

Wake County Human Services
Public Health Report
Communicable Disease
2016



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1.0 Introduction

Wake County Human Services (WCHS), an accredited health department, strives to perform the three core Public Health functions of assessment, policy development and assurance and to deliver the 10 public health essential services (Figure 1). Reports are provided on a quarterly basis about health and safety trends for Wake County residents, providers, policy makers and the community to better inform decision making.

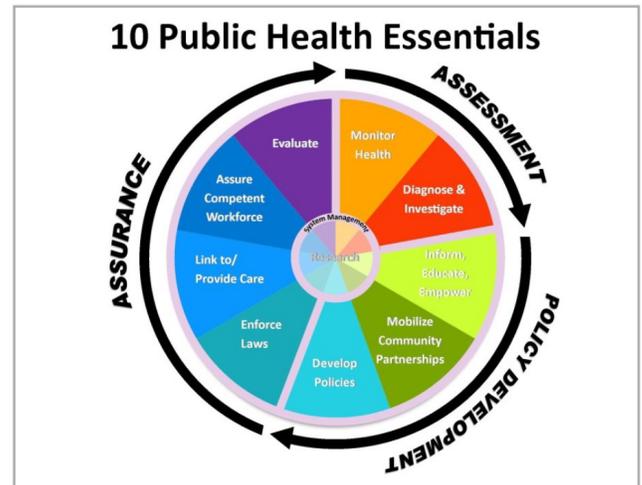
These reports help fulfill public health essential services:

- Number 1: Monitor health status to identify community health problems and
- Number 3: Inform, educate, and empower people about health issues

This report also fulfills, in part, North Carolina Public Health Accreditation requirements including:

- Analysis and tracking of reportable events occurring in the community and reporting unusual occurrences to the NC Division of Public Health and local board of health (Benchmark activity 2.4)
- Provision of reports on the health of the community to the local board of health (Benchmark activity 38.1).

Figure 1



2.0 Surveillance for Reportable Communicable Diseases in Wake County

Communicable diseases are illnesses caused by infectious agents (bacteria, viruses, parasites, fungi and prions) or their toxins that are transmitted from an infected person, animal, plant or from the environment. Because communicable diseases can have so much impact on populations, they are tracked and the information analyzed (called surveillance) so that measures can be put in place for protecting the public's health. Certain communicable diseases are required by law to be reported to local health departments by:

- physicians
- school administrators
- child care center operators
- medical facilities
- operators of restaurants and other food or drink establishments and
- persons in charge of laboratories (G.S. § 130A-135 through 130A-139).

There are 74 reportable diseases and conditions specified in the N.C. Administrative Code rule 10A NCAC 41A .0101 (<http://epi.publichealth.nc.gov/cd/index.html>).

After initial notification about a case or cases of a communicable disease, an investigation begins to collect details such as demographic, clinical, and epidemiological information. A case, meeting the reporting requirements in the standardized case definitions, is reported electronically to the N.C. Division of Public Health via the North Carolina Electronic Disease Surveillance System (NC EDSS) and then to the Centers for Disease Control and Prevention’s (CDC) National Notifiable Diseases Surveillance System.

This report focuses on all diseases that have been reported in Wake County from 2011 through 2015 along with other information about selected communicable diseases of public health significance for Wake County. For a list of all reportable communicable diseases, see Table 6.

3.0 Vaccine Preventable Diseases

Over the last 5 years, pertussis (whooping cough) rates have fluctuated in Wake County (see Table 6, page 22). In 2015, two-thirds of pertussis cases were among females, over half were in children 0-9 years of age and half were among whites (see Figures 2-4).

Chronic hepatitis B rates remained low in 2015, when looking at the 5-year trend. After reaching a high of 13.3 per 100,000 population in 2011, the chronic hepatitis B rate went down to 6.7 per 100,000 population in 2015. (see Table 6). The demographic groups most affected by hepatitis B were males, people ages 30-39 and Asians (see Figures 2-4).

Figure 2

Most Commonly Reported Vaccine Preventable Disease Cases, by Gender, Wake, 2015

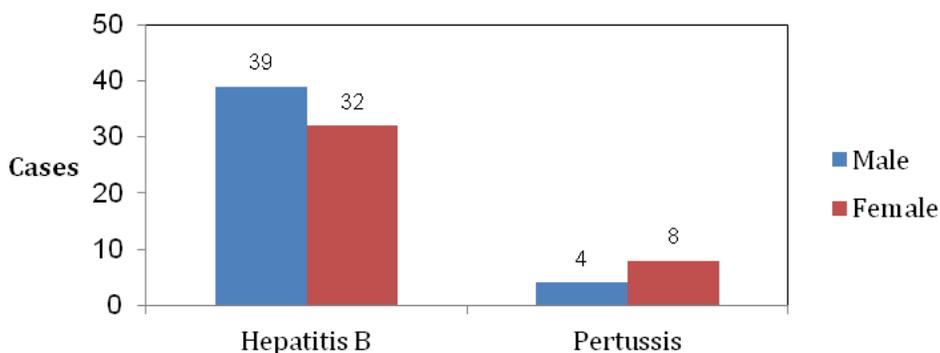


Figure 3

Most Commonly Reported Vaccine Preventable Diseases, by Age Group, Wake, 2015

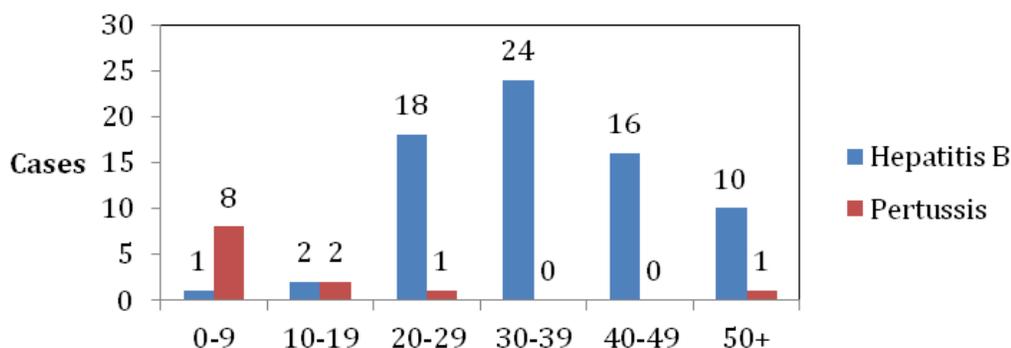
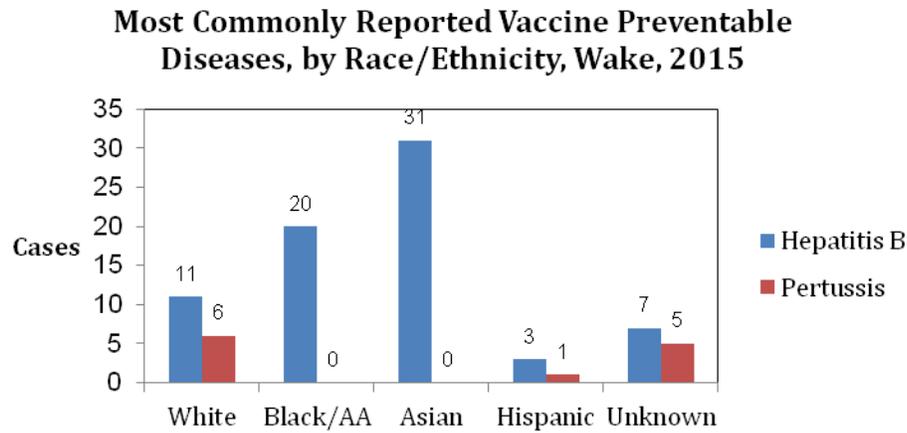


Figure 4

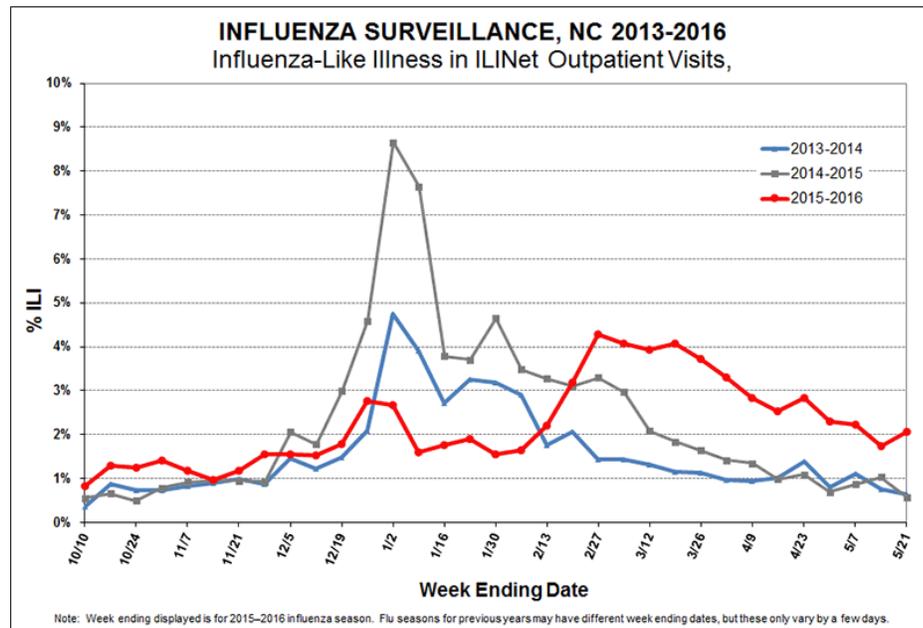


Source for Figures 2-4: NCEDSS, accessed 4/18/16

3.1 Influenza

The 2015-2016 flu vaccine formulation was reported to be a good match for the circulating strains and may have contributed to a low mortality rate in North Carolina (59 flu deaths reported as of 5/21/16, compared to 218 deaths from the previous season). The peak of flu season for 2015-2016 occurred in February, which was later than the previous two seasons (see Figure 5).

Figure 5



Source: <http://www.flu.nc.gov/>, as of 5/21/16 . Accessed 6/7/16.

WCHS administered 9,120 doses of flu vaccine from September 15, 2015 to June 3, 2016. Of those doses, 5,409 (59%) were administered to children ages 6 months through 18 years and 3,711 (41%) to adults 19 years and older.

The above total includes 1,420 flu doses administered to Wake County employees as of June 3, 2016. (NOTE: The 1,420 doses includes any county staff, not just those covered by Wake County Division of Public Health's immunization requirement).

4.0 Foodborne Diseases

In 2015 in Wake County, *Salmonella spp* non-typhoidal and *Campylobacter spp* accounted for over 90% of all reported food-borne diseases (Figure 6). The *Salmonella* rate increased slightly in 2015: 18.6 per 100,000 population, compared to 17.7 per 100,000 in 2014 (Table 6). Slightly more than half of Wake's *Salmonella* cases occurred among children (ages 0-9) and older adults (\geq age 50). A little more than half of *Salmonella* cases occurred among females and whites (see Figures 8 & 9).

The rate of *Campylobacter* stayed relatively unchanged in 2015: 9.7 per 100,000 population, compared to 10.2 per 100,000 in 2014 (see Table 6). The majority of *Campylobacter* cases occurred among older adults (\geq age 50), males and whites (see Figures 8 & 9). Laboratory testing to confirm the cause of some reportable diseases, for example *Clostridium perfringens* food poisoning, is not routinely available except under special circumstances during outbreaks. Foodborne disease case numbers, therefore, are likely underreported.

Figure 6

Reported Foodborne Illness Cases, Wake County, 2015

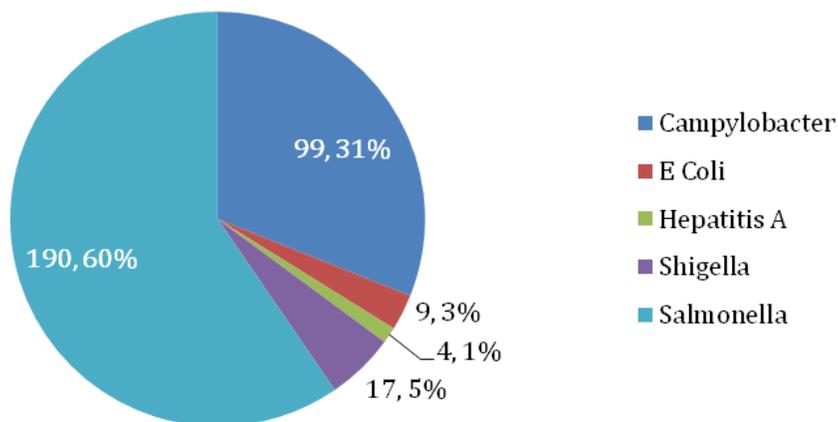


Figure 7

Foodborne Illness by Age Group, Wake County, 2015

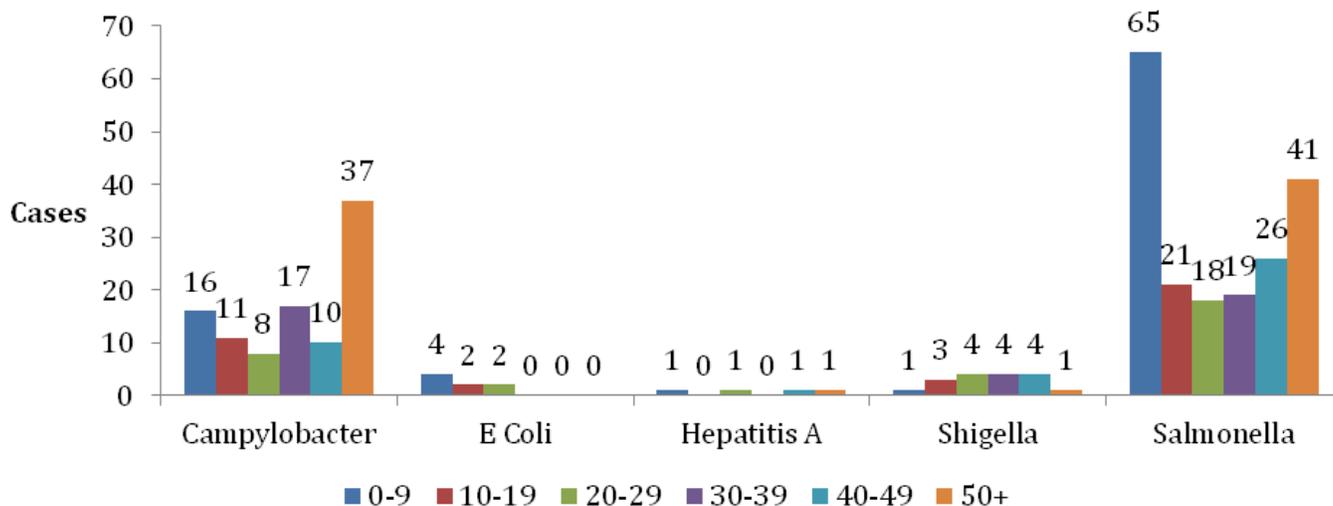


Figure 8

**Foodborne Illness by Gender,
Wake County, 2015**

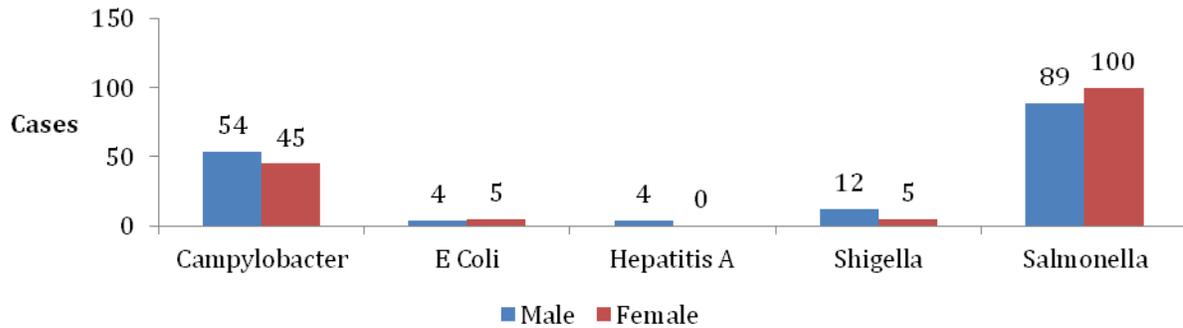
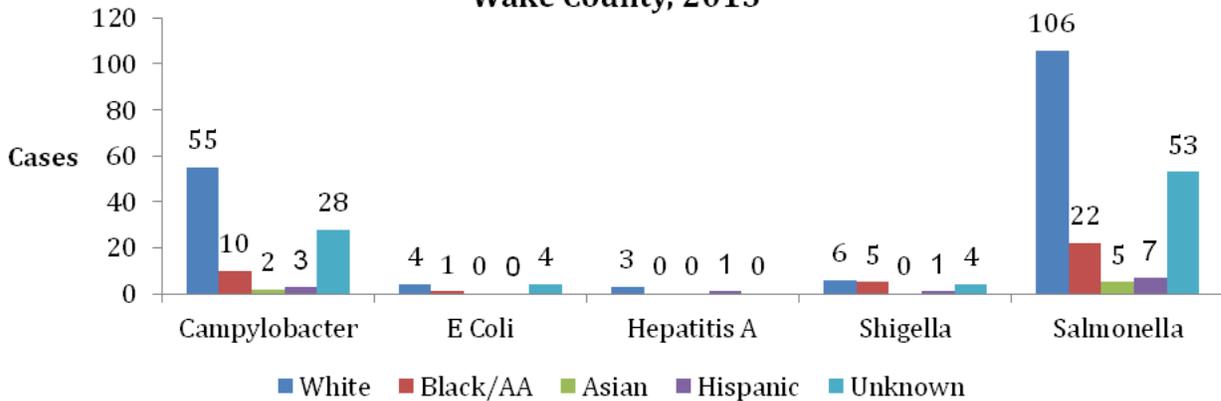


Figure 9

**Foodborne Illness by Race/Ethnicity,
Wake County, 2015**



Source for Figures 6-9-NCEDSS, accessed 4/18/16

Additionally, cases of some foodborne diseases caused by other microorganisms are not required to be reported under NC communicable disease law. The Centers for Disease Control and Prevention (CDC) estimates that each year roughly 1 in 6 people in the US (or 48 million people) get sick, 128,000 are hospitalized, and 3,000 die of foodborne diseases. While not all agents of foodborne disease are known, among the 31 known foodborne pathogens:

- Nontyphoidal *Salmonella*, *Toxoplasma*, *Listeria*, and norovirus caused the most **deaths**
- Nontyphoidal *Salmonella*, norovirus, *Campylobacter*, and *Toxoplasma* caused the most **hospitalizations** and
- Norovirus caused the most **illnesses**. Although norovirus usually causes a mild illness, it is a leading cause of foodborne deaths because it affects so many people (Figure 10).

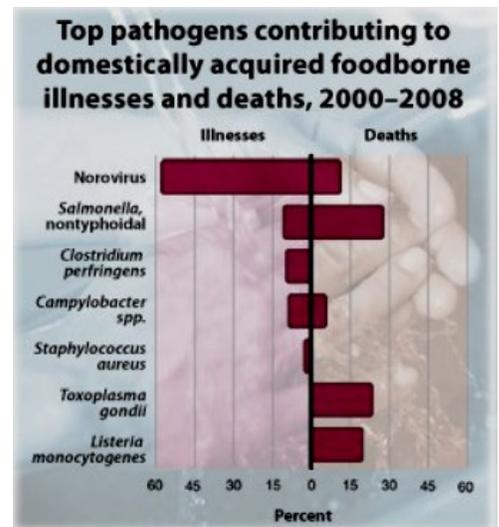


Figure 10

Source: CDC, <http://www.cdc.gov/dsFoodborneEstimates/>, 5-17-2015

4.1 Food Safety Education at the Farmer's Market

Communicable Disease Program Health Educators, in collaboration with the Health Promotion Chronic Disease Prevention Program, reached out to the Triangle Farmers Market Coalition in the spring of 2015 to present Produce Pro to both market managers and market goers. Produce Pro is an educational program developed by the Partnership for Food Safety Education that provides consumer education to help prevent the spread of foodborne illness. Produce Pro was piloted at the Zebulon and Midtown Farmers Markets in the summer of 2015. This food safety education program is expanding to seven Farmer's Markets in 2016 and will include additional food safety topics.



Children made refrigerator magnets at Farmer's Market Display.

4.2 Foodborne Outbreaks

All foodborne outbreaks are required to be reported to local health departments and the NC Division of Public Health. From January 1, 2015 through April 20, 2016, suspected norovirus outbreaks were predominately associated with long term care and other facilities (Table 1). The sources (such as person to person, environmental or foodborne) of the outbreaks were not determined.

Table 1

Norovirus Outbreaks Investigated by WCHS Public Health Communicable Disease Nurses 2015 and 2016		
	2015	2016
Lab confirmed reported outbreaks	3	4
Total number of people who got sick	390	252

4.3 Food Safety

In 2015, Wake County Environmental Services inspected, re-inspected or verified over 7000 establishments that serve or sell food (Table 2). Environmental Services also provided 1,086 hours of training, including certified manager training (ServSafe) for nearly 80 managers. Topics included:

- food safety risks associated with contamination,
- employee hygiene,
- holding temperatures,
- approved food sources and
- final cook temperatures



Hand washing sign for food service establishments.

Table 2

Inspections by Wake County Environmental Services, 2015			
Type	Activities*	Verifications**	Total
Bed and Breakfast Home	4	0	4
Bed and Breakfast Inn	2	0	2
Elderly Nutrition Sites (catered)	21	0	21
Food Stand	1,055	113	1,168
Hospitals	8	0	8
Institutional Food Service	108	12	120
Limited Food Service	24	1	25
Meat Market	220	13	233
Mobile Food Units	92	6	98
Private School Lunchrooms	38	3	41
Public School Lunchrooms	464	21	485
Pushcarts (carts that sell only hot dogs and can be moved by one person)	74	2	76
Restaurants	4,120	618	4,738
Grand Total	6,230	799	7,029
*Activities: Inspections and re-inspections **Verifications: Follow up visits for critical violations observed at inspections/re-inspections Additional information about types of health inspections can be found: http://www.wakegov.com/food/healthinspections/facilities/Pages/default.aspx			

Source: Wake County Environmental Services Database, 4/26/16.

5.0 Sexually Transmitted Diseases (STDs)

In Wake County during 2015, the most commonly reported sexually transmitted diseases were chlamydia and gonorrhea. While the numbers of chlamydia and gonorrhea cases have remained high compared to peer counties over the last 5 years, Wake County's rates per 100,000 population are *significantly* lower (Table 3). Early syphilis cases are a major concern in Wake County as well as the other largest counties in North Carolina. The increase in syphilis cases will be discussed on page 11 of this report. HIV (human immunodeficiency virus) case rates decreased slightly from 16.1 to 14.5 per 100,000 population. AIDS (acquired immune deficiency syndrome) rates in Wake County did not change significantly from 2014 to 2015.

Table 3

**Chlamydia, Gonorrhea, Early Syphilis*, HIV and AIDS, Case Counts and Rates
NC compared to NC's Six Largest Counties (by population), 2011-2015
(cases in table were reported to CDC in the year indicated)**

CHLAMYDIA

COUNTY	2011		2012		2013		2014		2015	
	CASES	RATE								
Cumberland	3,582	1106	3,577	1107.1	3,648	1117.4	3,099	949.7	3,441	1062.6
Durham	2,070	749.2	1,860	658.9	2,185	758	2,159	733.2	2,468	820.1
Forsyth	2,598	732.9	2,802	782.8	2,418	668.8	2,420	662.5	2,723	737.9
Guilford	4,038	815.7	3,802	759	3,879	765.2	3,563	695.7	4,398	849.7
Mecklen- burg	6,012	636	5,986	617.9	6,243	629	6,938	685.2	8,684	839.7
Wake	4,576	492.4	4,615	484.5	4,255	436.4	4,556	456.2	4,613	450.4
NC TOTAL	49,578	513.7	49,478	507.6	49,220	499.8	49,904	501.9	57,995	577.4

GONORRHEA

COUNTY	2011		2012		2013		2014		2015	
	CASES	RATE								
Cumberland	1,434	442.8	1,090	337.4	1,252	383.5	1,105	338.6	1,069	330.1
Durham	767	277.6	640	226.7	798	276.8	752	255.4	721	239.6
Forsyth	778	219.5	721	201.4	751	207.7	935	256	1,073	290.8
Guilford	1,654	334.1	1,371	273.7	1,382	272.6	1,272	248.4	1,533	296.1
Mecklen- burg	1,743	184.4	1,783	184	1,857	187.1	2,391	236.1	2,667	257.9
Wake	1,265	136.1	1,336	140.2	1,215	124.6	1,265	126.7	1,360	132.8
NC TOTAL	15,360	159.1	13,740	140.9	14,114	143.3	14,952	150.4	16,960	168.9

EARLY SYPHILIS

COUNTY	2011		2012		2013		2014		2015	
	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE
Cumberland	32	9.8	30	9.3	47	14.4	75	23	109	33.7
Durham	26	9.4	24	8.5	46	16	73	24.8	121	40.2
Forsyth	36	10.2	42	11.7	51	14.1	50	13.7	80	21.7
Guilford	102	20.6	58	11.6	55	10.9	87	17	183	35.4
Mecklen- burg	175	18.5	127	13.1	419	15	269	26.6	328	31.7
Wake	70	7.5	82	8	110	11.3	177	17.7	224	21.9
NC TOTAL	706	7.4	564	5.8	688	7	1,113	11.2	1,674	16.7

Table with HIV and AIDS cases and rates continued on next page

Table 3 continued

**Chlamydia, Gonorrhea, Early Syphilis*, HIV and AIDS, Case Counts and Rates
NC compared to NC's Six Largest Counties (by population), 2011-2015
(cases in table were reported to CDC in the year indicated)**

HIV

COUNTY	2011		2012		2013		2014		2015	
	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE
Cumberland	95	29.3	63	19.5	74	22.7	77	23.6	101	31.2
Durham	68	24.6	67	23.7	70	24.3	66	22.9	72	23.9
Forsyth	78	22	53	14.8	65	18	50	13.8	55	14.9
Guilford	128	25.9	95	19	117	23.1	103	20.3	129	24.9
Mecklen- burg	321	34	255	26.3	261	26.3	340	34.3	305	29.5
Wake	137	14.7	137	14.4	174	17.9	157	16.1	149	14.5
NC TOTAL	1,474	15.3	1,269	13	1,330	13.5	1,351	13.6	1,462	14.6

AIDS

COUNTY	2011		2012		2013		2014		2015	
	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE
Cumberland	48	14.8	28	8.7	37	11.3	41	12.6	44	13.6
Durham	23	8.3	25	8.9	17	5.9	47	16.3	56	18.6
Forsyth	40	11.3	26	7.3	33	9.1	13	3.6	54	14.6
Guilford	52	10.5	37	7.4	43	8.5	25	4.9	42	8.1
Mecklen- burg	133	14.1	211	21.8	250	25.2	166	16.7	146	14.1
Wake	77	8.3	70	7.3	77	7.9	61	6.3	70	6.8
NC TOTAL	818	8.5	782	8	862	8.8	706	7.2	793	7.9

*Early Syphilis denotes cases diagnosed in the Primary, Secondary and Early Latent Stages

**Rate per 100,000 population.

Source for 2011-14 data: <http://epi.publichealth.nc.gov/cd/stds/figures/std14rpt.pdf>, accessed 4/7/16.

Source for 2011-14 data: <http://epi.publichealth.nc.gov/cd/stds/figures/std14rpt.pdf>, accessed 4/7/16. Source for 2015 data: <http://epi.publichealth.nc.gov/cd/stds/figures/vol15no4.pdf>, accessed 4/7/16. (Rates for 2015 data calculated using 2015 population estimates found at <http://www.census.gov/quickfacts/table/PST045215/37081,37119>, accessed 4/7/16.

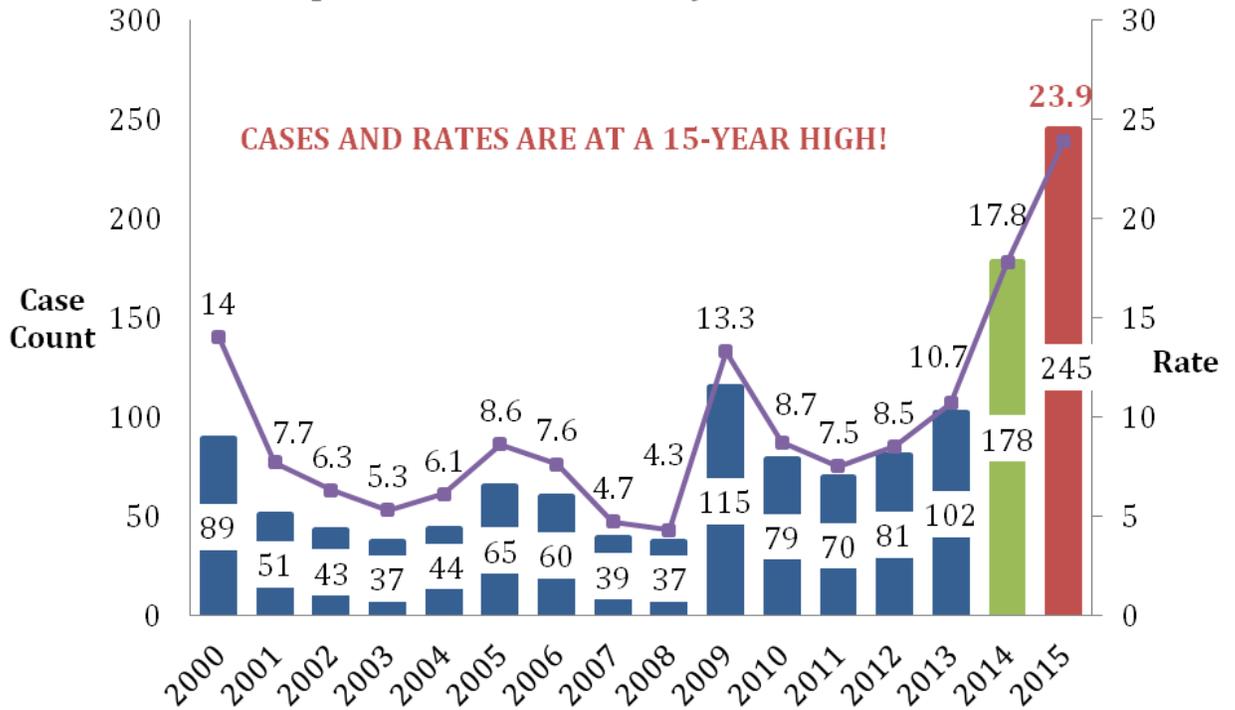
5.1 Syphilis Outbreak

Public health programs at the local, state and national levels are encountering a massive resurgence in syphilis cases. From 2013 to 2015, there were increases in early syphilis cases in North Carolina's largest six counties (listed in Table 3 and including Wake) as well as statewide (see Table 3). In 2015, the 5 counties accounted for over 62% of the state's early syphilis cases. After what was already a record-setting year for early syphilis in 2014, Wake County had even more cases diagnosed in 2015 (see Figure 11).

In syphilis outbreak situations, a fundamental reason for the high number of cases is the presence of the infectious-stage (primary and secondary) of syphilis. Figure 12 shows the comparison of *symptomatic* (primary and secondary) to *asymptomatic* (early latent) syphilis in Wake County over the last 8 quarters. When symptomatic cases (particularly in the primary stage) are being diagnosed, there is evidence of very recent and sustained transmission of syphilis in the community. Until the ratio of symptomatic to asymptomatic cases reverses, Wake County will continue to experience high numbers of early syphilis cases.

Figure 11

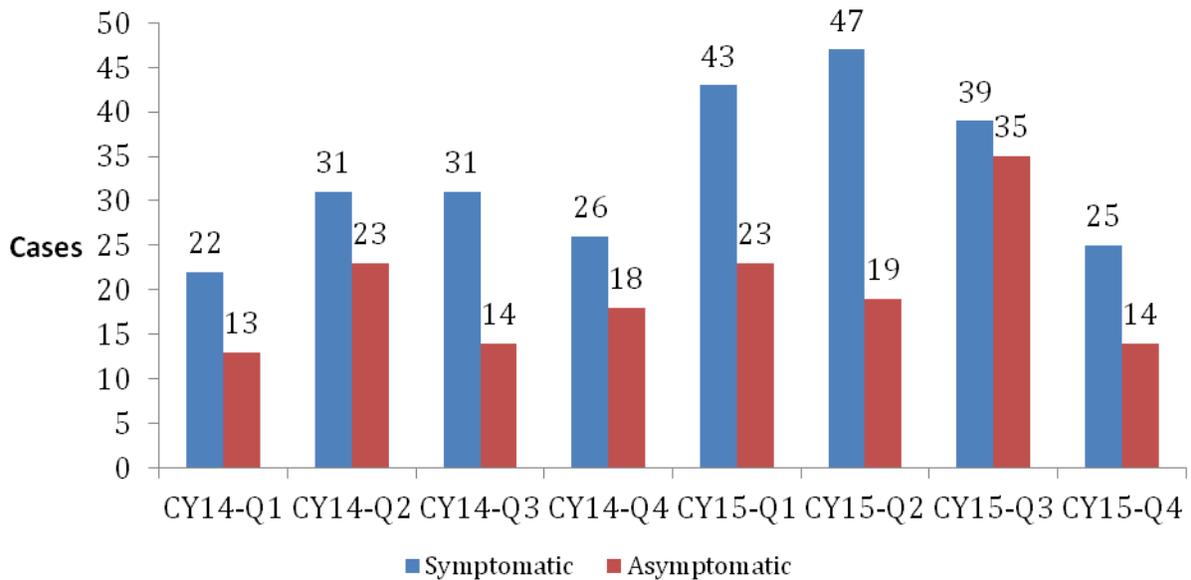
Early Syphilis Case Counts and Rates per 100,000 Population, Wake County, 2000-2015



Source: For 2014 and 2015, source is NCEDSS. Case counts for 2014 and 2015 obtained via different method than cases in all other years. 2000-2013 source: <http://epi.publichealth.nc.gov/cd/stds/>

Figure 12

Comparison of Symptomatic (Primary and Secondary) to Asymptomatic (Early Latent) Syphilis Cases, Wake County Last 8 Quarters



Source: NCEDSS, accessed 4/26/16.

To address the on-going syphilis outbreak in Wake County, a pilot quality improvement program was initiated to bring testing and treatment directly to a high risk population in a place they feel comfortable. Since October 15, 2015 a Wake County Public Health Nurse has been providing rapid syphilis testing and treatment at the local LGBT (Lesbian, Gay, Bisexual, Transgender) Center, located near downtown Raleigh bars and clubs that cater to that community during evening hours. The nurse is able to provide treatment at the Center based on clinical symptoms and a positive rapid test to clients and their partners. The nurse is also part of the County’s Disease Intervention Specialist (DIS) Team that allows her to interview people infected with sexually transmitted infections (STIs) to find out how and where to locate and test their partners. During the same visit, blood is drawn to test for other STIs and HIV. Clients with positive test results can be treated at the LGBT center during a later visit. Counseling, education and condoms are provided as well.

Preliminary anecdotal data from the nurse suggests that the LGBT community feels comfortable being tested and treated for STDs in a place they are familiar with and at times that are convenient for them. Since the beginning of the pilot project, the nurse has seen 100 people (an average of 15 per month) for testing, evaluation and treatment.

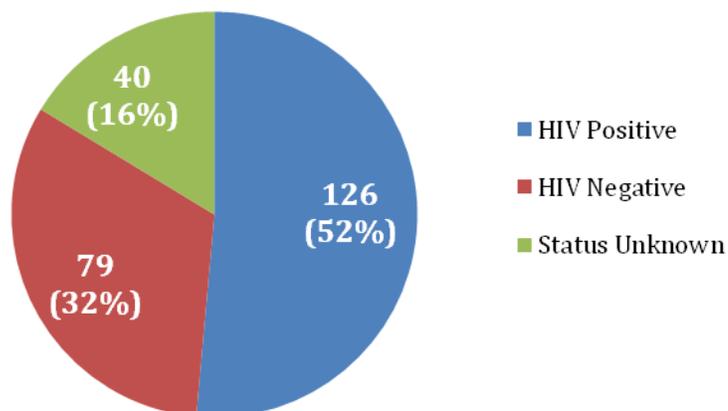
Over 50% of Wake’s 2015 syphilis cases were HIV positive (Figure 13). In order to address HIV positive clients with ongoing STD diagnoses after their initial HIV diagnosis, Comprehensive Risk Reduction and Counseling Services (CRCS) was established in August 2015. Through CRCS, a designated social worker with the HIV/STD Community Outreach Program receives referrals from various sources then provides counseling, follow-up and additional referrals as appropriate. In the event that a client refuses to participate in CRCS, the Health Director has to establish a plan for HIV control measure compliance. To close that loop, the Health Director may issue an isolation order per North Carolina public health law. The isolation order can lead to legal consequences for the client, and is available as a “last resort” after all other means of protecting the public’s health have been exhausted. In the first 9 months of CRCS (August 2015-April 2016), 41 clients have received CRCS follow-up.



DIS nurse doing rapid syphilis testing.

Figure 13

Wake County Syphilis Cases, HIV Status, 2015



Source: NCEDSS, accessed 4/26/16.

Wake County has also been providing information and education to medical providers about the current syphilis outbreak through both a provider web page and a provider training. Dr. Edward Hook, Professor of Medicine, Epidemiology and Microbiology at the University of Alabama Birmingham, School of Medicine was the keynote speaker at a syphilis update sponsored by Wake County Human Services, the NC Division of Public Health and the Alabama-North Carolina STD/HIV Prevention Training Center on March 22, 2016. Dr. Hook provided clinical guidance on identifying signs and symptoms that should not be overlooked by practitioners, as well as the most up-to-date treatment guidelines. The training also sought to address the most significant public health concerns related to the outbreak including:

- Missed diagnoses of syphilis in its early stages, which contributes to the spread of new cases and increases the chance for complications in infected people
- Severe health outcomes associated with ocular syphilis, including visual impairment and blindness
- The potential for increased cases among females of child-bearing age, which could lead to a resurgence of congenital syphilis and its most lethal outcome: *fetal death*

Over 30 providers from local universities and colleges, jails, hospitals and private medical offices attended the training.

5.2 General Strategies to Reduce HIV/STDs in Wake County

On-going outreach and education is provided by the HIV/STD Community Program in a variety of settings, including but not limited to, area jails, substance abuse programs, and Human Services Regional Centers.

There are 43 condom distribution sites (CDS) across Wake County conveniently located at area barbershops, beauty salons, tattoo parlors, markets, laundromats and other local businesses. These community partners volunteer to display CDS materials free of charge to improve community members' access to condoms, education and testing information.

Ongoing HIV and STD testing is provided regularly in Wake County's Regional Centers as well as locations that serve those at high risk (substance abuse centers, area colleges and universities, LGBT centers, and local jails). Targeted testing and education is also provided in "hot spots" where increased cases of STDs have been found.

Under One Roof, Wake County's Bridge Counseling Service, provides case management for HIV positive individuals with the goal of "getting people into HIV care and keeping them there". Keeping HIV positive individuals in care helps to reduce viral loads, which in turn reduces the risk of transmission of HIV in the community.

5.3 Emerging Issues in HIV/STD Prevention

Given that injection drug use (specifically, needle-sharing behavior) is a significant risk factor in HIV transmission, Wake County public health staff are monitoring increases in both hepatitis C cases and heroin use in order to address any synergistic effects. Prevention planning is occurring further upstream, since prescription opioid use (which is also increasing in Wake County) is often a "gateway" to heroin use. HIV/STD Community Outreach staff are among those at WCHS designated to carry naloxone reversal kits, in case they encounter clients in the community who experience opioid overdoses.

5.4 Drug Overdose Prevention Coalition

In November 2015, Wake County Human Services and Wake County Office of the Sheriff brought together groups and organizations in Wake County that are working to prevent and respond to an epidemic

of heroin and opioid overdoses . This group formed a coalition to leverage resources to more effectively prevent drug overdoses in Wake County. The Coalition, which meets quarterly, has identified current drug overdose prevention and treatment strategies, gaps in service and other needs.

To address gaps and other needs the Coalition formed 5 committees that work on the focus areas listed below.

- **Syringe Exchange and Naloxone Distribution Committee.** Syringe exchange programs (SEPS), currently illegal in NC, have proven to be effective strategies for reducing the spread of HIV, hepatitis C and other diseases spread through blood. SEPS provide clean needles to participants as well as connect users to treatment and other needs like food and housing. Efforts are underway to make SEPS possible.
- Naloxone (Narcan) is a prescription medication that has been safely used for decades to reverse opioid overdose. This committee focuses on making it easier to get naloxone to those who are at risk of opioid overdose and their families.
- **Education and Outreach Committee.** Education is key in all drug overdose prevention and treatment efforts. The coalition, along with other drug use prevention and treatment groups and organizations, is working to raise awareness, provide information and identify best practice drug use prevention curricula for youth.
- **Medical Intelligence Committee.** Tracking data and activities helps assure resources are focused on those who are most vulnerable. This committee tracks data from a variety of sources including NC Controlled Substances Reporting System (a system created to help health and dental care providers and pharmacists find patients who misuse controlled medicines and get them into treatment). This committee is planning a centralized data repository to help the Coalition and others track information about drug overdose and how well prevention efforts are working.
- **Recovery Initiation and Maintenance Committee.** Connecting drug users at the time of overdose to specially trained people who are recovered drug users themselves is an effective way to help people toward recovery. Efforts to support this and the Recovery Community Center, a place with a variety of programs and services for people affected by drugs and alcohol are ongoing.
- **Policy, Law Enforcement and Diversion Changes Committee.** LEAD (Law Enforcement Assisted Diversion) is a program that connects people arrested for low-level drug and prostitution crimes to treatment instead of jail. Efforts are being made to support a LEAD program in Wake County. Additionally, this committee is working to help Drug Treatment Court address current drug-related issues within the community by gathering data, identifying existing treatment options, researching funding, and gaining support from local law enforcement offices.

6.0 Tuberculosis (TB)

Over the last 5-year period, TB case numbers have fluctuated from year to year (See Table 6). There were 25 TB cases in Wake County in 2015; additionally, the WCHS TB Program investigated 5 cases on out-of-area residents (according to NC TB reporting rules, a person's case is counted by the county in which he or she resides at the time of diagnosis). In 2015, four North Carolina counties accounted for almost half of all TB cases in the state (see Table 4). At a national level, North Carolina's 2015 TB rate (2.0/100,000 pop.) ranked #26 among the 50 states and the District of Columbia; the overall US case rate was 3.0/100,000 population.

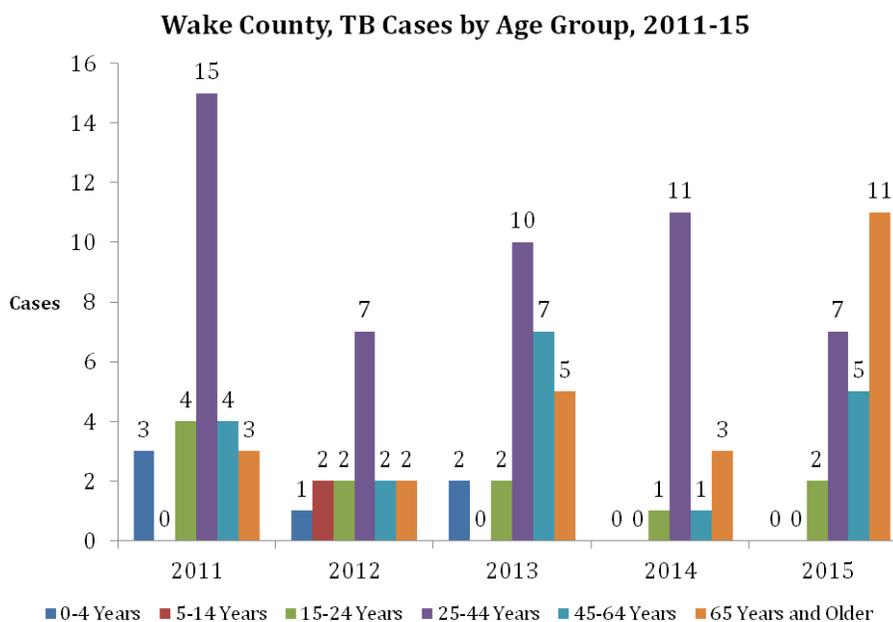
In a shift from previous years, there was a significant increase in cases among the 65 and older age group in 2015 (see Figure 14). The percentage of foreign-born TB cases continues to be much higher than US-born (see Figure 15). Of the foreign-born cases (N=20), the countries of origin were as follows: India (8), Taiwan (2), Vietnam (2), Philippines (2), Guatemala (1), Morocco (1), Democratic Republic of Congo (1), China (1), Gambia (1) and Kenya (1).

Table 4

TB Cases and Rates, Top 4 NC Counties, 2015		
County	Number of Cases	Case Rate (per 100,000 pop.)
Wake	25	2.5
Mecklenburg	25	2.5
Robeson	23	17.1
Guilford	23	4.5
NC	199	2.0

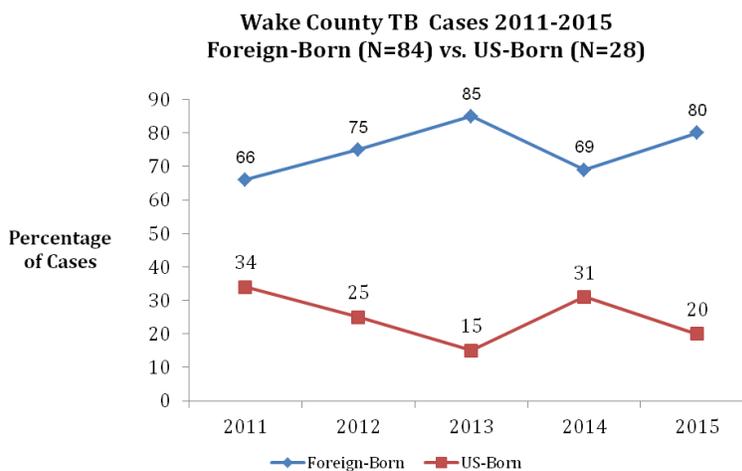
Source: <http://epi.publichealth.nc.gov/cd/tb/figures.html>, accessed 4/29/16.

Figure 14



Source: WCHS TB Program, 4/29/16.

Figure 15

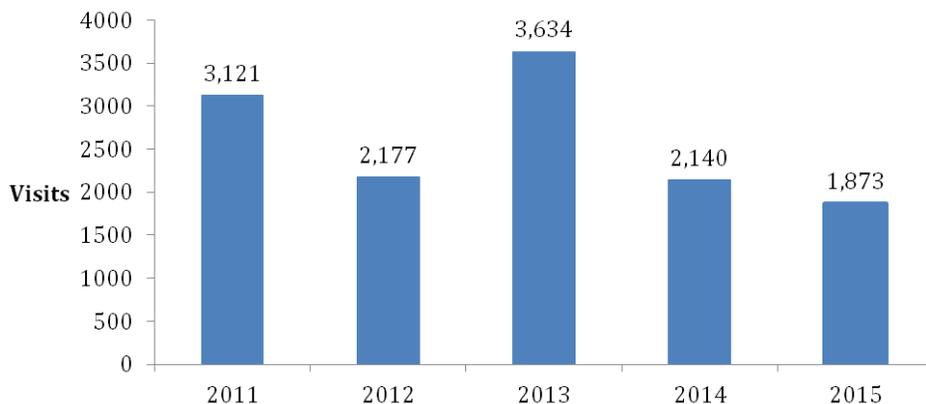


Source: WCHS TB Program, 4/29/16.

Due to an increase in caseload and a decrease in staffing, TB program staff took advantage of technology in 2015 by doing some Directly Observed Therapy (DOT) visits by video. DOT is a strategy by which a Public Health Nurse observes patients taking their medication. DOT is vital in preventing the spread of TB; if patients do not take all of their medicines as prescribed (and for up to a year at a time), drug-resistant TB can occur. Figure 16 shows the number of TB-Related home visits in the last 5 years.

Figure 16

**TB-Related Home Visits,
Wake County 2011-2015**



Source: WCHS TB Program, 4/29/16.

7.0 Vector-borne Diseases

Vector-borne diseases are caused by microbes that are spread to people by arthropods like ticks and mosquitoes that feed on human blood. The vector-borne diseases that occur most often in Wake County are transmitted by ticks. Table 5 shows confirmed as well as suspect and probable cases of tickborne disease (ehrlichiosis, Lyme disease and Rocky Mountain spotted fever). For tickborne diseases, many more cases are suspected and investigated than can be confirmed. This is due to the difficulty in getting clinical and/or laboratory information needed to meet the confirmed case definition.

Table 5

Tickborne Disease Reported in Wake County, 2011-2015										
Disease	2011		2012		2013		2014		2015	
	Case Count*	Con- firmed								
Ehrlichia	0	0	1	0	0	0	0	0	0	0
Ehrlichia, HGE	14	0	10	0	11	0	8	0	3	0
Ehrlichia, HME	64	2	61	1	17	2	11	1	7	1
Lyme Disease	55	3	32	2	58	7	53	7	26	3
Rocky Mountain Spotted Fever	110	1	170	0	73	0	101	0	47	1

* Suspect, Probable and Confirmed Cases

Source: NCEDSS, accessed 4/6/16.

7.1 Zika Virus

In 2016, Zika virus disease emerged as a public health threat to the US. Zika is an arbovirus that is spread to people primarily through the bite of an infected *Aedes* species mosquito. The incubation period lasts from 3-12 days, and the most common symptoms of Zika virus infection are fever, rash, joint pain, and conjunctivitis (red eyes). Zika's symptomatic presentation is similar to that of dengue and chikungunya, so symptomatic patients should be evaluated and managed for dengue and chikungunya infection as well.

Zika virus infection is usually mild with symptoms lasting for several days to a week after being bitten by an infected mosquito. People usually don't get sick enough to go to the hospital, and they very rarely die of Zika. For this reason, many people might not realize they have been infected. There is no specific antiviral treatment available; the recommended treatments are rest, fluids and acetaminophen. (Source: http://epi.publichealth.nc.gov/cd/zika/zika_memo_providers_update_03312016.pdf)

Zika was first identified in Uganda in 1947, and since 2007 there have been reported outbreaks in Gabon, Micronesia and French Polynesia. Beginning in 2015, Zika became endemic (actively transmitted) in Central and South America (Figure 17). As of June 1, 2016, there have been 11 cases of travel-associated Zika virus in North Carolina and 1 case of travel-associated Zika virus in Wake County. *There have been no locally acquired vector-borne cases reported anywhere in North Carolina.*

7.2 Zika Virus Infection and Pregnancy

There have been reports of congenital microcephaly and other poor pregnancy outcomes in babies of mothers who were infected with Zika virus while pregnant. Zika virus infections have been confirmed in several infants with microcephaly (smaller than expected head size). Studies are under way to clarify the association between Zika virus infection and microcephaly.

Health care providers should ask all pregnant women about their recent travel and their sexual partners' recent travel. Pregnant women who develop symptoms consistent with Zika virus infection within two weeks of travel to areas <2,000m above sea level in countries and U.S. territories where Zika virus transmission is ongoing should be evaluated by a health care provider and recommended for testing as described below. Serologic testing for Zika virus can also be offered to asymptomatic pregnant women 2–12 weeks after travel to areas <2,000 m above sea level in countries and U.S. territories with ongoing transmission.

Pregnant women should be considered potentially exposed and recommended for testing if they have had sex without using a condom (i.e., vaginal intercourse, anal intercourse, or fellatio) during the current pregnancy with a male partner who has traveled to an area of ongoing transmission and had symptoms of Zika virus disease during travel or within 2 weeks of return. (Source: http://epi.publichealth.nc.gov/cd/zika/zika_memo_providers_update_03312016.pdf, accessed 4/29/16)



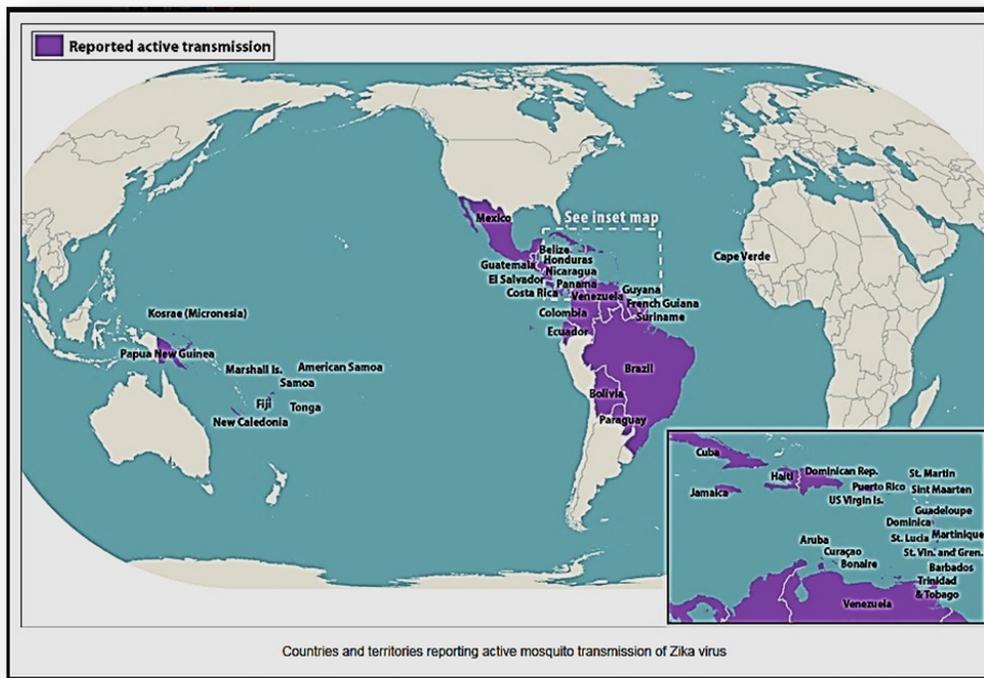
Primary: *Aedes aegypti*



Secondary: *Aedes albopictus*

Photos courtesy of
CDC .http://www.cdc.gov/dengue/resources/factSheetsControl_Mosquitoes_CHIKV_DENV_

Figure 17



(Source: CDC. <http://wwwnc.cdc.gov/travel/page/zika-information>, accessed 5/4/16.)

Effective April 11, 2016, the state Communicable Disease Branch developed a multi-level mosquito control plan for North Carolina. Elements of this plan include:

- Personal protection messages—wear insect repellent and long-sleeved shirts and pants (when weather permits)
- “Tip and Toss”—ensure that standing water is tipped out of containers at least once every 5 days, so that mosquito larvae cannot develop
- Integrated mosquito management
 - Education: creating messaging for the general public on prevention, epidemiological and ecological data, and travel advisories
 - Surveillance: vector monitoring, larval surveillance
 - Source reduction: remove discarded, unused and unmaintained containers through community involvement programs and/or vector control personnel
 - Larval control: applying biological or chemical larvicides to potential larval habitats (by licensed personnel administered by the NC Department of Agriculture and Consumer Services)
 - Mosquito spraying: adult mosquito control (generally only used in outbreak situations)
 - Resistance monitoring: evaluating pesticide susceptibility should be performed to ensure effectiveness of control measures

(Source: http://epi.publichealth.nc.gov/zika/docs/MosquitoTalkingPoints_Apr112016.pdf)

Wake County Public Health and the Wake County Communications Office developed a Zika Virus communication plan to ensure accurate, appropriate and timely information is disseminated to the community and stakeholders now and in the event of local transmission of the Zika virus.

The Communicable Disease Program provides ongoing guidance and education on Zika virus infection and testing to health care providers, travelers and others who are being evaluated for testing. Concerned residents are provided counseling and guidance and are directed to a health care provider as appropriate.

8.0 Ebola

In 2014, the world experienced the largest Ebola epidemic in history, affecting multiple countries in West Africa. Wake County Division of Public Health and its partners took precautions to prevent and prepare for Ebola cases that may surface in the Wake County. The Public Health Incident Management Team and the Emergency Operations Center (EOC) were activated to help coordinate technical assistance and control activities.

From August 6, 2014 to January 3, 2016, 134 people traveling to Wake County from Liberia, Sierra Leone, Guinea and Mali were monitored for potential exposure to and symptoms of Ebola. (Source: WCHS CD Program, 4/27/16)

The outbreak ended in Liberia on May 9, 2015 and Sierra Leone on November 7, 2015. Once the World Health Organization (WHO) declared the Ebola outbreak over in Guinea on December 29, 2015, state and local health officials discontinued active monitoring of travelers from Guinea to North Carolina.

9.0 Well Water Program

Over 100,000 people in Wake County rely on private wells for their drinking water. Wake County Environmental Services (WCES) helps protect the health of private well users by:

- reviewing new well sites for proximity to contamination
- inspecting wells during and after construction
- testing new and existing wells for contamination
- Providing educational outreach to well users
- and providing technical assistance to well users who have concerns about their well water

In 2015, during the course of routine permitting work, WCES staff reviewed 455 proposed or existing well sites for nearby known sources of contamination. Approximately 20% of these reviews found known contamination within 1500 feet of the proposed well site; in each of these cases, the wells were subjected to additional testing or the well was installed farther away from the contamination. WCES also collected samples from over 400 wells in 2015, including nearly 300 samples related to issuance of a well or septic permit and over 100 samples in response to voluntary requests by well users.

In addition to this permit-driven or resident-requested work, WCES also performed targeted outreach around three contaminated sites in the county in 2015. These outreach efforts provided specific recommendations for well water testing to 107 households within 1500 feet of known contamination sites and resulted in testing of 28 existing private wells in these areas.

WCES, with support from Human Services, also developed a new policy for the county to become financially involved in infrastructure solutions for neighborhoods with well water problems. The new policy was adopted by the Board of Commissioners in April 2015. It allows residents to petition the County to assist in financing the construction of waterlines into areas with contaminated wells, and outlines the process for the county to recover costs of construction through special assessments levied on property owners who have frontage on the new waterlines.

(Source: Wake County Environmental Services Database, 4/26/16)

10.0 Public Health Preparedness

10.1 The Epi Team

The Epi Team has been meeting monthly since 2008 to discuss routine surveillance data, disseminate public information and provide necessary training for members. Face to face meetings foster collaboration needed to address issues as they arise. Special meetings are called when there is an emergency or outbreak situation. The Epi Team keeps local health care providers informed about emerging issues through its “Healthcare Provider” webpage (<http://www.wakegov.com/humanservices/publichealth/providers/Pages/default.aspx>).



Epi Team Monthly Meeting

10.2 Strategic National Stockpile Exercise

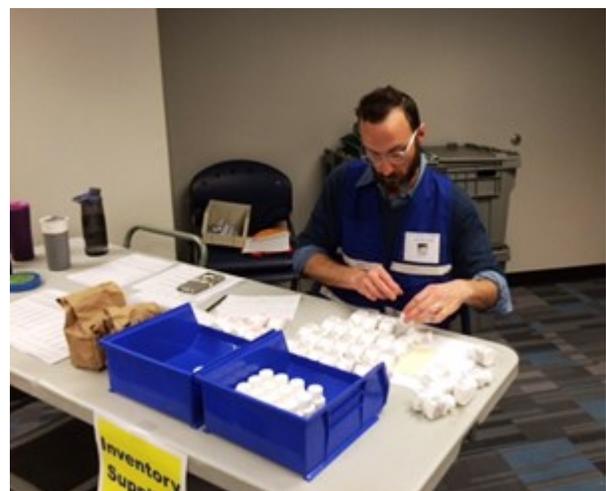
Public Health and Emergency Preparedness is regularly tasked with showing preparedness around different possible emergency scenarios that might occur in Wake County, including radiological events, mass sheltering and medication dispensing. In March 2016, Wake County Human Services led a successful Strategic National Stockpile (SNS) exercise at the Public Health Center. The exercise was evaluated by state and local officials and demonstrated the ability of Wake County government to respond to an emergency where mass dispensing of medication would be needed to protect the public.

Eighty five staff signed up to work as greeters, form checkers, runners, medication screeners, dispensers and health educators. Staff also volunteered to be the 'victims' of the emergency, and nearly 175 victims participated in the exercise, filling out forms and receiving medications.

Participation and collaboration between the Wake County Sheriff's Office, Emergency Management, General Services Administration, Information Services and Risk Management helped to make this a successful event.



Dispensing medication to patient with complex health needs during SNS exercise



SNS medication inventory/supply area

11.0 All Reportable Diseases and Conditions

Table 6

Notifiable Communicable Diseases, 2011-2015, Wake County

Disease	2011		2012		2013		2014		2015	
	Cases	Rate per 100,000 population								
AIDS ^a	88	9.5	61	6.4	77	8.1	61	6.3	70	6.8
Anthrax	0	*	0	*	0	*	0	*	0	*
Arboviral Other	0	*	0	*	0	*	0	*	0	*
Botulism - foodborne/wound	0	*	0	*	0	*	0	*	0	*
Botulism - infant	0	*	0	*	0	*	0	*	0	*
Brucellosis	0	*	1	*	0	*	0	*	0	*
Campylobacter Infection	49	5.3	95	10.0	134	13.8	102	10.2	99	9.7
Chancroid	0	*	0	*	0	*	0	*	0	*
Chikungunya	0	*	0	*	0	*	1	*	1	*
Chlamydia	4,961	533.6	4,668	490.3	4,213	432.4	4,384	439.0	5,759	562.3
Cholera	0	*	0	*	0	*	0	*	0	*
Creutzfeldt-Jakob Disease	1	*	2	*	1	*	0	*	1	*
Cryptosporidiosis	0	*	4	*	7	*	9	*	13	*
Cyclosporiasis	0	*	0	*	0	*	1	*	0	*
Dengue	2	*	0	*	1	*	0	*	2	*
Diphtheria	0	*	0	*	0	*	0	*	0	*
E. Coli	26	2.8	18	*	13	*	10	*	9	*
Eastern Equine Encephalitis	0	*	0	*	0	*	0	*	0	*
Ehrlichia	0	*	0	*	0	*	0	*	0	*
Ehrlichia, HE	0	*	0	*	0	*	0	*	0	*
Ehrlichia, HME	2	*	1	*	2	*	1	*	1	*
Encephalitis, arboviral, LaCrosse	0	*	0	*	0	*	0	*	0	*
Encephalitis, arboviral, West Nile Virus	0	*	0	*	0	*	0	*	0	*
Foodborne clostridium perfringens	0	*	0	*	1	*	0	*	0	*
Foodborne Hypothesis	0	*	0	*	0	*	0	*	0	*
Foodborne Other	0	*	0	*	0	*	0	*	0	*
Foodborne Poison	0	*	0	*	0	*	0	*	0	*
Foodborne Staphylococcal	2	*	0	*	0	*	2	*	0	*
Gonorrhea	1,421	152.8	1,342	140.9	1,206	123.8	1,213	121.5	1,686	164.6
Granuloma inguinale	0	*	0	*	0	*	0	*	0	*
Haemophilus influenza	9	*	12	*	19	*	11	*	12	*
Hantavirus	0	*	0	*	0	*	0	*	0	*

Notifiable Diseases continued on next page

11.0 All Reportable Diseases and Conditions

Table 6 Continued

Notifiable Communicable Diseases, 2011-2015, Wake County										
Disease	2011		2012		2013		2014		2015	
	Cases	Rate per 100,000 population								
Hemorrhagic Fever Virus	0	*	0	*	0	*	0	*	0	*
Hepatitis A	2	*	2	*	2	*	2	*	4	*
Hepatitis B - Acute	4	*	4	*	5	*	6	*	2	*
Hepatitis B - Chronic	124	13.3	82	8.6	97	10.0	60	6.0	69	6.7
Hepatitis B - Perinatally	0	*	0	*	0	*	0	*	0	*
Hepatitis C - Acute	1	*	3	*	5	*	5	*	4	*
HIV ^b	234	25.2	206	21.6	186	19.5	157	16.1	149	14.5
HUS (Hemolytic Uremic	0	*	0	*	0	*	0	*	0	*
Influenza death (<18 years	1	*	0	*	0	*	1	*	0	*
Influenza, Adult Death (18 years of age or more)	7	*	3	*	2	*	8	*	10	*
Influenza, NOVEL virus	0	*	0	*	0	*	0	*	0	*
Legionellosis	8	*	3	*	9	*	8	*	11	*
Leprosy (Hansen's	0	*	0	*	0	*	0	*	0	*
Leptospirosis	0	*	0	*	0	*	0	*	0	*
Listeriosis	1	*	0	*	3	*	1	*	0	*
Lyme disease	3	*	2	*	7	*	7	*	3	*
Lymphogranuloma	0	*	0	*	0	*	0	*	0	*
Malaria	9	*	5	*	8	*	10	*	7	*
Measles	0	*	0	*	0	*	0	*	0	*
Meningococcal	3	*	1	*	1	*	1	*	1	*
Middle East Respiratory Syndrome (MERS)	0	*	0	*	0	*	0	*	0	*
Monkeypox	0	*	0	*	0	*	0	*	0	*
Mumps	0	*	0	*	0	*	0	*	0	*
Non-gonococcal urethritis	514	55.3	742	77.9	703	72.2	562	56.3	554	54.1
Ophthalmia neonatorum	0	*	0	*	0	*	0	*	0	*
Pertussis	3	*	32	3.4	17	*	38	3.8	12	*
PID (Pelvic Inflammatory	273	29.4	246	25.8	265	27.2	270	27.0	135	13.2
Plague	0	*	0	*	0	*	0	*	0	*
Pneumococcal meningitis	2	*	4	*	0	*	2	*	2	*
Polio	0	*	0	*	0	*	0	*	0	*

Notifiable Diseases continued on next page

11.0 All Reportable Diseases and Conditions

Table 6 Continued

Notifiable Communicable Diseases, 2011-2015, Wake County										
Disease	2011		2012		2013		2014		2015	
	Cases	Rate per 100,000 population								
Psittacosis	0	*	0	*	0	*	0	*	0	*
Q Fever	0	*	0	*	0	*	0	*	0	*
Rabies – Human	0	*	0	*	0	*	0	*	0	*
Rocky Mountain Spotted Fever	1	*	0	*	0	*	0	*	1	*
Rubella	0	*	0	*	0	*	0	*	0	*
Rubella, congenital syndrome	0	*	0	*	0	*	0	*	0	*
<i>S. aureus</i> with reduced susceptibility to vancomycin	0	*	1	*	0	*	0	*	0	*
Salmonellosis	229	24.6	166	17.4	155	15.9	177	17.7	190	18.6
SARS	0	*	0	0.0	0	*	0	0.0	0	*
Shigellosis	11	*	14	*	21	2.2	34	3.4	17	*
Smallpox	0	*	0	*	0	*	0	*	0	*
Streptococcal infection Group A, Invasive	27	2.9	15	*	13	*	26	2.6	15	*
Syphilis, Congenital	0	*	0	*	0	*	1	*	0	*
Syphilis, Early Latent	32	3.4	26	2.7	43	4.4	73	7.3	104	10.2
Syphilis, Late Latent	57	6.1	42	4.4	55	5.6	104	10.4	120	11.7
Syphilis, Late Latent (with symptoms)	0	*	0	*	0	*	2	*	1	*
Syphilis, Latent (Duration unknown)	7	*	17	*	11	*	1	*	0	*
Syphilis, Neurosyphilis	0	*	0	*	0	*	0	*	0	*
Syphilis, Primary	13	*	7	*	18	*	39	3.9	33	3.2
Syphilis, Secondary	29	3.1	44	4.6	48	4.9	79	7.9	120	11.7
Tetanus	0	*	0	*	0	*	0	*	0	*
Toxic Shock Syndrome, non-streptococcal	0	*	0	*	0	*	0	*	0	*
Toxic Shock Syndrome, streptococcal	2	*	0	*	0	*	0	*	1	*
Trichinosis	0	*	0	*	0	*	0	*	0	*
Tuberculosis	29	3.1	16	*	26	2.7	16	*	25	2.4
Tularemia	0	*	0	*	0	*	0	*	0	*
Typhoid acute	1	*	1	*	0	*	3	*	3	*
Typhoid carrier	0	*	0	*	0	*	0	*	0	*
Typhus	0	*	0	*	0	*	0	*	0	*
Unknown Syphilis	0	*	0	*	0	*	0	*	0	*
Vaccinia	0	*	0	*	0	*	0	*	0	*

Notifiable Diseases continued on next page

11.0 All Reportable Diseases and Conditions

Table 6 Continued

Notifiable Communicable Diseases, 2011-2015, Wake County										
Disease	2011		2012		2013		2014		2015	
	Cases	Rate per 100,000 population								
Vibrio Infection, Other	1	*	2	*	4	*	2	*	5	*
<i>Vibrio vulnificus</i>	0	*	1	*	0	*	0	*	2	*
Yellow Fever Virus	0	*	0	*	0	*	0	*	0	*

*Number of cases too small to calculate a rate.
 Source: NCEDSS, 4/18/16
 a,b Due to incomplete data availability for HIV and AIDS cases, there are 3 different sources for case and rate data in Table 5: for 2011 and 2012, source is NCEDSS, accessed 4/18/16. For 2013 and 2014, source is <http://epi.publichealth.nc.gov/cd/stds/annualrpts.html>, accessed 5/1/16. For 2015, source is <http://epi.publichealth.nc.gov/cd/stds/figures/vol15no4.pdf>, accessed 5/1/16

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