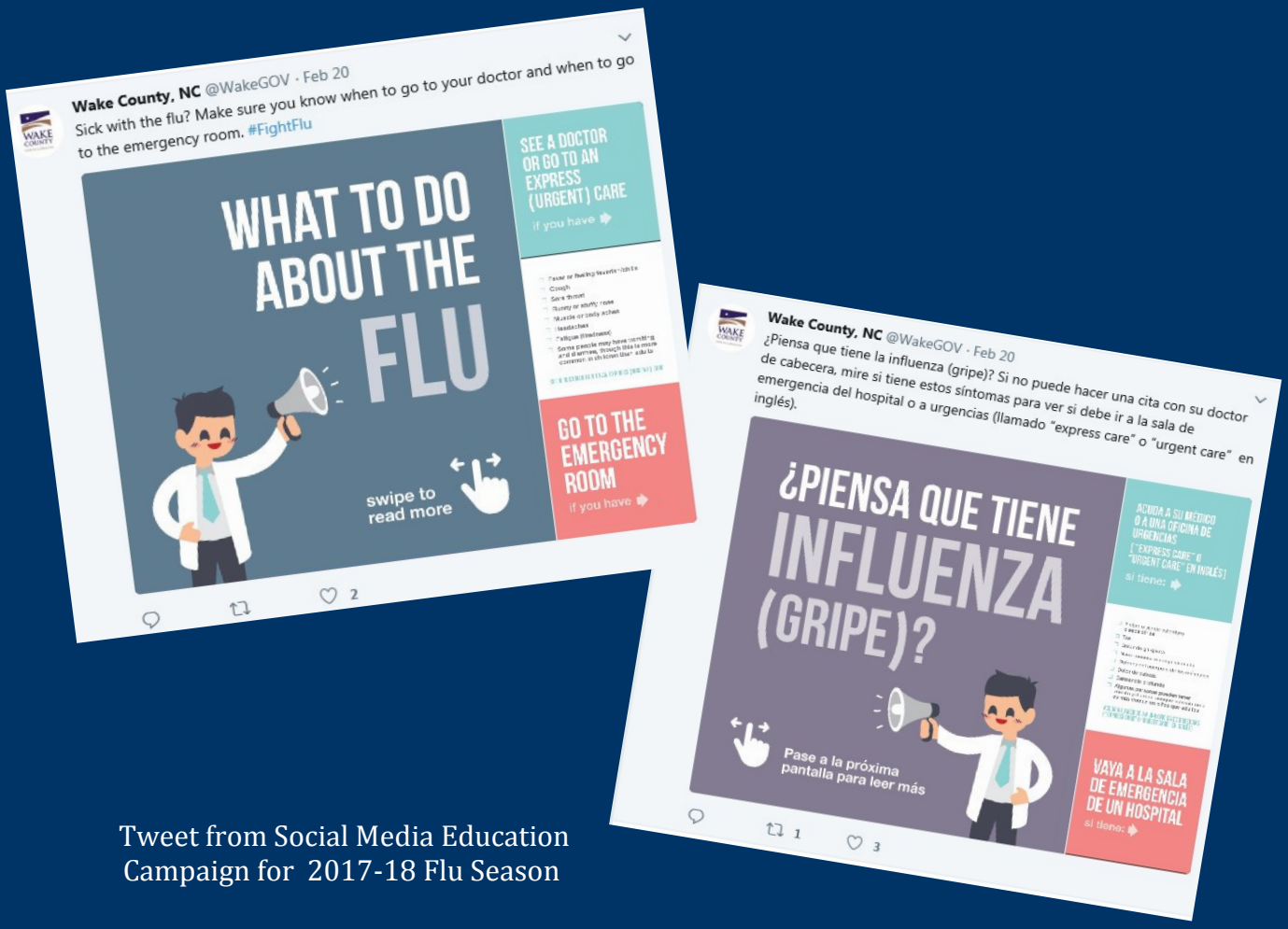
Wake County Human Services
Public Health Report

Communicable Disease 2018



Tweet from Social Media Education Campaign for 2017-18 Flu Season

Regina Petteway, Human Services Director
Sue Lynn Ledford, Public Health Division Director

Editor-in chief: Edie Alfano–Sobsey, Public Health Epidemiologist
Content Editor: Ramsay Hoke, Human Services Program Specialist

WAKE COUNTY NORTH CAROLINA

NORTH CAROLINA Accredited Health Department 2015-2019 Local Health Department Accreditation Board

Table of Contents

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 (see 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.

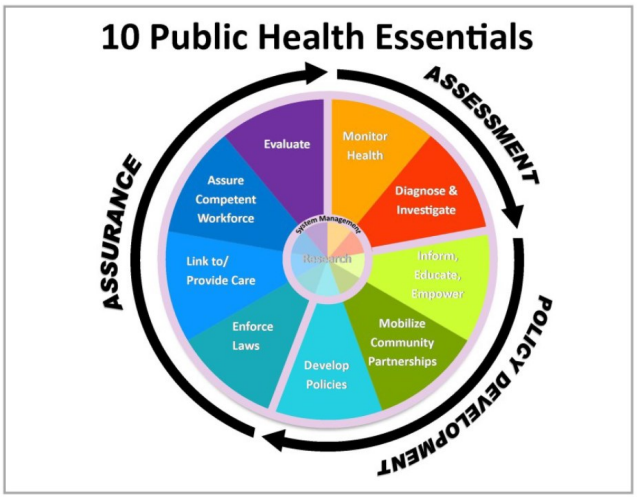
These reports help fulfill public health essential services:

- 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

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 over 70 reportable diseases and conditions specified in the N.C. Administrative Code rule 10A NCAC 41A .0101 (1).

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 (NCEDSS) and then to the Centers for Disease Control and Prevention's (CDC) National Notifiable Diseases Surveillance System.

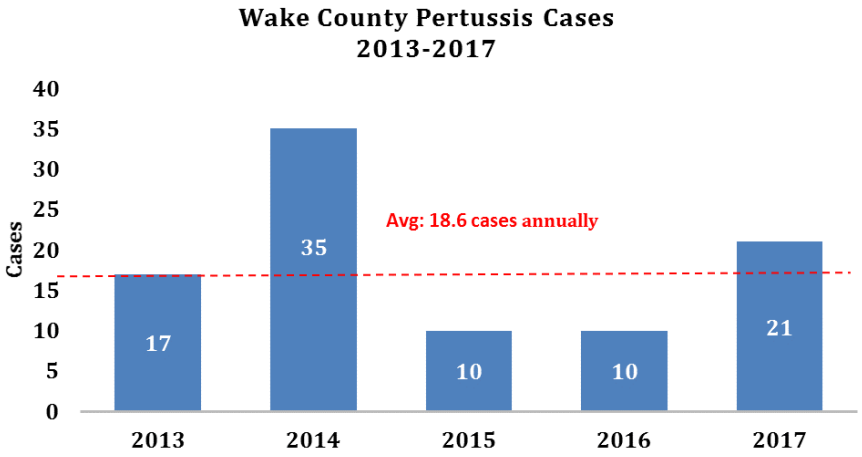
This report focuses on all diseases that have been reported in Wake County from 2012 through 2017 along with other information about selected communicable diseases of public health significance. For a list of all reportable communicable diseases and conditions, see Table 4.

3.0 Vaccine Preventable Diseases

3.1 Pertussis and Hepatitis B

Over the last five years, Wake County has averaged just under 19 pertussis (whooping cough) cases per year (see Figure 2).

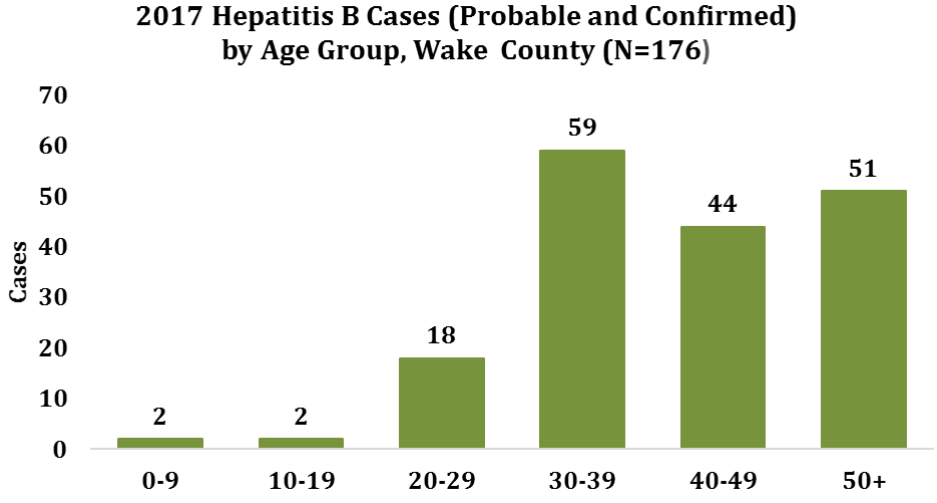
Figure 2



Source: North Carolina Electronic Data Surveillance System (NCEDSS) Technical Assistance and Training Program Case Count. Accessed 3/12/18.

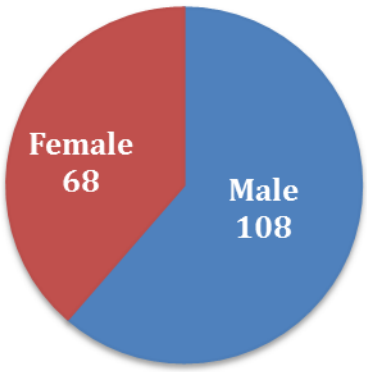
For 2017, the demographic groups most affected by hepatitis B were 30-39 year-olds, males and Asians (Figures 3-5).

Figure 3



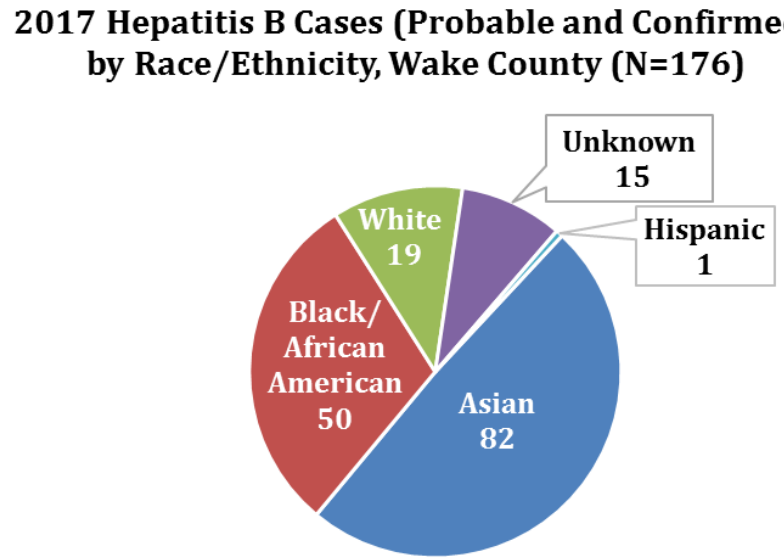
Source: NCEDSS, Demographic and Reporter Information Report,. Accessed 3/12/18.

Figure 4



Source: NCEDSS, Demographic and Reporter Information Report. Accessed 3/12/18.

Figure 5



Source: NCEDSS, Demographic and Reporter Information Report. Accessed 3/12/18.

3.2 Influenza

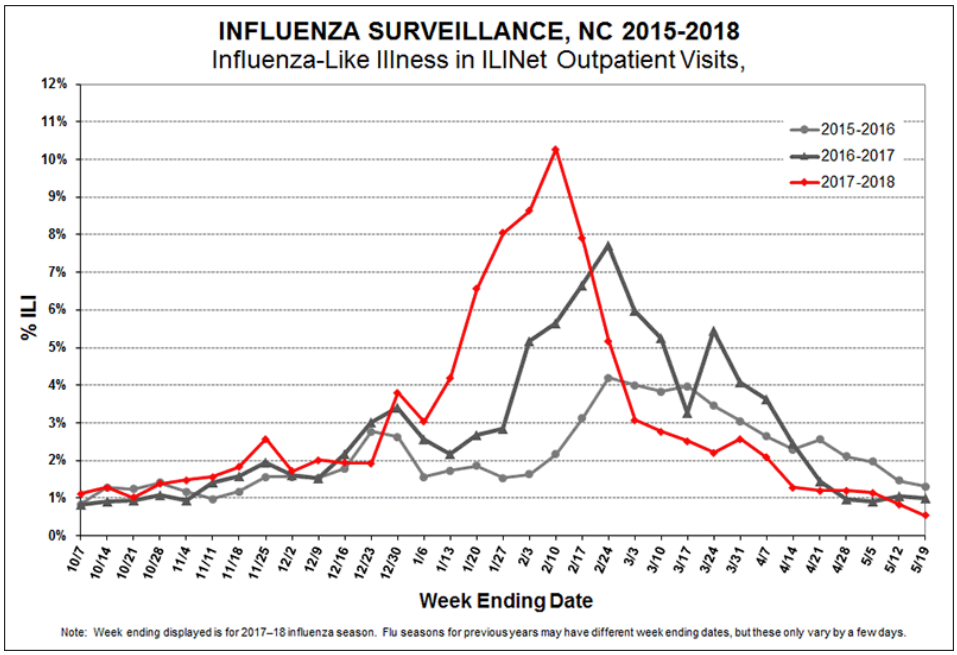
By the end of 2017, it had become clear that the 2017-18 flu season was going to be worse than previous flu seasons in terms of morbidity and mortality (2). 2017-18 was an influenza A(H3N2) virus-predominant season, and A(H3N2) is associated with more hospitalizations and deaths in persons aged 65 and older, as well as young children, compared to other age groups. According to national CDC estimates for the time period 11/2/2017—2/3/2018, vaccine effectiveness (VE) for all ages was:

- 25% against medically attended acute respiratory illness (ARI) caused by A(H3N2) virus infection
- 67% against influenza A(H1N1)pdm09 virus infection
- 42% against influenza B virus infection

The overall VE against influenza A and influenza B was 36% (3).

In North Carolina, influenza-like illness (ILI) outpatient visits were much higher this season than in the previous two seasons, with statewide ILI reaching a peak level of almost 11% by mid-February 2018 (see Figure 6). Statewide, ILI decreased dramatically in the weeks after hitting its peak. There were 391 deaths in North Carolina during the 2017-18 flu season (10/1/17—5/19/18), compared to 219 in the 2016-17 flu season.

Figure 6



Source: NC DHHS. http://flu.nc.gov/.6/29/18.

At the local level, Wake County flu deaths slightly decreased (as of 7/16/18, 20 deaths for 2017-18 compared to 22 deaths in 2016-17). The 2017-18 flu season could nevertheless be characterized as severe. Like the rest of the US and North Carolina, Wake County experienced a higher percentage of ILI outpatient visits this season compared to previous seasons. One aspect of this increase was a corresponding surge in patients presenting to local emergency departments (EDs) with ILI symptoms, many requiring hospitalization.

By January 2018, the noted surge led the Capital Regional Advisory Committee *(CapRAC)* Healthcare Preparedness Coalition to coordinate with Wake County government agencies to maintain appropriate situational awareness during this event. The WCHS Epidemiology (Epi) Program's routine surveillance of flu data (via NC DETECT and weekly statewide trends) impacted how frequently conference calls were needed. When flu case numbers were high in the early part of 2018, the following partner agencies engaged in regular communication, information sharing and coordination of public messaging in response to changing epidemiological trends:

- WakeMed Health & Hospitals
- Wake County Human Services/Public Health
- Wake County Emergency Management
- Wake County Emergency Medical Services
- Wake County Communications Office
- Duke Raleigh Hospital
- UNC Rex Healthcare

Table 1 shows the number of flu vaccine doses administered by Wake County Human Services (WCHS) during the 2017-18 flu season.

Table 1

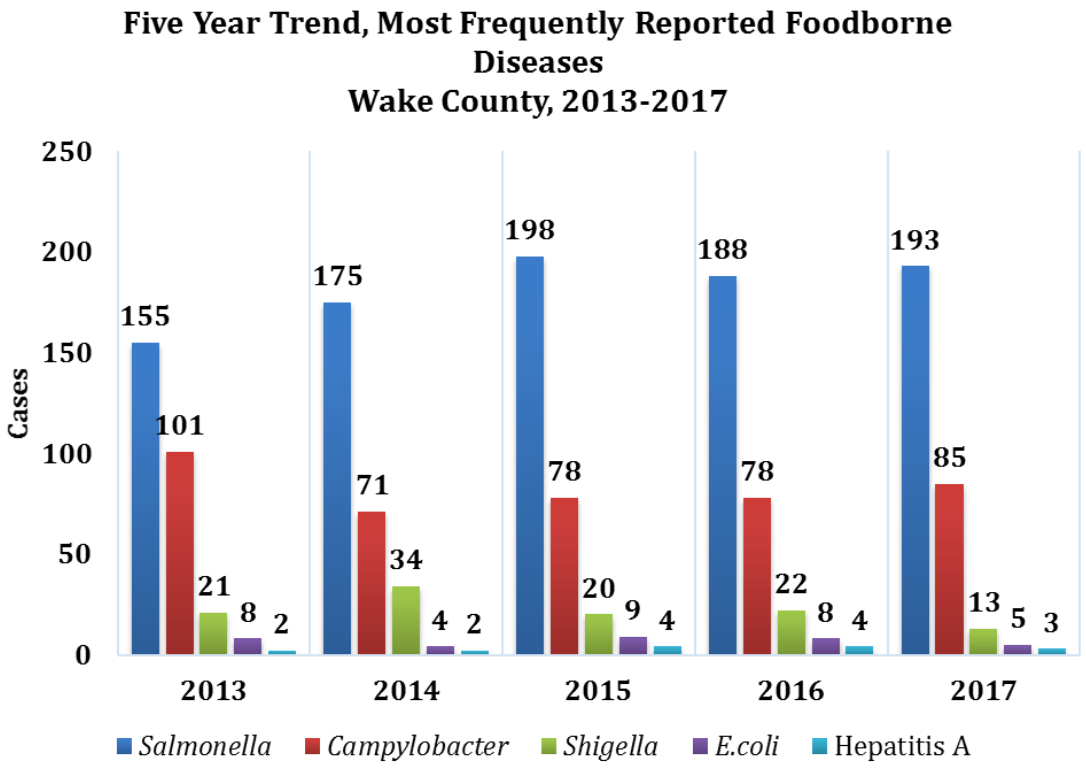
Flu Vaccine Doses Administered by WCHS* September 15, 2017 to March 1, 2018	
Children ages 6 months through 18 years	4,679
Adults age 19 and older	3,183
TOTAL	**7,862**
*The numbers above include 1,261 flu vaccine doses administered to Wake County employees. This number includes all staff, not just those covered by the Public Health Division's flu vaccine mandate.	

Source: WCHS Immunization Tracking Team, 3/13/18.

4.0 Foodborne Diseases

Figure 7 shows the five-year trend for the most frequently reported foodborne diseases in Wake County.

Figure 7

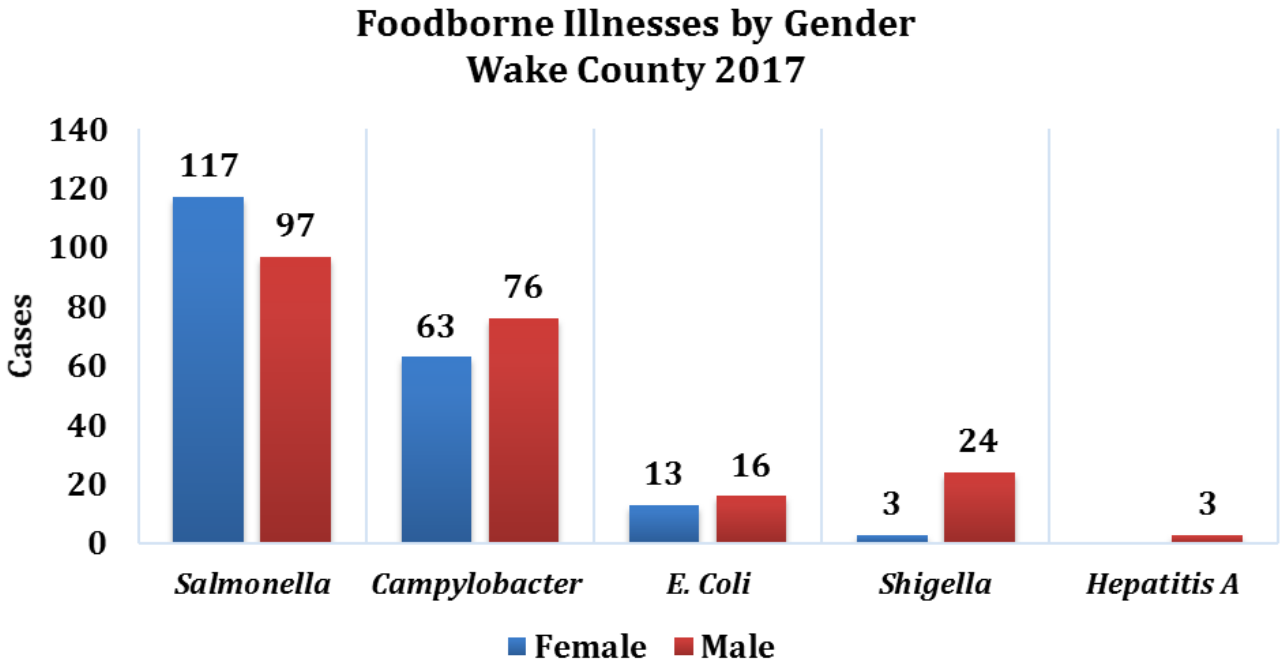


Source: NCEDSS, Technical Assistance and Training Program Case Count. Accessed 3/12/18.

As in previous years, *Salmonella* and *Campylobacter* predominated among reported foodborne illnesses, accounting for 86% of the foodborne cases in 2017.

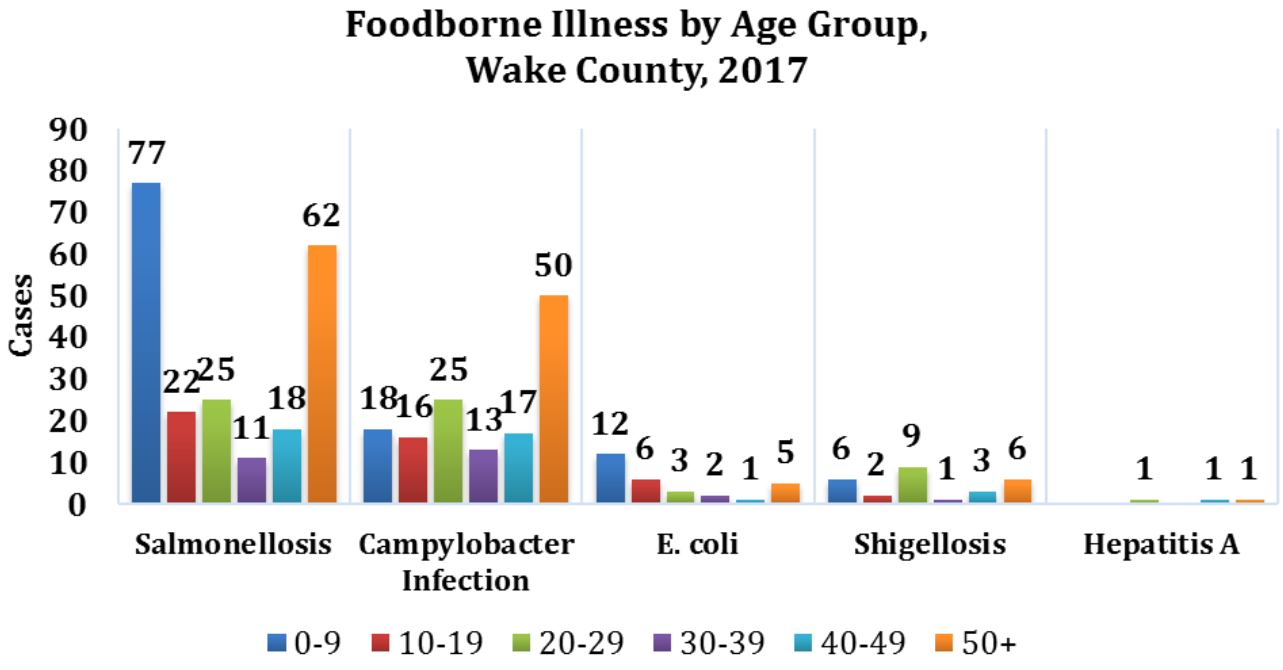
Further demographic analysis of the five most commonly reported foodborne illnesses shows they were most prevalent among males (except for *Salmonella*), young children and adults over age 50, and whites (Figures 8-10).

Figure 8



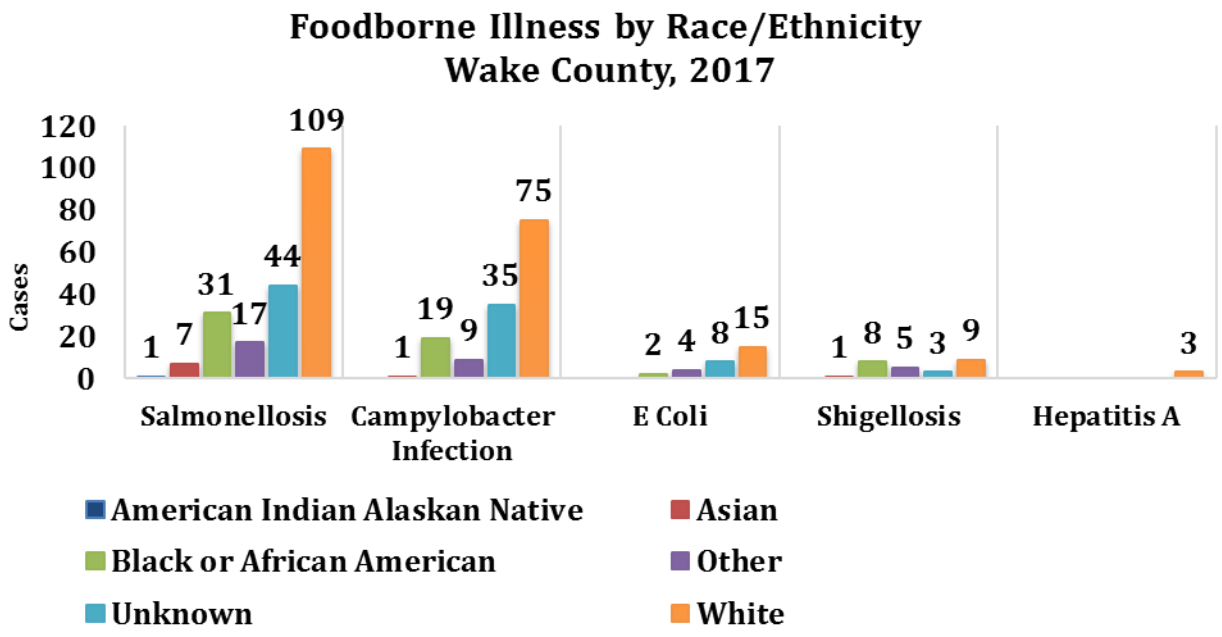
Source: NCEDSS, Demographic and Reporter Information Report, accessed 3/12/18. * Case numbers here differ from the corresponding disease case numbers in Table 4 because suspect, probable and confirmed cases are counted here, while Table 4 only shows the number of confirmed cases.

Figure 9



Source: NCEDSS, Demographic and Reporter Information Report, accessed 3/12/18. * Case numbers here differ from the corresponding disease case numbers in Table 4 because suspect, probable and confirmed cases are counted here, while Table 4 only shows the number of confirmed cases.

Figure 10



Source: NCEDSS, Demographic and Reporter Information Report, accessed 3/12/18. * Case numbers here differ from the corresponding disease case numbers in Table 4 because suspect, probable and confirmed cases are counted here, while Table 4 only shows the number of confirmed cases.

4.1 Foodborne Outbreaks

All foodborne outbreaks must be reported to the local health department and the NC Division of Public Health. In 2017, the Communicable Disease Nursing Team investigated four outbreaks with 177 sick individuals and 9 out of 25 specimens testing positive for norovirus.

4.1a. Key Partnership in an Outbreak Investigation

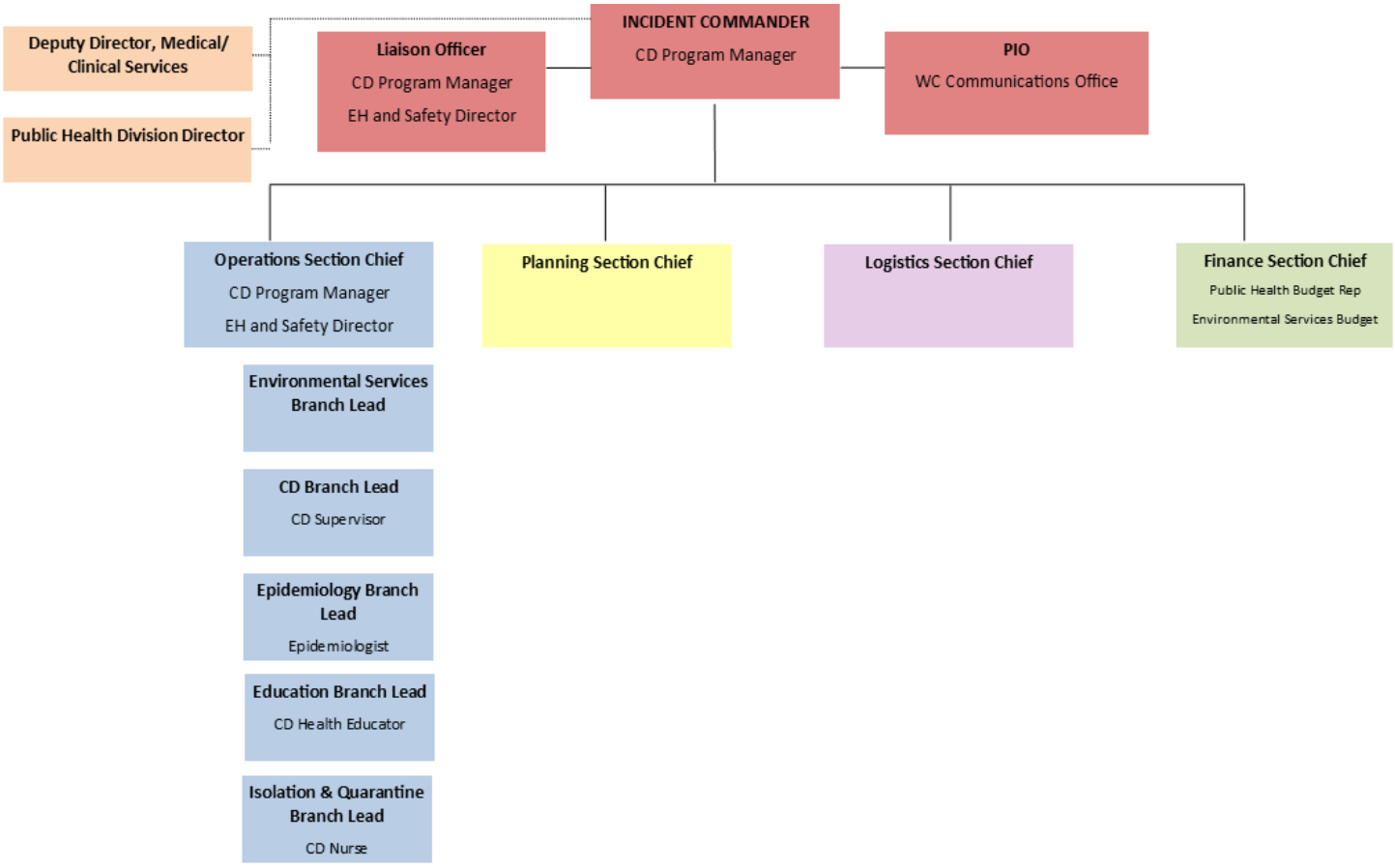
In December 2017, WCHS Public Health received a report from Student Health staff at a local college that more than 30 people had gotten sick with nausea/vomiting/diarrhea after attending an on-campus banquet. An Incident Command Structure (ICS—see Figure 11) was set up to investigate and manage the event.

In tandem with the Wake County Communications Office (CO), WCHS and Wake County Environmental Services (WCES) staff took immediate action to determine the cause of the mass illness as well as outline control measures to prevent the further spread of illness. The environmental investigation consisted of the following steps:

- Obtaining the banquet menu
- Interviewing food service employees who had different food preparation jobs
- Questioning employees who may have called out sick
- Discussing food service employee health policy
- Inspecting the food preparation areas

Figure 11

Wake County Human Services/Environmental Services Investigation Incident Command Structure



The public health investigation proceeded simultaneously with the environmental investigation, and comprised the following steps:

- Obtaining stool samples for laboratory testing from sick individuals
- Establishing a case definition
- Developing a survey for banquet attendees then coordinating its distribution
- Analyzing epidemiological findings of the completed surveys

As a result of the rapid and comprehensive response of staff in their designated ICS roles, it was determined that norovirus was the cause of this outbreak. Accordingly, Wake County and school staff disseminated clear-cut disease control measures, both to minimize complications for those affected by norovirus symptoms as well as prevent the further spread of disease:

- WCEH staff provided NCDHHS, Division of Public Health Norovirus Surveillance and Infection Control Guidance to food service staff
- Public Health staff conducted a retrospective cohort study to determine risk factors associated with the outbreak
- The Communications Office assisted the college's Student Affairs staff with a press release listing control measures for students to follow (4).

5.0 Vectorborne Diseases

Vectorborne diseases are caused by microbes that are spread to people by arthropods like ticks and mosquitoes that feed on human blood. According to a recent CDC report, between 2004 and 2016 more than 640,000 vectorborne diseases were reported nationwide, and nine new pathogens spread by bites from infected mosquitoes and ticks were discovered or introduced in the US (5).

The vectorborne diseases that occur most often in Wake County are transmitted by ticks. Table 2 shows confirmed as well as suspect and probable cases of tickborne disease (ehrlichiosis, Lyme disease and Rocky Mountain spotted fever) over the last five years. 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 2

Tickborne Diseases in Wake County, 2013-2017

	2013		2014		2015		2016		2017	
	Confirmed	Suspect Probable Confirmed	Confirmed	Suspect Probable Confirmed	Confirmed	Suspect Probable Confirmed	Confirmed	Suspect Probable Confirmed	Confirmed	Suspect Probable Confirmed
Ehrlichia	0	0	0	0	0	0	0	0	0	0
Ehrlichia, HGE	0	11	0	8	0	4	0	1	0	2
Ehrlichia, HME	2	17	0	11	1	7	1	10	0	10
Rocky Mountain Spotted Fever	0	72	0	102	0	47	2	36	0	31
Lyme Disease	5	58	5	53	1	27	3	30	4	45

Source: Technical Assistance and Training Program Case Count. NC EDDS. Assessed 3/12/18.

5.1 Zika Virus

Vectorborne surveillance in Wake County has demonstrated two key findings regarding Zika:

- The predominant mosquito species in Wake County is *Aedes albopictus*, which is less likely to spread Zika virus than *Aedes aegypti*
- There has never been a case of ***locally*** transmitted Zika virus reported in Wake County

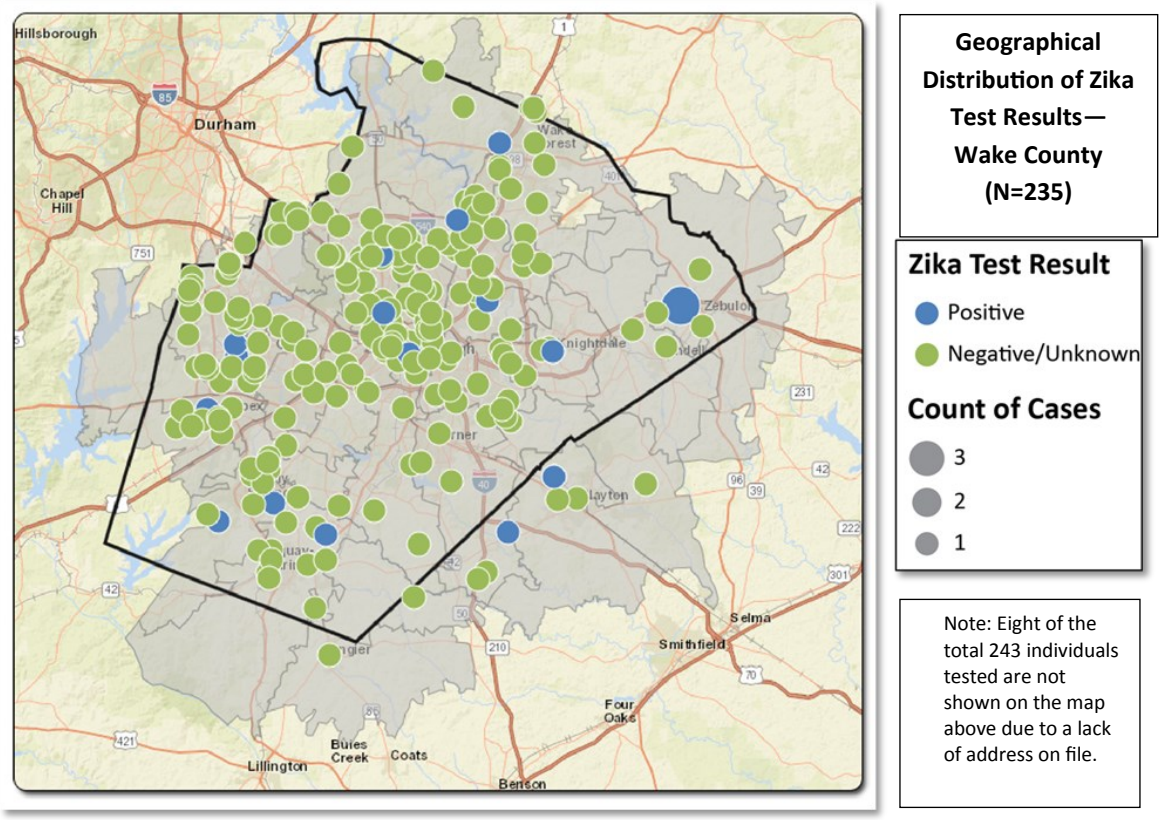
Those key findings notwithstanding, WCHS and WCES conducted a Zika surveillance project in May 2017 to understand more about the risk factors for localized transmission. Working with an outside evaluator, Ascendient Healthcare Advisors, the primary objectives of this surveillance project were as follows:

- Development of a profile of persons infected with Zika virus and those at-risk of Zika infection in Wake County and the surrounding communities
- Assessment of high-risk areas for Zika transmission by mapping of high-risk populations

Ascendient analyzed epidemiological data on 243 persons who tested for Zika between January 2016 and May 2017, 18 of whom tested positive (all travel-associated). In order to develop this profile and assess areas of high risk, WCHS developed a survey tool that was used to conduct both a telephone and web survey. Initial contact letters were developed and distributed to the residential mailing addresses of those who were tested and were over the age of 17. All surveys and letters were available in both English and Spanish.

Analytical findings showed that areas of high risk within Wake County appeared to be concentrated in suburban areas, as a disproportionately high percentage of those testing positive live in these areas. Those who tested negative were more likely to reside in the central, more urban areas of the county (see Figure 11). Females represented a higher percentage of the at-risk population than males, partially due to the precautionary efforts taken to test pregnant women. However, females were also more likely than males to test positive for Zika.

Figure 11



Source: Map created by Ascendient Healthcare Solutions, found in *Wake County Human Services—Zika Surveillance* report prepared by Ascendient Healthcare Advisors, May 2017.

Based on the comparative analysis, the profile of those testing positive, and the profile of those testing negative, it appeared that additional efforts to educate both the public and healthcare providers were necessary. At the time of this report, local transmission of Zika virus has not occurred. However, more education related to the methods of transmission of the virus may help to decrease the possibility of local transmission.

Healthcare providers can help to prevent the spread of Zika virus by ensuring that all individuals who are tested, regardless of test results, are given a standard set of instructions and list of future precautions that can be taken at the time they are tested. This is particularly important as people who have previously been tested may continue to travel to areas of known risks for transmission. Further, educational materials informing the public of the importance of being tested after traveling to, or being in contact with, high-risk areas/persons, may be beneficial.

6.0 Waterborne Diseases

6.1 *Legionella*

Legionella bacteria are found naturally in freshwater environments, like lakes and streams. *Legionella* can become a health concern when it grows and spreads in water systems like:

- Showerheads, fixtures and sink faucets
- Cooling towers (structures that contain water and a fan as part of centralized air cooling systems for buildings or industrial processes)
- Hot tubs that aren't drained after each use
- Decorative fountains and water features
- Hot water tanks and heaters
- Large plumbing systems

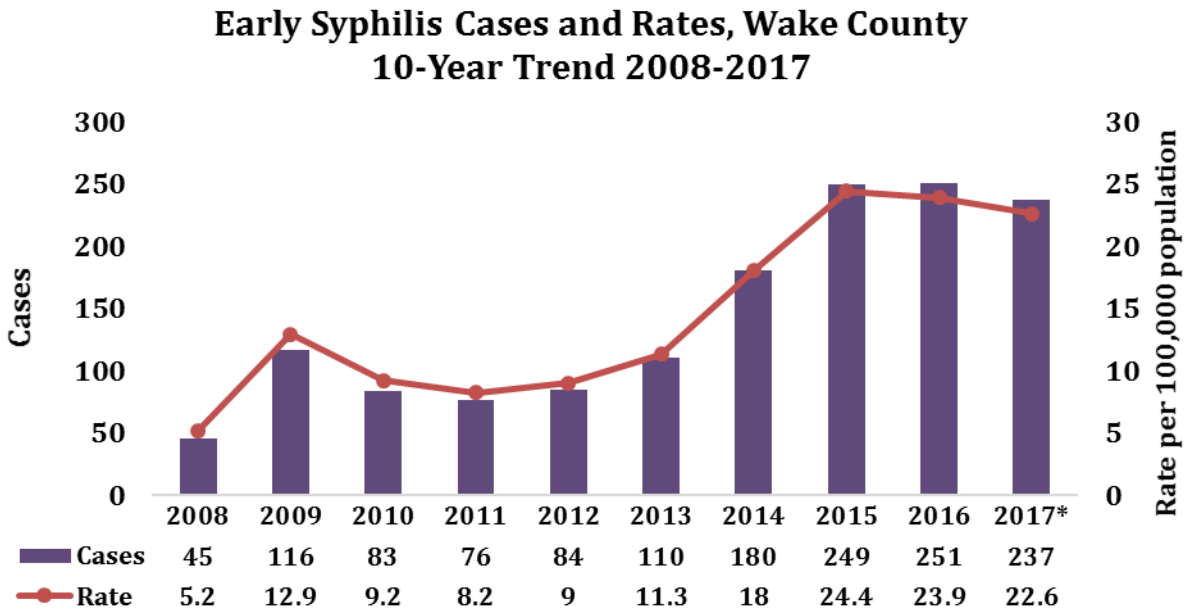
After *Legionella* grows and multiplies in building water systems, people can become infected with *Legionella* when they breathe in small droplets of water in the air that contain these bacteria.

From March 2017 thru March 2018, the WCHS CD Nursing and the Wake County Environmental Health teams responded to an outbreak of *Legionella* at an independent living facility operating in Wake County. The CD Nursing team's work involved investigation, interviewing, education to residents and staff, case management, and facilitating coordination between local, state, and CDC agencies. The Environmental Health team monitored environmental samples and ensured compliance. Both teams worked with facility staff to ensure the development of a water management plan, with recommendations from all parties involved (6).

7.0 Sexually Transmitted Diseases (STDs)

Looking at 10-year trend data, Wake County's focus on stopping a syphilis outbreak appears to have paid off. After five straight years of increases from 2011-2015, syphilis cases reached a plateau in 2016 and 2017 (see Figure 13).

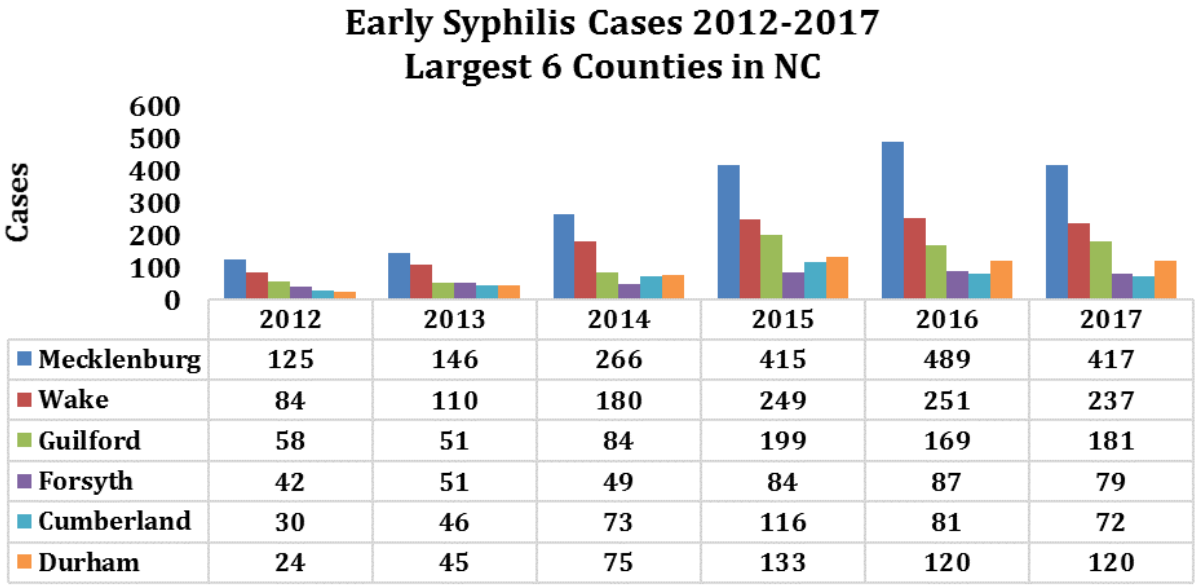
Figure 13



Source: 2008-12 case and rate data comes from 2012 HIV/STD annual surveillance report, found at http://epi.publichealth.nc.gov/cd/stds/annualrpts.html. 2013-2016 case and rate data comes from 2016 HIV/STD annual surveillance report, found at http://epi.publichealth.nc.gov/cd/stds/annualrpts.html.
*2017 case data found at http://epi.publichealth.nc.gov/cd/stds/quarterlyrpts.html, and rate calculated using 2017 population estimate found at https://files.nc.gov/ncosbm/demog/

Wake County still has the second highest number of syphilis cases among the largest six counties in North Carolina (see Figure 14), yet as of 2017 its syphilis rate was lower than the other large counties except Forsyth and Cumberland (see Figure 15).

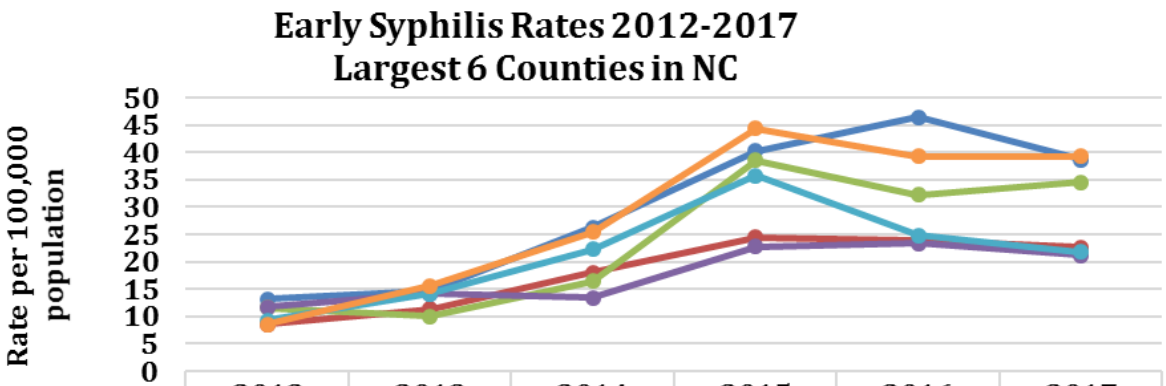
Figure 14



	2012	2013	2014	2015	2016	2017
Mecklenburg	125	146	266	415	489	417
Wake	84	110	180	249	251	237
Guilford	58	51	84	199	169	181
Forsyth	42	51	49	84	87	79
Cumberland	30	46	73	116	81	72
Durham	24	45	75	133	120	120

Source: 2012-16 case data comes from 2016 HIV/STD annual surveillance report, found at http://epi.publichealth.nc.gov/cd/stds/annualrpts.html.
2017 case data found at http://epi.publichealth.nc.gov/cd/stds/quarterlyrpts.html. Accessed 2/28/18 .

Figure 15

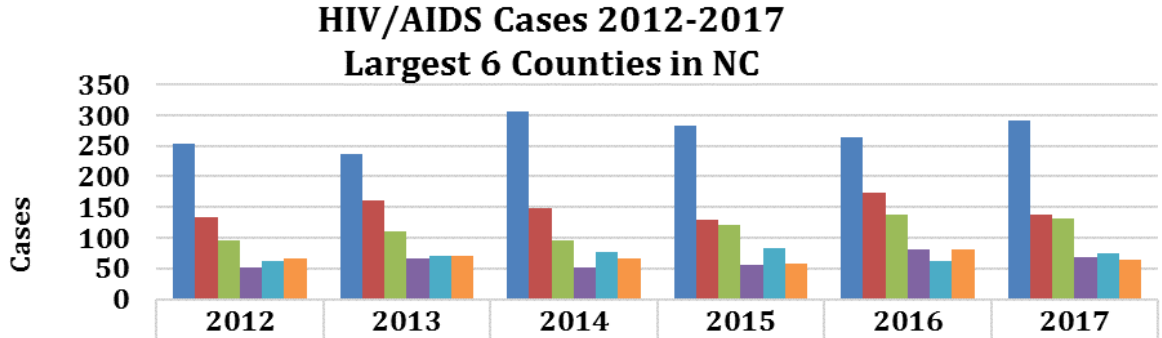


	2012	2013	2014	2015	2016	2017
Mecklenburg	13.2	14.7	26.3	40.2	46.4	38.7
Wake	8.5	11.3	18	24.4	23.9	22.6
Guilford	11.6	10	16.4	38.5	32.2	34.5
Forsyth	11.7	14.1	13.4	22.8	23.4	21.2
Cumberland	9.3	14.1	22.3	35.7	24.8	21.8
Durham	8.5	15.6	25.4	44.3	39.2	39.2

Source: 2012-16 rate data comes from 2016 HIV/STD annual surveillance report, found at http://epi.publichealth.nc.gov/cd/stds/annualrpts.html. 2017 rate estimated using case data found at http://epi.publichealth.nc.gov/cd/stds/quarterlyrpts.html and 2017 population estimate found at https://files.nc.gov/ncosbm/demog/countytotals_2010_2019.html . Accessed 2/28/18.

Like syphilis, Wake County had the second highest number of HIV/AIDS cases among the largest six counties in NC (see Figure 16) from 2012-17, yet comparatively speaking had the lowest HIV/AIDS rates (see Figure 17).

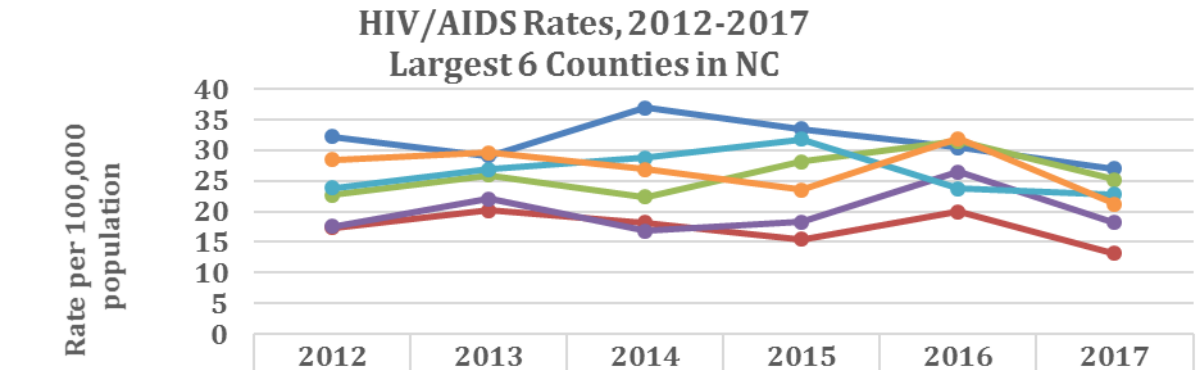
Figure 16



	2012	2013	2014	2015	2016	2017
Mecklenburg	254	236	306	284	264	291
Wake	134	161	149	130	173	138
Guilford	95	110	96	122	138	132
Forsyth	52	66	51	56	82	68
Cumberland	62	71	76	84	63	75
Durham	67	71	66	59	82	65

Source: 2012-16 case data comes from 2016 HIV/STD annual surveillance report, found at http://epi.publichealth.nc.gov/cd/stds/annualrpts.html. 2017 case data found at http://epi.publichealth.nc.gov/cd/stds/quarterlyrpts.html. Accessed 2/28/18.

Figure 17

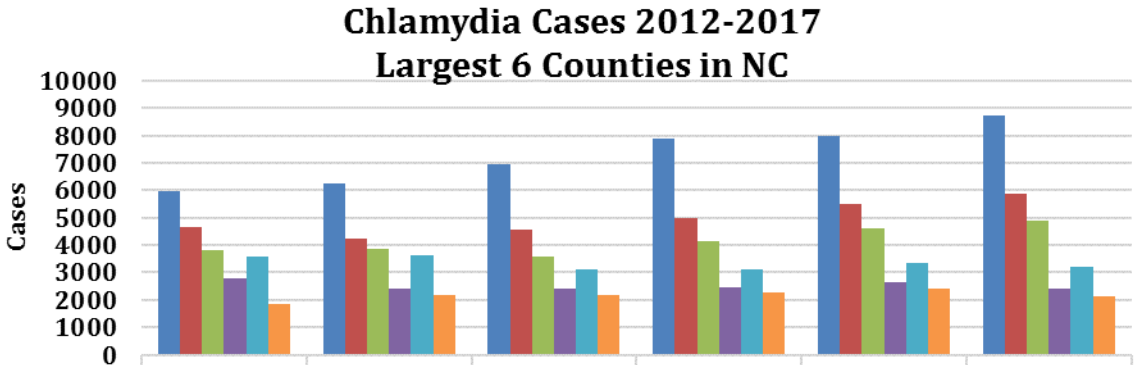


	2012	2013	2014	2015	2016	2017
Mecklenburg	32.2	29.1	36.9	33.5	30.4	27
Wake	17.3	20.2	18.2	15.5	20	13.2
Guilford	22.7	25.9	22.4	28.1	31.5	25.2
Forsyth	17.6	22.1	16.8	18.3	26.5	18.2
Cumberland	23.8	26.9	28.8	31.8	23.7	22.8
Durham	28.5	29.6	26.9	23.5	31.9	21.2

Source: 2012-16 rate data comes from 2016 HIV/STD annual surveillance report, found at http://epi.publichealth.nc.gov/cd/stds/annualrpts.html. 2017 rate estimated using case data found at http://epi.publichealth.nc.gov/cd/stds/quarterlyrpts.html and 2017 population estimate found at https://files.nc.gov/ncosbm/demog/countytotals_2010_2019.html. Accessed 2/28/18.

Chlamydia and gonorrhea are both much more prevalent in Wake County (as well as in NC and the US) than syphilis and HIV/AIDS. Figures 18-21 show that while Wake County had more chlamydia and gonorrhea cases--yet lower rates--than the largest counties in NC, the number of cases and rates rose to unprecedented levels in 2017.

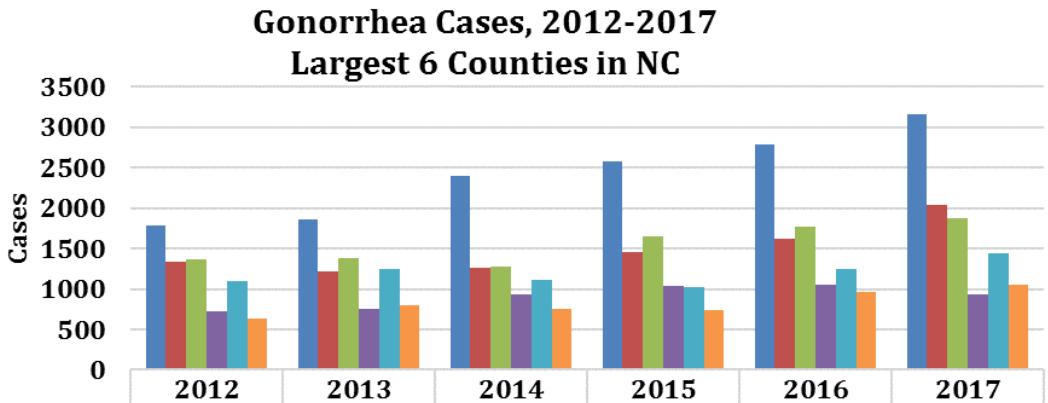
Figure 18



	2012	2013	2014	2015	2016	2017
Mecklenburg	5986	6243	6939	7893	7978	8733
Wake	4667	4255	4558	4966	5514	5897
Guilford	3801	3879	3563	4138	4605	4890
Forsyth	2802	2418	2422	2484	2626	2420
Cumberland	3578	3648	3131	3131	3360	3233
Durham	1859	2185	2160	2284	2426	2154

Source: 2012-16 case data comes from 2016 HIV/STD annual surveillance report, found at http://epi.publichealth.nc.gov/cd/stds/annualrpts.html. 2017 case data found at http://epi.publichealth.nc.gov/cd/stds/quarterlyrpts.html. Accessed 2/28/18.

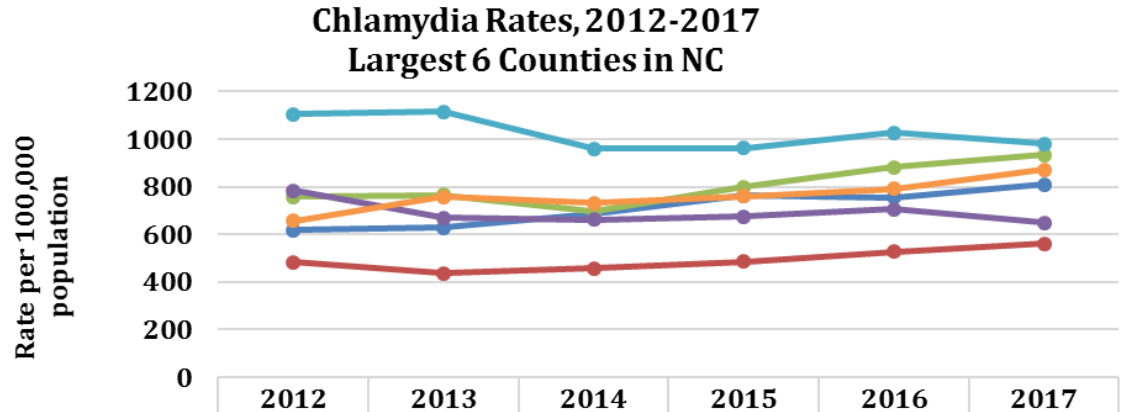
Figure 19



	2012	2013	2014	2015	2016	2017
Mecklenburg	1783	1857	2392	2575	2781	3152
Wake	1340	1215	1264	1452	1626	2036
Guilford	1371	1382	1271	1656	1776	1881
Forsyth	721	751	936	1044	1049	926
Cumberland	1090	1252	1116	1016	1246	1435
Durham	640	798	752	739	965	1045

Source: 2012-16 case data comes from 2016 HIV/STD annual surveillance report, found at http://epi.publichealth.nc.gov/cd/stds/annualrpts.html. 2017 case data found at http://epi.publichealth.nc.gov/cd/stds/quarterlyrpts.html. Accessed 2/28/18.

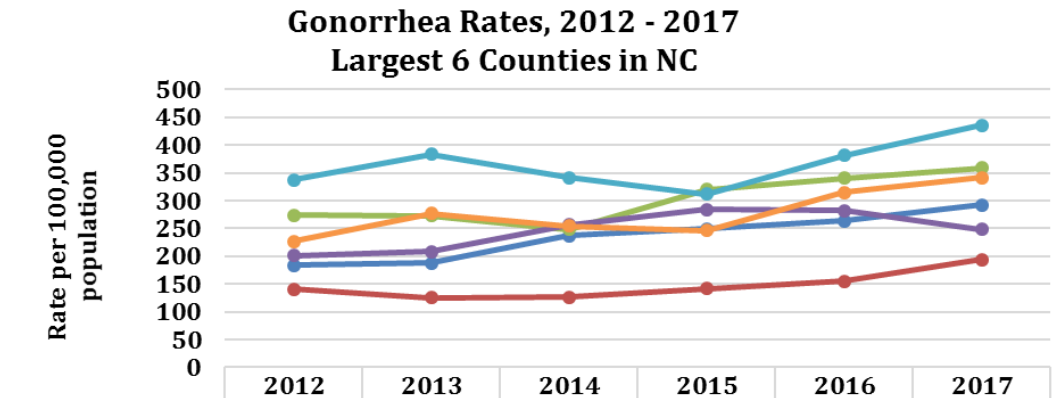
Figure 20



	2012	2013	2014	2015	2016	2017
Mecklenburg	618.2	629.8	686.4	763.7	756.3	810.6
Wake	484.6	436.9	456.8	485.9	526.8	562.3
Guilford	758.9	765.4	695.1	799.5	883.3	933.3
Forsyth	783.1	669.7	663.5	675	706.8	649.4
Cumberland	1106.2	1116.7	959.3	961.7	1027.1	980.9
Durham	657.6	757.3	731.9	759.9	792.3	871.4

Source: 2012-16 rate data comes from 2016 HIV/STD annual surveillance report, found at http://epi.publichealth.nc.gov/cd/stds/annualrpts.html. 2017 rate estimated using case data found at http://epi.publichealth.nc.gov/cd/stds/quarterlyrpts.html and 2017 population estimate found at https://files.nc.gov/ncosbm/demog/countytotals_2010_2019.html. Accessed 2/28/18.

Figure 21



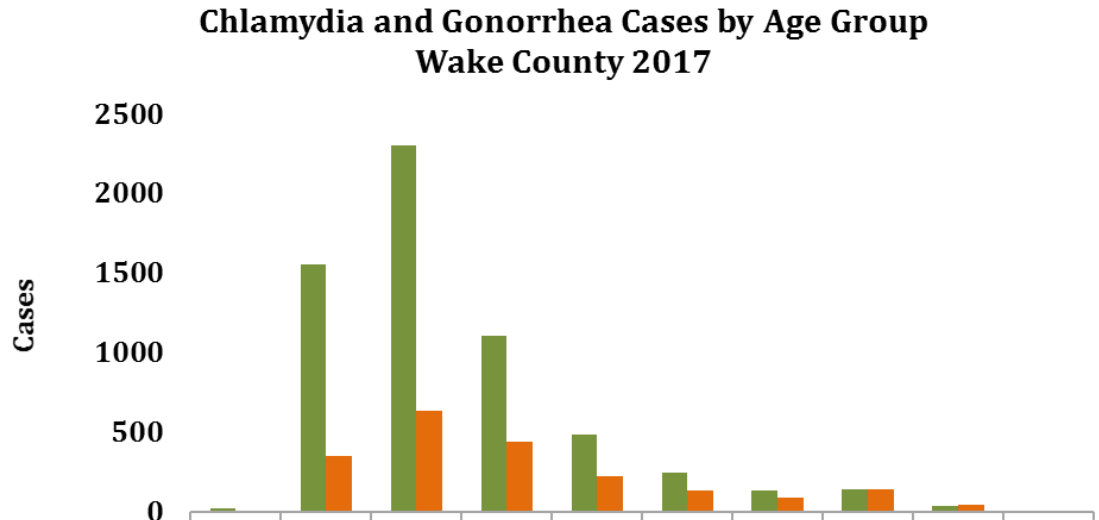
	2012	2013	2014	2015	2016	2017
Mecklenburg	184.1	187.3	236.6	249.2	263.6	292.6
Wake	140.3	124.8	126.7	142.1	155.3	194.1
Guilford	273.7	272.7	248	320	340.7	359
Forsyth	201.5	208	256.4	283.7	282.4	248.5
Cumberland	337	383.3	341.9	312.1	380.9	435.4
Durham	226.4	276.6	254.8	245.9	315.1	341.3

Source: 2012-16 rate data comes from 2016 HIV/STD annual surveillance report, found at http://epi.publichealth.nc.gov/cd/stds/annualrpts.html. 2017 rate estimated using case data found at http://epi.publichealth.nc.gov/cd/stds/quarterlyrpts.html and 2017 population estimate found at https://files.nc.gov/ncosbm/demog/countytotals_2010_2019.html. Accessed 2/28/18.

7.1 Special Focus—STDs Among 15-24 Year Olds

Epidemiological analysis of Wake County data shows both chlamydia and gonorrhea are overwhelmingly concentrated among 15-24 year olds (see Figure 22). This age group represented 64% of chlamydia cases and 52% of gonorrhea cases in 2017.

Figure 22

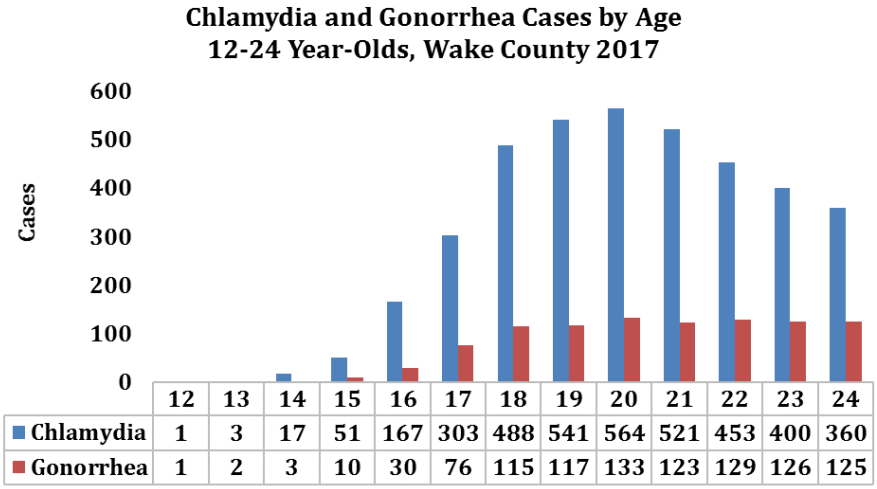


	0-14	15-19	20-24	25-29	30-34	35-39	40-44	45-54	55-64	65+
Chlamydia	21	1550	2298	1108	482	243	135	144	36	7
Gonorrhea	6	348	636	440	223	133	91	143	47	5

Source: NCEDSS. Accessed 5/3/18.

Figure 23 shows an exponential rise in chlamydia and gonorrhea cases between ages 14 and 18, with both diseases peaking in 20 year olds. Interestingly, Figure 23 also shows that chlamydia decreases more precipitously than gonorrhea from ages 20 to 24.

Figure 23



	12	13	14	15	16	17	18	19	20	21	22	23	24
Chlamydia	1	3	17	51	167	303	488	541	564	521	453	400	360
Gonorrhea	1	2	3	10	30	76	115	117	133	123	129	126	125

Source: NCEDSS. Accessed 5/3/18.

Table 3 shows the distribution of chlamydia and gonorrhea diagnosed across WCHS as an agency in 2017. More than a quarter of Wake County's chlamydia and more than a third of its gonorrhea cases were diagnosed by WCHS.

Table 3

WCHS Chlamydia and Gonorrhea Cases by Site/Program Area, 2017

	Chlamydia	Gonorrhea	Total
Non-traditional Testing Sites (NTS)			
NTS	300	99	399
Sunnybrook			
Clinic A (STD)	922	480	1402
Clinic C (Child Health)	12	2	14
Clinic F (Women's Health)	126	26	152
Clinic G (Prenatal)	98	13	111
HIV Intervention Program (HIP)	78	73	151
Northern Regional Center (NRC)			
Clinic C (Child Health)	1		1
Clinic F (Women's Health)	18	4	22
Clinic G (Prenatal)	23	4	27
STD	23	3	26
Eastern Regional Center (ERC)			
Clinic F (Women's Health)	17	8	25
Clinic G (Prenatal)	5	3	8
STD	26	8	34
Southern Regional Center (SRC)			
Clinic F (Women's Health)	7		7
Grand Total	1656	723	2379
Countywide Total	6027	2072	8099
WCHS Percentage of Countywide Total	**27.5%**	**34.9%**	**29.4%**

7.2 Key Strategy: Women's Health Teen Clinic

Focusing on the epidemiology of a particular WCHS program, Figure 24 shows that 15-19 year olds accounted for around 20% of Clinic F's chlamydia and gonorrhea morbidity and 20-24 year olds accounted for almost half in 2017. These numbers demonstrate the need to focus on STD prevention education for this age group. One programmatic response, aimed at reaching 15-19 year olds, is Clinic F's Teen Clinic.

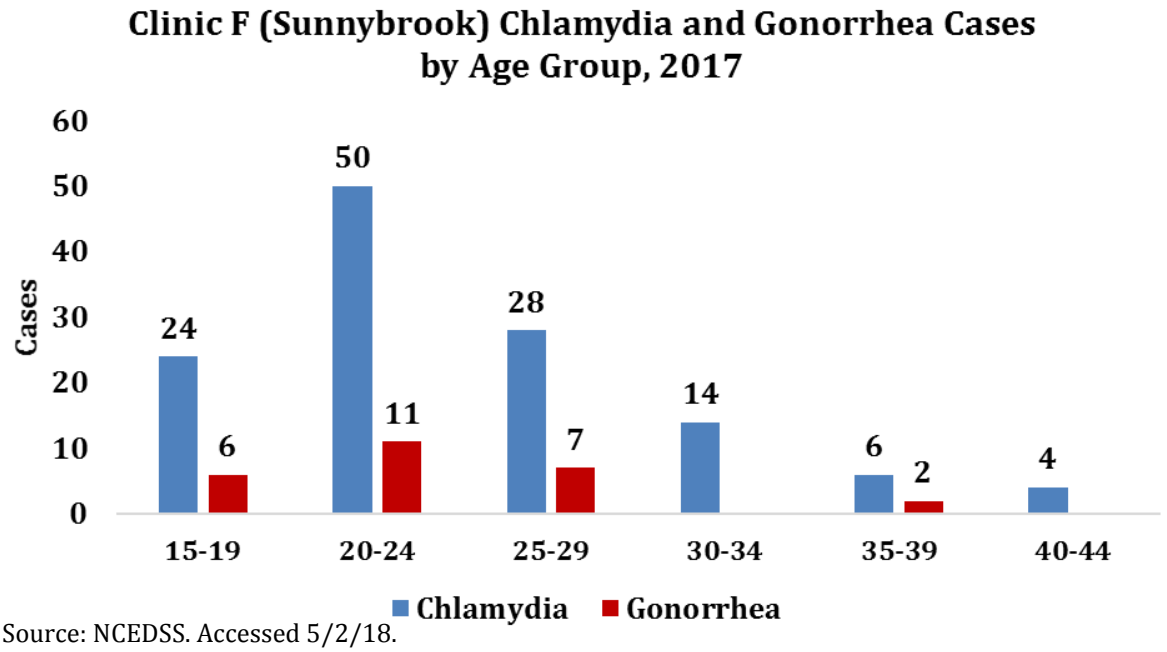
On Mondays, Teen clinic offers confidential walk-in visits for teens who have never been seen before in Clinic F. Services include STD testing and counseling as well as providing contraception (if desired by the client). Teen Clinic encourages abstinence as an STD prevention measure and provides teens with information on the benefits of abstinence. Counseling on the following is also available:

- female anatomy
- STDs
- various forms of contraception
- drug use (including alcohol)
- dating violence

Most Teen Clinic clients attend high schools in Wake County. A number of new Teen Clinic customers are diagnosed with chlamydia (and some with gonorrhea), and many have been sexually active, on average, for one year prior to coming to the clinic. Since chlamydia and gonorrhea can be present without symptoms, teens can remain undiagnosed for many months. Testing offered through Teen Clinic is very important not only to prevent the consequences of untreated disease but for the broader health of the community in preventing further spread of these diseases.

Clinic F providers have noted that the majority of the teens served tell them that sexual health issues are not discussed by teens' parents and/or guardians. It is thought that the services provided by Teen Clinic have contributed to the decline in teen pregnancy rates and the further spread of STD cases in Wake County.

Figure 24



Source: NCEDSS. Accessed 5/2/18.

7.3 Hepatitis C

Since September 2016, WCHS has implemented targeted hepatitis C testing to high-risk clients under the Gilead FOCUS (On the **F**rontlines **o**f **C**ommunities in the **U**nited **S**tates) grant. Hepatitis C screening has been incorporated into normal clinic flow for clients who are baby boomers (born between 1945-1965), HIV positive, injection drug users (IDU) in the past or present, men who have sex with men (MSM) and other risk factors. Clients who test positive for hepatitis C are immediately linked to specialized hepatitis C bridge counselors, who link clients to medical care as well as other "wrap-around" services if needed.

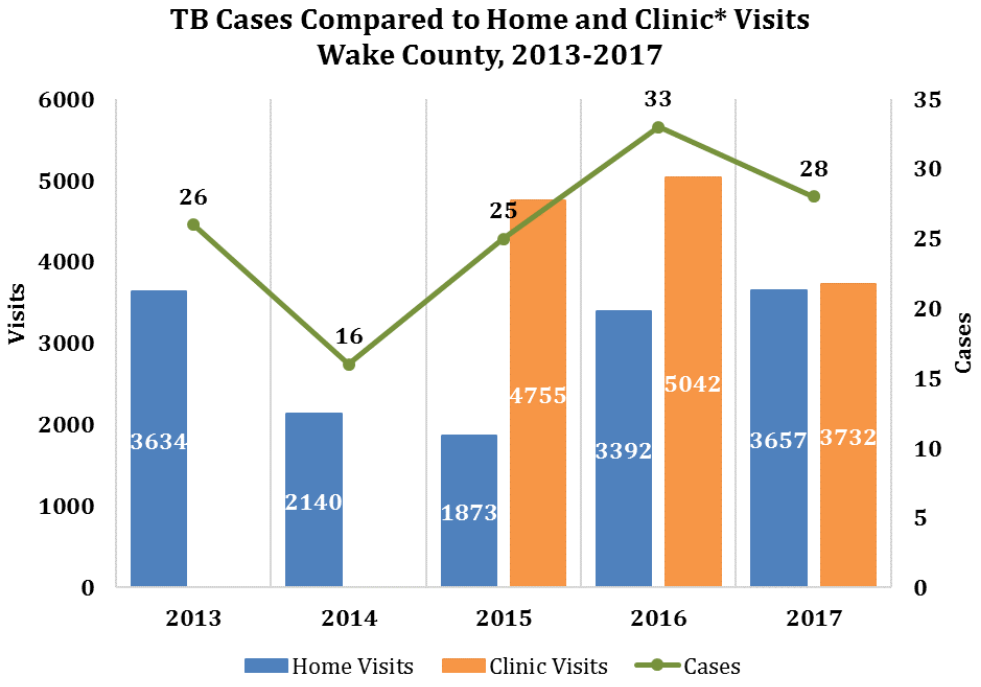
The first year of the FOCUS Hepatitis C testing program (actually a 14-month period spanning September 2016-October 2017) was very successful in achieving the following results:

- 6,524 clients screened at all WCHS clinics and regional centers (exceeded Gilead's target of 5,000)
- 142 identified hepatitis C positives
- 112 (79%) positive clients were linked to medical care
- 11 clients were completely cured of hepatitis C

8.0 Tuberculosis

The number of tuberculosis (TB) cases dropped slightly in 2017; there were 33 cases in 2016 and 28 cases in 2017 (see Table 4). From 2016 to 2017, home visits increased by 7.8% and clinic visits decreased by 26% (Figure 25). Home visits rose because the standard of care for directly observed therapy (DOT) for patients with active TB changed. As of July 21, 2017, the new standard of care became daily medication for the first two months, followed by three times weekly medication for the duration of treatment. (The previous standard of care was daily medication for the first two weeks, followed by twice weekly medication for the duration of treatment.) (7). The decrease in clinic visits was the result of a staff shortage; in 2017, the WCHS TB Clinic operated on a half-day basis.

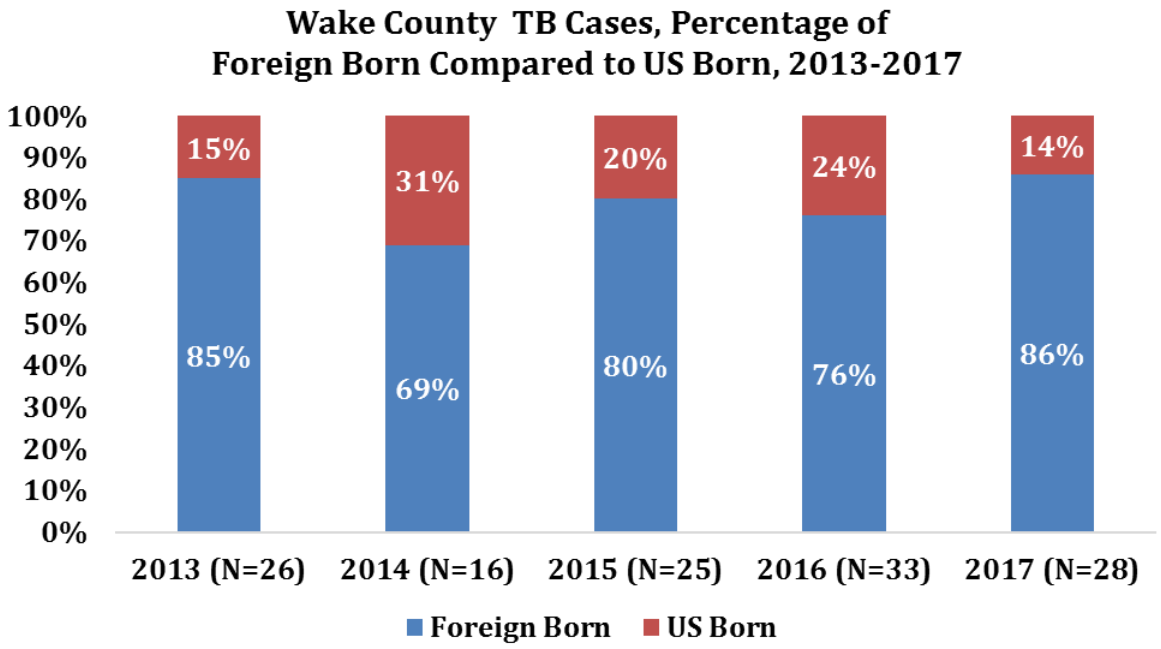
Figure 25



*Clinic visit data prior to 2015 not available due to a change in patient management systems.
Source: WCHS TB Program, 4/27/18.

As in previous years, the 2017 percentage of foreign born TB cases was much higher than for US-born cases (see Figure 26). Of the foreign born cases (N=24), the countries of origin were as follows: India (13), Ethiopia (2), Mexico (2), and one each from the following countries: Syria, China, Philippines, Sierra Leone, Bangladesh, Vietnam and the Democratic Republic of the Congo. There were four US born TB cases.

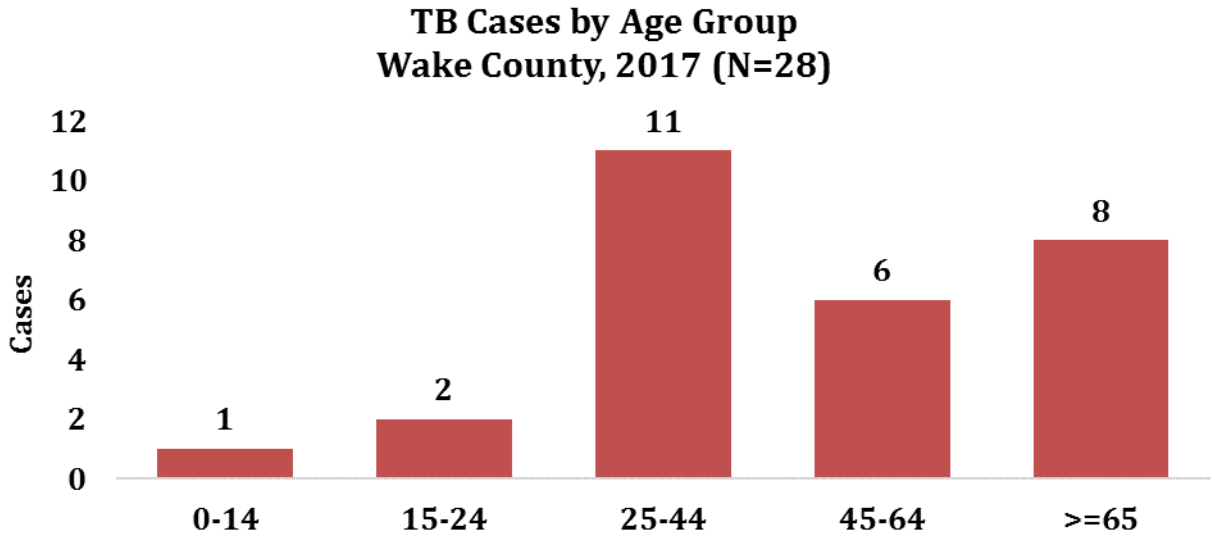
Figure 26



Source: WCHS TB Program, 4/27/18.

In 2017, TB cases predominated among those ages 25-44, females and Asians (see Figures 27-29).

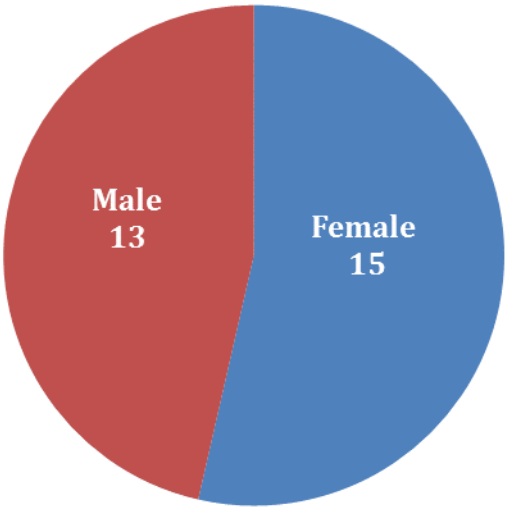
Figure 27



Source: WCHS TB Program, 4/27/18.

Figure 28

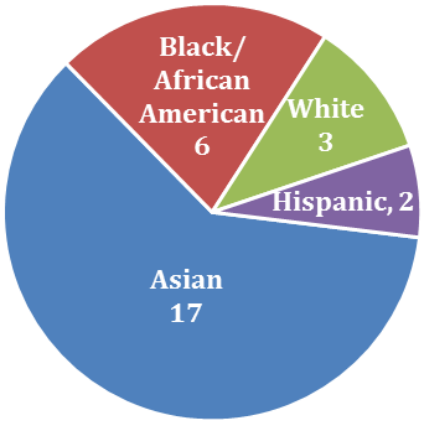
TB Cases by Gender, Wake County, 2017 (N=28)



Source: WCHS TB Program, 4/27/18

Figure 29

TB Cases by Race/Ethnicity, Wake County, 2017 (N=28)



Source: WCHS TB Program, 4/27/18

9.0 Program Profiles

This section describes:

- Public Health programs, services and activities that assess, identify, treat, follow up and prevent reportable (and some non-reportable) communicable diseases and conditions in Wake County
- The number of employees dedicated to those activities
- Program outputs

9.1 Immunization Tracking Team

Mission: Ensure that children and adults living in Wake County are age-appropriately immunized per NC Law

Staff: 4 FTE's: 1 Administrative Supervisor – 1 Registered Nurse – 2 Human Services Technicians

Activity	Description	Outcomes/Outputs Data for period July 1, 2017 through April 1, 2018
Tracking for Compliance	Tracking to ensure Wake County children are age appropriately immunized, focus on 19-35 month old children with medical home at WCHS.	• 89% compliant at 24 months • 95% compliant at 35 months For 1,042 client records Assessment Oct. 2, 2017
North Carolina Immunization Registry (NCIR)	Provide system administration, training and support to Wake County staff.	• 407 Active Users • 38 New Users during this period of FY18
Immunization Program Management	Provides vaccine supply and inventory management to support 12 clinic and program areas.	• 32,820 doses received • 30,209 doses administered • 12,879 clients immunized during this period of FY18
Middle School Immunization Compliance	Provides project management and professional nursing services for immunization initiative in collaboration with Wake County Public Schools system	• 7th grade cohort: 12,200 students • 67 students immunized with 126 vaccine doses at 2 'Exclusion Day' clinic events For school year 2017-2018
Outreach Immunization Clinics	Provides access to immunization services to Wake County Employees and the public at clinics around the County.	• 250 flu doses to clients • 628 flu doses to Wake County employees during this period of FY18
National Association of Counties (NACo) Prescription Discount Card Program	Provides project administration for Wake County.	Calendar Year 2017 • 5,117 utilizers • total price savings of $211,690
Supports Public Health Division	Provides clinical and/or administrative support and services for special projects and emergency response.	Staff participated in the Mass Shelter Exercise at the EMS Warehouse and Reception Congregate Care Center Exercise at Sanderson High School in FY18

9.2 The Wake County Communicable Disease (CD) Program

The Wake County Communicable Disease (CD) Program investigates and follows up on diseases and conditions reported as required under NC law; the program reports disease data to the NC Division of Public Health through the NC Electronic Disease Surveillance System (NCEDSS) and responds to public health emergencies.

Staff: County Funded – 24.0 FTE, state grant-funded—1.0 FTE

Activity	Description	Outputs Data for period January 1, 2017-December 31, 2017
General CD	• Conduct investigations for over 70 reportable diseases and conditions as well as animal exposures • Report disease data to NC Division of Public Health through NCEDSS	• 904 total CD cases • 812 animal exposure cases
Tuberculosis (TB)	• Conduct investigations for all TB cases in Wake County (both county and out-of-area residents) • Provide clinical care and Directly Observed Therapy (DOT) home visits • Report TB data to NC Division of Public Health through NCEDSS	• 28 TB cases • 3,732 clinic visits • 3,657 DOT visits
Disease Intervention Specialists (DIS)	• Conduct investigations for HIV and syphilis cases • Reports HIV/STD data to NC Division of Public Health through NCEDSS	• 163 HIV investigations • 233 syphilis investigations

Health Education	Provide support to CD program by:
	• Assessing, developing and evaluating written educational materials and curricula for use with staff, clients and the community
	• Creating and maintaining educational content for WakeGOV.com, media and social media
		• 20 media interviews (includes Spanish media interviews)
		• Social media
		  • 29 Facebook posts for an average reach of 915
		  • 36 tweets (Twitter) with 7113 average impressions for the time period July-December
		• 19 programs/trainings for 369 participants

9.2 The Wake County Communicable Disease (CD) Program

The Wake County Communicable Disease (CD) Program investigates and follows up on diseases and conditions reported as required under NC law. The program reports disease data to the NC Division of Public Health throuhthe NC Electronic Disease Surveillance System (NCEDSS) and responds to public health emergencies.

Staff: County funded-24.0 FTE, state grant funded-1.0 FTE

CY 2017 Program/Service Report: Data for period January 1, 2017-December 31, 2017

Activity	Description	Outputs Data for period January 1, 2017-December 31, 2017
Health Education (continued)	• Serving as media liaison to Communications Office for Spanish language media • Representing the CD program and Public Health on agency and county wide committees and special initiatives • Responding to public health emergencies	• 24 other outreach for 926 participants • 110 material development and review (Spanish and English) • 20 special projects • 13 internal education communications for 1500 Human Services employees
North Carolina Electronic Disease Surveillance System (NCEDSS)	Ensures all chlamydia, gonorrhea, non-gonococcal urethritis (NGU) and pelvic inflammatory disease (PID) cases are reported to the NC Division of Public Health	Cases reported: • 6,083 chlamydia • 2,082 gonorrhea • 287 NGU • 90 PID

9.3 The HIV/STD Community Program

The mission of the HIV/STD Community Program is to provide HIV/STD health/outreach education services, HIV/STD counseling/testing services and HIV/AIDS Case Management services to populations at highest risk for HIV/STD in Wake County. These services are focused on the principle of Teach, Test and Treat. We provide prevention services by utilizing health education and outreach best practices, identification of new cases by through testing in community settings, and connecting people with HIV/STD treatment and care.

Staff: County Funded - 16 FTE; State Grant funded - 11 FTE; HRSA Grant - 2 FTE; FOCUS Grant – 2 FTE; Wake County Drug Overdose Prevention and Tobacco Use Initiative – 1 FTE

Health Education and Outreach

Program and Services	Description	Program Outputs for FY 2016-2017
Jail classes	Provide educational sessions (multiple classes per session) at Wake County jail about HIV/STD prevention (in English and Spanish)	• 26 sessions • 283 participants
Classes at Clinic A and Regional Centers	Provide HIV/STD prevention classes for patients in STD waiting room	• 60 classes • 609 participants
Substance abuse centers	Provide HIV/STD prevention classes for substance users	• 18 classes • 1,106 participants
Community response	Respond to community requests for health education classes such as colleges and churches	• 60 classes • 609 participants
Outreach services	Provide one-on-one education to high risk populations (e.g. homeless, sex workers, substance users, individual clients at health fairs)	• 9,575 contacts with community members
Condom Distribution Sites (CDS)	Establish and maintain 44 sites throughout Wake County	• 72,674 condoms distributed among all CDS
***Making Proud Choices* Classes**	Provide Making Proud Choices curriculum to foster care youth served by Wake County Human Service Child Welfare's LINKS program. Making Proud Choices is a ten-module evidence-based curriculum that provides adolescents with the knowledge, confidence, and skills necessary to reduce their risk of sexually transmitted diseases (STDs), HIV, and pregnancy.	• 7 classes • 35 participants

Counseling and Testing		
Program and Services	**Description**	**Program Outputs for FY 2016-17**
Community testing sites (29 sites)	Provide regularly scheduled HIV, STD and hepatitis C testing at shelters, substance abuse centers, colleges/universities, County jails, LGBT Center, community based organizations, pregnancy centers, Regional Centers and local events.	# persons tested for: • HIV- 3,836 • Syphilis- 3,747 • Chlamydia- 3,824 • Gonorrhea- 3,824 • Hepatitis C- 1,194
Field Delivered Therapy (FDT)	Deliver medication to clients that test positive for chlamydia at community testing sites	• 295 patients received FDT
HIV/AIDS Case Management and Bridge Counselors		
Program and Services	**Description**	**Program Outputs for FY 2016-17 (unless otherwise noted)**
Services for HIV/AIDS patients	Social Workers (Bridge Counselors and AIDS Case Managers) connect HIV-positive patients to medical care and other support services such as food, housing, emergencies financial assistance, support groups, and education	• 70 newly diagnosed clients connected to HIV medical care • 120 received ongoing HIV/AIDS case management
HIV/AIDS housing	Provide *Housing Opportunities for Persons With AIDS* (HOPWA) vouchers to HIV-positive clients	# of HOPWA Vouchers: • 35 vouchers-Wake County • 1 voucher-Franklin County • 4 vouchers-Johnston County
Assistance: walk-ins and/or by appointments	Provide walk-in assistance to clients at Under One Roof center (emergency financial, educational, emotional, housing)	• 2,418 clients served
Services for hepatitis C patients	Through the FOCUS grant, social worker (hepatitis C Bridge Counselor) counsels newly diagnosed hepatitis C positive patients and connects them with medical care and other support services	From October 2016 (FOCUS grant start date) through June 30, 2017: • 108 positive hepatitis C referrals • 62 connected to treatment

9.4 Wake County Epidemiology Program

The Wake County Epidemiology (Epi) Program provides support to WCHS programs as well as external partners through data analysis, outbreak management, community presentations and research inquiries. The Epi Program is the key conduit to the Human Services Board for regularly required reporting on public health, including quarterly reports on communicable diseases, chronic diseases, injury prevention and State of the County's Health (SOTCH) reports.

Staff: County Funded – 2.0 FTE, FOCUS Grant funded – 2.1 FTE, Wake County Drug Overdose Prevention and Tobacco Use Initiative – 0.2 FTE

Program and Services	Description	Program Outputs for CY 2017
Surveillance	Monitors and analyzes case data for all reportable communicable diseases in Wake County	• Annual communicable disease, chronic disease and injury prevention reports
Outbreak/Public Health Incident Support	Provides direction and support for outbreaks and other public health incidents	• Norovirus outbreaks
Data Requests	Respond to internal and external data requests	• 133 data requests with average response turnaround time of 2.4 days
Special Data Report Requests	Development of special reports as requested by the Human Service Director or other senior leadership	• 2017 Zika Surveillance Report
Community Health Needs Assessment (CHNA)	Action Planning and Support	• 2017 State of the County's Health (SOTCH) Report
Grant Support	Provides ongoing development, coordination and assistance for grants and acquisition of funds from other sources	• WCHS Public Health Division awarded $261,000 through the FOCUS (On the Frontlines of Communities in the United States) Program of Gilead Sciences Inc. to enhance HCV testing and linkage to care

Program and Services	Description	Program Outputs for CY 2017
Grant Support continued		• Epidemiology Program directs the FOCUS grant with assistance from the HIV/STD Program and the WCHS Laboratory • Coordination and assistance writing the proposal that led to awarding of ABC funding for $950,142 to develop the Wake County Drug Overdose Prevention and Tobacco Use Initiative
Overdose Prevention Coalition	Data support and facilitation of the Wake County Drug Overdose Prevention Coalition	• Planned and facilitated quarterly meetings (February, April, June and September) of the Coalition
Evaluation Services	Data support and analysis for the Wake County Drug Overdose Prevention and Tobacco Use Initiative	• Manage program evaluation functions, including written quarterly and annual updates

10.0 All Notifiable Diseases and Conditions

Table 4

All Notifiable Diseases and Conditions Wake County 2013-2017										
Rates are per 100,000 people	**2013**		**2014**		**2015**		**2016**		**2017**	
Disease/Condition	**Cases**	**Rate**	**Cases**	**Rate**	**Cases**	**Rate**	**Cases**	**Rate**	**Cases**	**Rate**
AIDS**	74	9.3	60	7.3	68	8.1	66	7.6	68	6.3
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	*	1	*	0	*	0	*
Brucellosis	0	*	0	*	0	*	0	*	0	*
C. perfringens	1	*	0	*	0	*	0	*	0	*
Campylobacter Infection	101	10.4	71	7.1	78	7.6	78	7.4	85	7.9
Chancroid	0	*	0	*	0	*	0	*	0	*
Chikungunya	0	*	0	*	0	*	0	*	0	*
Chlamydia	4211	431.9	5174	518.0	4972	485.6	5513	525.5	6079	567.0
Cholera	0	*	0	*	0	*	0	*	0	*
Congenital Syphilis	0	*	1	*	0	*	0	*	0	*
Creutzfeldt-Jakob Disease	1	*	0	*	1	*	2	*	0	*
Cryptosporidiosis	2	*	9	*	11	*	45	4.3	7	*
Cyclosporiasis	0	*	1	*	0	*	0	*	2	*
Dengue	0	*	0	*	1	*	1	*	0	*
Diphtheria	0	*	0	*	0	*	0	*	0	*
E . coli	8	*	4	*	9	*	8	*	5	*
Early Latent Syphilis	43	4.4	71	7.1	104	10.2	125	11.9	117	10.9
Eastern Equine Encephalitis	0	*	0	*	0	*	0	*	0	*
Ehrlichia	0	*	0	*	0	*	0	*	0	*
Ehrlichia, HGE	0	*	0	*	0	*	0	*	0	*

*Rates not calculated for diseases/conditions with case counts less than 20.

Source: NCEDSS—Technical Assistance and Training Program Case Counts for all diseases except the following:

- **--HIV, AIDS: 2013-16 data found at http://epi.publichealth.nc.gov/cd/stds/figures/std16rpt_rev3.pdf, 5/3/18. 2017 data found at http://epi.publichealth.nc.gov/cd/stds/figures/vol17no4.pdf, 5/3/18.
- ***--Tuberculosis: All data provided by WCHS TB Program, 4/27/18.

All Notifiable Diseases and Conditions Wake County 2013-2017										
Rates are per 100,000 people	**2013**		**2014**		**2015**		**2016**		**2017**	
Disease/Condition	**Cases**	**Rate**	**Cases**	**Rate**	**Cases**	**Rate**	**Cases**	**Rate**	**Cases**	**Rate**
Ehrlichia, HME	2	*	0	*	1	*	1	*	0	*
Foodborne Hypothesis	0	*	0	*	0	*	0	*	0	*
Foodborne Other	0	*	0	*	0	*	0	*	0	*
Foodborne Poison	0	*	0	*	0	*	0	*	0	*
Gonorrhea	1205	123.6	1444	144.6	1454	142.0	1624	154.8	2082	194.2
Granuloma inguinale	0	*	0	*	0	*	0	*	0	*
Haemophilus influenzae	19	*	11	*	15	*	14	*	36	3.4
Hantavirus	0	*	0	*	0	*	0	*	0	*
Hemorrhagic Fever Virus infection	0	*	0	*	0	*	0	*	0	*
Hepatitis A	2	*	2	*	4	*	4	*	3	*
Hepatitis B - Acute	5	*	6	*	2	*	10	*	4	*
Hepatitis B - Chronic	81	8.3	44	4.4	77	7.5	203	19.3	62	5.8
Hepatitis B - Perinatal	0	*	0	*	0	*	0	*	0	*
Hepatitis C - Acute	5	*	5	*	5	*	1	*	5	*
Hepatitis C - Chronic	0	*	0	*	0	*	0	*	0	*
HEPB Unknown	0	*	0	*	0	*	0	*	0	*
HIV**	161	20.2	149	18.2	130	15.5	173	20.0	138	12.9
HUS	0	*	0	*	0	*	0	*	0	*
Influenza death (<18 years old)	0	*	1	*	0	*	0	*	1	*
Influenza, Adult Death (18 years of age or more)	2	*	8	*	10	*	3	*	23	2.1

*Rates not calculated for diseases/conditions with case counts less than 20.

Source: NCEDSS—Technical Assistance and Training Program Case Counts for all diseases except the following:

- **--HIV, AIDS: 2013-16 data found at http://epi.publichealth.nc.gov/cd/stds/figures/std16rpt_rev3.pdf, 5/3/18. 2017 data found at http://epi.publichealth.nc.gov/cd/stds/figures/vol17no4.pdf, 5/3/18.
- ***--Tuberculosis: All data provided by WCHS TB Program, 4/27/18.

All Notifiable Diseases and Conditions Wake County 2013-2017										
Rates are per 100,000 people	**2013**		**2014**		**2015**		**2016**		**2017**	
Disease/Condition	**Cases**	**Rate**	**Cases**	**Rate**	**Cases**	**Rate**	**Cases**	**Rate**	**Cases**	**Rate**
Influenza, NOVEL virus infection	0	*	0	*	0	*	0	*	0	*
Lacrosse (California)	0	*	0	*	0	*	0	*	0	*
Late Latent Syphilis	55	5.6	105	10.5	113	11.0	89	8.5	127	11.8
Late Syphilis w/ clinical manifestations	0	*	2	*	1	*	3	*	1	*
Legionellosis	9	*	8	*	13	*	7	*	16	*
Leprosy (Hansen's Disease)	0	*	0	*	0	*	0	*	0	*
Leptospirosis	0	*	0	*	0	*	0	*	0	*
Listeriosis	3	*	1	*	0	*	2	*	3	*
Lyme disease	5	*	5	*	1	*	3	*	4	*
Lymphogranuloma venereum	0	*	0	*	0	*	0	*	0	*
Malaria	8	*	11	*	7	*	7	*	9	*
Measles	0	*	0	*	0	*	1	*	0	*
Meningococcal	1	*	1	*	1	*	1	*	1	*
Middle East Respiratory Syndrome (MERS)	0	*	0	*	0	*	0	*	0	*
Monkeypox	0	*	0	*	0	*	0	*	0	*
Mumps	0	*	0	*	0	*	1	*	1	*
Non-gonococcal urethritis	703	72.1	633	63.4	555	54.2	528	50.3	287	26.8
Ophthalmia neonatorum	0	*	0	*	0	*	0	*	0	*
Pelvic Inflammatory Disease	266	27.3	314	31.4	174	17.0	108	10.3	90	8.4
Pertussis	17	*	35	3.5	10	*	10	*	21	2.0

*Rates not calculated for diseases/conditions with case counts less than 20.

Source: NCEDSS—Technical Assistance and Training Program Case Counts for all diseases except the following:

- **--HIV, AIDS: 2013-16 data found at http://epi.publichealth.nc.gov/cd/stds/figures/std16rpt_rev3.pdf, 5/3/18. 2017 data found at http://epi.publichealth.nc.gov/cd/stds/figures/vol17no4.pdf, 5/3/18.
- ***--Tuberculosis: All data provided by WCHS TB Program, 4/27/18.

All Notifiable Diseases and Conditions Wake County 2013-2017										
Rates are per 100,000 people	**2013**		**2014**		**2015**		**2016**		**2017**	
Disease/Condition	**Cases**	**Rate**	**Cases**	**Rate**	**Cases**	**Rate**	**Cases**	**Rate**	**Cases**	**Rate**
Plague	0	*	0	*	0	*	0	*	0	*
Pneumococcal meningitis	0	*	2	*	2	*	1	*	3	*
Polio	0	*	0	*	0	*	0	*	0	*
Primary Syphilis	17	*	42	4.2	30	2.9	41	3.9	53	4.9
Psittacosis	0	*	0	*	0	*	0	*	0	*
Q Fever	0	*	0	*	0	*	0	*	0	*
Rabies - Human	0	*	0	*	0	*	0	*	0	*
Rocky Mountain Spotted Fever	0	*	0	*	0	*	2	*	0	*
Rubella	0	*	0	*	0	*	0	*	0	*
Rubella - congenital	0	*	0	*	0	*	0	*	0	*
Salmonellosis	155	15.9	175	17.5	198	19.3	188	17.9	193	18.0
SARS	0	*	0	*	0	*	0	*	0	*
Secondary Syphilis	53	5.4	80	8.0	115	11.2	85	8.1	72	6.7
Shigellosis	21	2.2	34	3.4	20	2.0	22	2.1	13	*
Smallpox	0	*	0	*	0	*	0	*	0	*
Staphylococcal	0	*	2	*	0	*	0	*	0	*
Staphylococcus aureus - VRSA	0	*	0	*	0	*	1	*	1	*
Streptococcal infection Group A, Invasive	13	*	26	2.6	16	*	19	*	35	3.3
Tetanus	0	*	0	*	0	*	0	*	0	*
Toxic Shock Syndrome, non-streptococcal	0	*	0	*	0	*	0	*	0	*
Toxic Shock Syndrome, streptococcal	0	*	0	*	1	*	0	*	3	*
Trichinosis	0	*	0	*	0	*	0	*	0	*
Tuberculosis**	26	2.7	16	*	25	2.4	33	3.1	28	2.6

*Rates not calculated for diseases/conditions with case counts less than 20.

Source: NCEDSS—Technical Assistance and Training Program Case Counts for all diseases except the following:

- **--HIV, AIDS: 2013-16 data found at http://epi.publichealth.nc.gov/cd/stds/figures/std16rpt_rev3.pdf, 5/3/18. 2017 data found at http://epi.publichealth.nc.gov/cd/stds/figures/vol17no4.pdf, 5/3/18.
- ***--Tuberculosis: All data provided by WCHS TB Program, 4/27/18.

All Notifiable Diseases and Conditions Wake County 2013-2017										
Rates are per 100,000 people	**2013**		**2014**		**2015**		**2016**		**2017**	
Disease/Condition	**Cases**	**Rate**	**Cases**	**Rate**	**Cases**	**Rate**	**Cases**	**Rate**	**Cases**	**Rate**
Tularemia	0	*	0	*	0	*	0	*	0	*
Typhoid acute	0	*	3	*	3	*	2	*	2	*
Typhoid carrier	0	*	0	*	0	*	0	*	0	*
Typhus	0	*	0	*	0	*	0	*	0	*
Vaccinia	0	*	0	*	0	*	0	*	0	*
Vibrio Infection, Other	4	*	2	*	6	*	5	*	3	*
Vibrio Vulnificus	0	*	0	*	2	*	1	*	0	*
West Nile Infection	0	*	0	*	0	*	0	*	0	*
Yellow Fever Virus	0	*	0	*	0	*	0	*	0	*
Zika	0	*	0	*	0	*	14	*	1	*

*Rates not calculated for diseases/conditions with case counts less than 20.

Source: NCEDSS—Technical Assistance and Training Program Case Counts for all diseases except the following:

- **--HIV, AIDS: 2013-16 data found at http://epi.publichealth.nc.gov/cd/stds/figures/std16rpt_rev3.pdf, 5/3/18. 2017 data found at http://epi.publichealth.nc.gov/cd/stds/figures/vol17no4.pdf, 5/3/18.
- ***--Tuberculosis: All data provided by WCHS TB Program, 4/27/18.

11.0 References

1. Communicable Disease. . *epi.publichealth.nc.gov.* North Carolina Division of Public Health. Web. 1 October, 2015. http://epi.publichealth.nc.gov/cd/index.html.

2. "Seasonal Influenza A (H3N2) Activity and Antiviral Treatment of Patients with Influenza." CDC Health Advisory. *cdc.gov* Centers for Disease Control and Prevention. Web. 27 December 2017. https://emergency.cdc.gov/han/han00409.asp.

3. Flannery B, Chung JR, Belongia EA, et al. Interim Estimates of 2017–18 Seasonal Influenza Vaccine Effectiveness — United States, February 2018. MMWR Morb Mortal Wkly Rep 2018;67:180–185. cdc.gov. Centers for Disease Control and Prevention. Web. http://dx.doi.org/10.15585/ mmwr.mm6706a2.

4. "Outbreak Report" 12.21.17. Wake County Communicable Disease Program and Wake County Environmental Services. Maintained electronically on "P Drive".

5. "Illnesses on the rise from mosquito, tick, and flea bites." CDC Vital Signs Report. *cdc.gov.* Centers for Disease Control and Prevention. Web. 2 May 2018. https://content.govdelivery.com/accounts/USCDC/bulletins/1ed5d09

6. Source: Wake County Environmental Health & Safety Division, April 27, 2018.

7. Stout, Jason MD. MHS. Memo. Changes to the NC TB Control Policy Manual. 21 July, 2017. http://epi.publichealth.nc.gov/cd/lhds/manuals/tb/memo_jul2017_updates.pdf.

12.0 Acknowledgements

For contributions to this report:

Gladys Bonilla

Natasha Bowen

Joann Douglas

Darlene Farmer

Nicole Gaylord-Scott

Randee Gordon

Katie Horstmann

Ruth Lassiter

Caroline Loop

Crystal Lormejuste

Darvlyn McLean

Tyler Pearce

Nancy Phillips

Andre Pierce

Carla Piedrahita

Michelle Ricci

Carolyn Stokes

Yvonne Torres