infections including, but not limited to:
 - Chikungunya virus infection
 - Dengue fever
 - Eastern equine encephalitis
 - LaCrosse virus infection
 - St. Louis encephalitis
 - Western equine encephalitis
 - West Nile virus infection
 - Yellow fever
 - Zika virus disease
- Babesiosis (*Babesia* species)
-  Botulism (*Clostridium botulinum* or botulinum toxin or other botulism producing *Clostridia*)
-  Brucellosis (*Brucella* species)
Campylobacteriosis (*Campylobacter* species)
Chancroid (*Haemophilus ducreyi*)
Chlamydia trachomatis infection, including lymphogranuloma venereum (LGV)
-  Cholera (*Vibrio cholerae*)
Coccidioidomycosis (*Coccidioides immitis*)
Creutzfeldt-Jakob disease
Cryptosporidiosis (*Cryptosporidium* species)
Cyclosporiasis (*Cyclospora cayatensis*)
-  Diphtheria (*Corynebacterium diphtheriae*)
Ehrlichiosis (*Ehrlichia* species) Encephalitis,
-  infectious*
- Epsilon toxin of *Clostridium perfringens* intoxication*
-  *Escherichia coli* O157:H7 infection

- Giardiasis (*Giardia* species)
- ☑ Glanders (*Burkholderia mallei*)
- Gonococcal infection (*Neisseria gonorrhoeae*)
- ☑ *Haemophilus influenzae* invasive disease
- ☑ Hantavirus infection
- Harmful algal bloom related illness*
- Hemolytic uremic syndrome, postdiarrheal
- ☑ Hepatitis A acute infection
- Hepatitis, viral (B, C, D, E, G, all other types and undetermined)
- ☑ Human immunodeficiency virus (HIV) infection
- HIV perinatal exposure (infant whose mother has tested positive for HIV)
- Influenza-associated pediatric mortality
- ☑ Influenza: novel influenza A virus infection
- Isosporiasis (*Cystoisospora belli*)*
- Kawasaki syndrome*
- ☑ Legionellosis (*Legionella* species)
- Leprosy (*Mycobacterium leprae*)
- Leptospirosis (*Leptospira interrogans*)
- Listeriosis (*Listeria monocytogenes*)
- Lyme disease (*Borrelia burgdorferi*)
- Malaria (*Plasmodium* species)
- ☑ Measles (rubeola)
- ☑ Melioidosis (*Burkholderia pseudomallei*)
- Meningitis, infectious*
- ☑ Meningococcal invasive disease (*Neisseria meningitidis*)
- Microsporidiosis (microsporidian protozoa, including but not limited to, *Encephalitozoon* species)*
- Mumps (infectious parotitis)
- Mycobacteriosis, other than tuberculosis and leprosy (*Mycobacterium* spp., other than *Mycobacterium tuberculosis* complex or *Mycobacterium leprae*)
- ☑ Pertussis (*Bordetella pertussis*)
- Pertussis vaccine adverse reactions*
- Pesticide related illness (Cholinesterase below the normal laboratory range)
- ☑ Plague (*Yersinia pestis*)
- Pneumonia in a health care worker resulting in hospitalization*
- ☑ Poliomyelitis (Poliovirus)
- Psittacosis (*Chlamydophila psittaci*)
- ☑ Q fever (*Coxiella burnetii*)
- ☑ Rabies infection (human)
- ☑ Ricin toxin poisoning (from *Ricinus communis* castor beans)
- Rocky Mountain spotted fever (*Rickettsia rickettsii*)
- ☑ Rubella (German measles) and congenital rubella syndrome
- Salmonellosis, nontyphoidal (*Salmonella* species, including serogroup, if known)

- ☎ Severe acute respiratory syndrome (SARS)
- ☎ Shiga-like toxin producing enteric bacterial infections
Shigellosis (*Shigella* species)
- ☎ Smallpox and other orthopoxvirus infections (Variola virus, vaccinia virus, and other orthopox viruses)
- ☎ Staphylococcal enterotoxin B poisoning
- Streptococcal invasive disease (Group A *Streptococcus pyogenes*)
- Streptococcal invasive disease (Group B *Streptococcus agalactiae*)
- Streptococcus pneumoniae* invasive disease
- Syphilis (*Treponema pallidum*)
- Tetanus (*Clostridium tetani*)
- Trichinosis (*Trichinella spiralis*)
- ☎ Tuberculosis and suspected tuberculosis (*Mycobacterium tuberculosis* complex)
- ☎ Tularemia (*Francisella tularensis*)
- ☎ Typhoid fever (case, carrier, or both, of *Salmonella Typhi*)
- Vancomycin-intermediate *Staphylococcus aureus* (VISA) infection or colonization
- Vancomycin-resistant *Staphylococcus aureus* (VRSA) infection or colonization
- Varicella (chickenpox), fatal cases only
- Vibriosis, non-cholera (All non-cholera *Vibrio* species)
- ☎ Viral hemorrhagic fevers, including but not limited to:
 - Crimean-Congo virus infection
 - Ebola virus infection
 - Marburg virus infection
 - Lassa virus infection
 - Machupo virus infection
- Yersiniosis (*Yersinia* species other than *Y. pestis*, which is immediately reportable)*
- ☎ Should be reported immediately

* Not Nationally Notifiable

Appendix B: Technical Notes

1. Data Sources

The Office of Planning and Epidemiology uses various data sources to compile information on disease burden and population health, including vital records, inpatient and outpatient hospitalization, disease registry, surveys, area health resources file, and Census. Data on infectious diseases are provided by the Infectious Disease Bureau of Maryland Department of Health. Behavioral Risk Factor Surveillance System (BRFSS) data and Youth Risk Behavior Survey (YRBS) data are provided by the Cancer and Chronic Disease Bureau of the Maryland Department of Health. Vaccination coverage estimates are from the National Immunization Survey (NIS) of CDC. Data on population estimates are derived from the American Community Survey (ACS) of U.S. Census Bureau.

In addition, the Office of Planning and Epidemiology uses other data sources such as program data collected in electronic medical records and electronic integrated case management system to conduct surveillance and program evaluation. These datasets are used to produce statistical information for health care professionals, researchers, and policy makers as part of surveillance activities.

2. Data Quality and Confidentiality

Data quality is assessed on a routine basis, in terms of completeness, timeliness and accuracy, and is documented to help interpret results from analyzing these population datasets. All data collected and housed by the Office of Planning and Epidemiology complies with the state and federal privacy and confidentiality regulations. Data or data analysis may be requested through the Office of Planning and Epidemiology.

3. Disparities on Race and Ethnicity

The Office of Planning and Epidemiology follows the recommendation of the National Center for Health Statistics of classifying health conditions according to the self-reported race/ethnicity of the individual. Information on race/ethnicity recorded in each data source is used to illustrate disease burdens for population subgroups. There are variations of data quality on race/ethnicity recorded in each population dataset, in terms of completeness and accuracy, thus interpretations of results are to take this into consideration. Though this information can be used to address important topics such as health equity, race/ethnicity is a self-reported item and is subject to the usual limitations of this type of information.

4. Rate

The rates provided in this report are estimations of the proportion of population with specific health conditions. This rate is usually expressed as per 100,000 population and is calculated by the formula:

$$\text{Rate} = \frac{\text{Number of Persons with Specific Conditions}}{\text{Total Population}} * 100,000$$

5. Graphs

Graphs have varying scales depending on the range of the data displayed. Therefore, cautions should be exercised when comparing such graphs.

6. Standard Errors

The standard errors (S.E.) of the rates were calculated using the following formula:

$$S.E. = \sqrt{\frac{w_j^2 n_j}{p_j^2}}$$

where,

- w_j = fraction of the standard population in age category
- n_j = number of cases in that age category
- p = person-years denominator

7. Confidence Intervals (CI)

The confidence interval is a method of assessing the magnitude and stability of a rate or ratio. The 95% CI represents a range of values that has a 95% probability of including the true rate or ratio. Observed rates are subject to statistical variation. Thus, even if the underlying risk of specific health condition is identical in two subpopulations, the observed rates for the subpopulations may differ because of random variation. The confidence interval describes the precision of the observed rate as an estimate of the underlying risk of having a specific health condition, with a wider interval indicating less certainty about this estimate. The width of the interval reflects the size of the subpopulation and the number of cases with specific health conditions. Smaller subpopulations with fewer health conditions lead to wider confidence intervals. The 95% confidence intervals used in the report are based on the Poisson distribution.

The standard error can be used to calculate the confidence interval. If the interval produced for one rate does not overlap the interval for another, the probability that the rates are statistically different is 95% or higher.

(This test can be inaccurate for rates based on fewer than 10 events.) The formula used is:

$$R \pm z (SE)$$

where,

- R=age-adjusted rate of one population
- z = 1.96 for 95% confidence limits
- SE= standard error as calculated above

Appendix C: Sources of Additional Information

For more information on infectious diseases and conditions, risk factors, prevention, disease burden, programs and efforts to address specific infectious diseases and conditions in the county, state, and national level please refer to the following resources:

- Data Montgomery – DHHS Food Establishment Inspection Database

<https://data.montgomerycountymd.gov/Health-and-Human-Services/Food-Inspection/5pue-gfbe>

- State Laboratory, Maryland Department of Health

[Maryland Department of Health Laboratories Administration](#)

- Vector-borne and zoonotic disease: A Reminder To Marylanders: Keep Wildlife In The Wild, Maryland Department of Health

<https://health.maryland.gov/newsroom/Pages/A-Reminder-To-Marylanders-Keep-Wildlife-In-The-Wild.aspx>

- Rabies Prevention: Get Mad About Rabies. Maryland Department of Health

<https://phpa.health.maryland.gov/OIDEOR/CZVBD/Shared%20Documents/Get-Mad-about-Rabies.pdf>

- Rabies PEP poster for clinicians

<https://phpa.health.maryland.gov/OIDEOR/CZVBD/Shared%20Documents/Rabies%20PEP%20poster.pdf>

- Rabies in Spanish

https://phpa.health.maryland.gov/OIDEOR/CZVBD/Shared%20Documents/Get%20Mad%20about%20Rabies_Spanish.pdf

- Tick Safety brochure: Maryland Get Ticked Off!

<https://phpa.health.maryland.gov/OIDEOR/CZVBD/Shared%20Documents/MGTO%20brochure%20Eng%202017%20mdh.pdf>

- Lyme disease fact sheet

<https://phpa.health.maryland.gov/pages/lyme-disease.aspx>

- Ticks Safety brochure in Spanish

<https://phpa.health.maryland.gov/OIDEOR/CZVBD/Shared%20Documents/MGTO%20brochure%20Eng%202017%20mdh.pdf>

- Malaria, Centers for Disease Control and Prevention

<https://www.cdc.gov/parasites/malaria/>

- Association of Public Health Laboratories (APHL)

<https://www.aphl.org/Pages/default.aspx>

- Zoonotic and Vector-borne Diseases, Maryland Department of Health (Spanish)

<https://phpa.health.maryland.gov/OIDEOR/CZVBD/Shared%20Documents/Maryland%20Quiete%20Las%20Garrapatas%202017.pdf>

- Lyme Disease, Maryland Department of Health

https://phpa.health.maryland.gov/OIDEOR/CZVBD/Shared%20Documents/Lyme_MD_poster_FINAL.pdf

- Center for HIV Surveillance, Epidemiology and Evaluation, Maryland Department of Health

<https://phpa.health.maryland.gov/OIDEOR/CHSE/Pages/statistics.aspx>

- HIV/AIDS Bureau, Health Resources and Services Administration, U.S. Department of Health and Human Services.

<https://hab.hrsa.gov/>

- The White House, National HIV/AIDS Strategy for the United States: Updated to 2020

<https://files.hiv.gov/s3fs-public/nhas-update.pdf>

- Public Health Preparedness Capabilities: National Standards for State and Local Planning

<https://www.cdc.gov/phpr/readiness/capabilities.htm>

- Maryland Public Health Preparedness and Situational Awareness (PHPSA) Reports

https://preparedness.health.maryland.gov/Pages/Reports_PHPSA.aspx

- CDC's National Syndromic Surveillance Program (NSSP)

<https://www.cdc.gov/nssp/index.html>

Appendix D: Infectious Disease Statistics in Montgomery County, 2013-2017

	2013	2014	2015	2016	2017	2013-2017	
Condition	N	N	N	N	N	N	*Rate
Amebiasis	5	7	2	15	12	41	0.8
Anaplasmosis	0	1	1	0	1	3	0.1
Animal Bites	737	-	995	1051	1,099	3882	76.2
Anthrax	0	0	0	0	0	0	0
Babesiosis	0	0	0	2	0	2	0
Botulism	2	1	1	1	0	5	0.1
Brucellosis	0	0	1	0	2	3	0.1
Campylobacteriosis	160	157	137	164	198	816	16.0
Chancroid	0	0	0	0	0	0	0
Chikungunya	-	24	6	164	0	194	3.8
Chlamydia	2,393	2,737	3015	3428	4,029	15602	306.1
Cholera	0	0	0	0	1	1	0
Coccidioidomycosis	2	3	1	0	0	6	0.1
Cruetzfeld-Jacob Disease	0	0	0	0	-	0	0
Cryptosporidiosis	6	5	3	6	17	37	0.7
Cyclosporiasis	0	0	0	1	11	12	0.2
Dengue Fever	5	1	3	1	3	13	0.3
Diphtheria	0	0	0	0	0	0	0
Ehrlichiosis	2	1	1	1	0	5	0.1
Encephalitis (Non-Arboviral)	0	0	3	0	3	6	0.1
Epsilon Toxin (C. perf) Associated Illness	0	0	0	0	0	0	0.0
Giardiasis	55	87	73	49	5	269	5.3
Glanders	0	0	0	0	0	0	0
Gonorrhea	472	417	386	563	726	2564	50.3
H. Influenzae-Invasive Disease	18	13	8	19	24	82	1.6
Hantavirus Infection	0	0	0	0	0	0	0
Hantavirus Pulmonary Syndrome	0	0	0	0	0	0	0
Hemolytic Uremic Syndrome, Post Diarrheal	2	0	1	1	0	4	0.1
Hepatitis A	10	9	5	6	5	35	0.7
Hepatitis B	4	5	3	0	6	18	0.4

Hepatitis B-Perinatal	0	0	0	0	0	0	0
Hepatitis C	0	0	0	0	1	1	0
Hepatitis D	0	0	0	0	-	0	0
Hepatitis E	0	0	0	1	-	1	0
Human Immunodeficiency Virus	167	181	155	159	164	826	16.2
Influenza Novel A Virus Infection	0	0	0	0	-	0	0
Isosporiasis	0	0	0	0	0	0	0
Kawasaki Syndrome	1	0	1	0	4	6	0.1
Legionellosis	22	20	27	21	9	99	1.9
Leprosy	2	1	0	0	0	3	0.1
Leptospirosis	0	0	0	0	0	0	0
Listeriosis	9	2	2	3	6	22	0.4
Lyme Disease	86	135	280	309	211	1021	20.0
Malaria	43	47	37	56	67	250	4.9
Measles	1	0	0	0	0	1	0
Meningitis, Aseptic	83	99	142	69	72	465	9.1
Meningitis, Fungal	0	2	2	4	2	10	0.2
Meningococcal, Invasive	1	3	0	0	1	5	0.1
Microsporidiosis	0	0	0	0	-	0	0
Mumps	0	1	1	4	0	6	0.1
Mycobacteriosis, other than TB and Leprosy	127	190	188	216	211	932	18.3
Pertussis	40	72	32	23	15	182	3.6
Pertussis Vaccine Adverse Reactions	0	0	0	0	0	0	0
Plague	0	0	0	0	0	0	0
Pneumonia-Hospitalized Healthcare Worker	0	0	0	1	0	1	0
Poliomyelitis	0	0	0	0	0	0	0
Psittacosis	0	0	0	1	0	1	0
Q Fever	0	0	0	0	0	0	0
Rabies-Animal	33	40	42	29	27	171	3.4
Rabies-Human	0	0	0	0	0	0	0
Ricin Toxin Associated Illness	0	0	0	0	0	0	0
Rubella	0	0	0	0	0	0	0
Rubella Congenital Syndrome	0	0	0	0	0	0	0
Salmonellosis other than Typhoid Fever	146	118	171	150	124	709	13.9
SARS	0	0	0	0	0	0	0
STEC	8	3	11	12	12	46	0.9
Shigellosis	17	29	25	19	25	115	2.3
Smallpox and other Orthopox	0	0	0	0	0	0	0

Spotted Fever Rickettsiosis	0	1	0	0	11	12	0.2
Staphylococcal Enterotoxin B Illness	0	0	0	0	0	0	0
Strep Group A -Invasive Disease	18	17	33	31	26	125	2.5
Strep Group B- Invasive Disease	62	66	71	73	62	334	6.6
Strep pneumoniae - Invasive Disease	46	49	36	47	53	231	4.5
Syphilis-Congenital (per 100,000 live births)	1	2	1	0	1	5	0.1
Syphilis-Primary and Secondary	20	31	38	33	53	175	3.4
Tetanus	0	0	0	0	0	0	0
Trichinosis	0	0	0	0	0	0	0
Tuberculosis	52	59	51	75	63	300	5.9
Tularemia	0	0	0	0	0	0	0
Typoid Fever-Acute	4	3	1	0	5	13	0.3
Typoid Fever-Carrier	0	0	0	0	0	0	0
Varicella-Deaths	0	0	0	0	0	0	0
Vibriosis (non cholera)	2	4	7	7	11	31	0.6
Viral Hemorrhagic Fever	0	0	0	0	0	0	0
West Nile Virus Symptomatic Infections	2	1	7	1	3	14	0.3
Yellow Fever	0	0	0	0	0	0	0
Yersiniosis	3	1	0	3	32	39	0.8
Zika virus infectious/disease	-	-	-	45	50	95	1.9

* Rates are per 100,000



Public Health Services
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