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Christina S Newby Date

A COMMUNITY NEEDS ASSESSMENT OF CHLAMYDIA PREVENTION EFFORTS IN THE MONTGOMERY COUNTY, TENNESSEE AREA

BY

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Degree to be awarded: M.P.H.
Executive MPH

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Christina Swann Newby
M.P.H., Emory University, 2015
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An abstract of
A Thesis submitted to the Faculty of the
Rollins School of Public Health of Emory University
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2015

Abstract

A COMMUNITY NEEDS ASSESSMENT OF
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MONTGOMERY COUNTY, TENNESSEE AREA

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Christina S. Newby

According to the Centers for Disease Control and Prevention, one of the most commonly reported sexually transmitted diseases in the United States is chlamydia. It is one of the major causes of tubal infertility, ectopic pregnancy, pelvic inflammatory disease, and chronic pelvic pain. Screening for this infection is vital for its prevention and control. Chlamydia is of great public health importance in Montgomery County, Tennessee. Chlamydia rates have increased drastically over the past several years. In 2011, there were 1,337 cases reported. By 2014, this number grew to 1,834 cases. The case incidence was 758 per 100,000 in 2011 but has increased 20% since then. Currently, Montgomery County ranks among the worst in the state for STDs (91st out of Tennessee's 95 counties).

Through an in-depth study using interviews with key informants and secondary data, this chlamydia infection prevention needs assessment will seek to 1) catalog existing chlamydia infection prevention efforts and resources in the Montgomery County, Tennessee area; 2) Investigate Montgomery County and surrounding area public health professionals' knowledge of, perspectives on, beliefs about, and barriers to use of chlamydia infection prevention measures; and 3) recommend and suggest additional measures to prevent, as well as reduce, chlamydia rates in the Montgomery County community using a social ecological approach. The aim of answering these specific questions is to provide chlamydia prevention practitioners at multiple levels of influence with a full scope and context of existing chlamydia prevention efforts in the community to further create a comprehensive framework for reducing the rates of chlamydia infections throughout the area.

Given the range of chlamydia infection challenges at all levels of influence, evidence-based recommendations for reducing the rate, as well as the burden of disease in the Montgomery County community are outlined. Where appropriate, recommendations are tailored to more specially address challenges to provide local chlamydia control practitioners with a comprehensive framework for reducing chlamydia infections in their area.

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ACKNOWLEDGEMENTS

I would like to thank my thesis committee chair, Dr. Grant T. Baldwin, and my field advisor, Dr. Anne Black, for their time, support and encouragement throughout this study project. I would also like to extend my appreciation to all who participated and extended a hand during this project. I could not have completed this study without the help of the Montgomery County and Christian County community and all affiliated public health professionals for committing their time and interest in chlamydia prevention and control efforts. Last, but not least, I want to thank my wonderful husband, who consistently encouraged me along the way, while watching our one-year-old daughter.

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EXECUTIVE SUMMARY

The *Chlamydia trachomatis* (often termed "chlamydia") infection is a public health concern all over the United States. In particular, itis the most commonly reported nationally notifiable disease in the United States and has been for some time now. Chlamydial infections are of major concern in the state of Tennessee, especially in areas where the population consists majority of adolescents between the ages of 15-24. Chlamydia is also of great public health importance within the Montgomery county community, as rates have steadily increased over the past several years. Due to Montgomery County's diversity and constant population turnover, it is important to identify and understand the driving force and reasoning behind the rising rate of chlamydial infections.

In order to reduce chlamydia rates in the Montgomery County community, as well as surrounding areas that also have high rates, a complete understanding of prevention strategies specific to the population will be required. An understanding of prevention efforts currently in place and barriers to prevention strategies are also vital. As such, the employment of the social ecological approach works best to influence the individual, interpersonal, organizational, community, and policy levels that together, shape ones' behavior.

This community needs assessment was developed to provide a rich substance of information. Through in-depth interviews with key informants within and around the Montgomery County area and secondary data, it catalogs existing chlamydia infection prevention efforts and resources available and seeks to investigate public health professionals' knowledge of and perspectives about chlamydia prevention measures. This assessment also recommends additional measures to prevent and aid in reducing chlamydia rates in Montgomery County. The ultimate aim of this document is to provide chlamydia prevention practitioners at multiple levels

of influence with a full scope and context of existing chlamydia prevention efforts in the community to further create a comprehensive framework for reducing the rates of chlamydia infections throughout the area. Key findings of this assessment include:

- **Chlamydia rates in the Montgomery County community are high.**
- **Current chlamydia prevention efforts are in place.**
- **Several barriers remain in place despite heavy involvement of local public health professionals.**
- **Key informants are well aware of the issue.**
- **Community partnerships with neighboring health services are developing.**
- **Community buy-in and participation towards chlamydia prevention is severely limited.**

Recommendations for reducing the burden of infection in the Montgomery County area are outlined, given the great deal of challenges and barriers that currently exist. Where appropriate, recommendations are tailored to more specially address challenges to provide local chlamydia control practitioners with a comprehensive framework for reducing chlamydia infections in their area.

CHAPTER 1:INTRODUCTION

Rationale for Community Needs Assessment

Infection with the bacterium, *Chlamydia trachomatis* (often termed "chlamydia") is the most commonly reported nationally notifiable disease in the United States, with over 1.4 million infections reported in 2013 (CDC, 2015f). Chlamydia, also considered the "common cold" of sexually transmitted diseases, is one that most people do not realize they have, therefore a large number of cases are not reported. Anyone who engages in sexual activities can become infected through unprotected vaginal, anal, or oral sex. However, sexually active adolescents and females are particularly the most vulnerable due to common social, economic and behavioral factors which may include the lack of openness and mixed messages regarding sexuality, lack of health insurance or access to care and risky sexual behavior (Healthy People, 2014). Biological factors may include the lag time between infection and complication or the lack of conspicuous signs or the asymptomatic nature of an infected person.

Asymptomatic infections are very common among both males and females, in turn, causing an easy spread back and forth between partners. An untreated infection in females can lead to several other complications such as pelvic inflammatory disease (PID), which can also cause tubal factor infertility, ectopic pregnancy, and chronic pelvic pain (CDC, 2014a). Although several complications exist amongst females, several exist for males as well. One very common illness resulting from an infection amongst men is urethritis. Among males who engage in receptive anal intercourse, the rectum is a common site of chlamydial infections (CDC, 2012). For men who have sex with men (MSM), healthcare providers are accountable for gathering an ample amount of sexual history, conducting thorough physical examinations and testing the

urethral and rectal sites. Having chlamydia increases your risk of becoming infected with human immunodeficiency virus (HIV) if you are exposed to the virus (CDC, 2011b). Early detection and treatment of chlamydia can have a major impact on the sexual transmission of HIV.

Chlamydia is most common among young adult populations. Generally, young adults are more likely to be single, have multiple sex partners and tend to engage in more risky behaviors than the older population. The Centers for Disease Control and Prevention (CDC) recommend yearly chlamydia screening of all sexually active women younger than 25, as well as older women with risk factors such as new or multiple partners, or a sex partner who has a sexually transmitted infection (Workowski KA, Berman S, 2010). Recommendations for screening are not the same for men. However, the screening of sexually active young men should be considered in clinical settings with a high prevalence of chlamydia (e.g., adolescent clinics, correctional facilities, and STD clinics) when resources permit and do not hinder screening efforts in women (Workowski KA, Berman S, 2010).

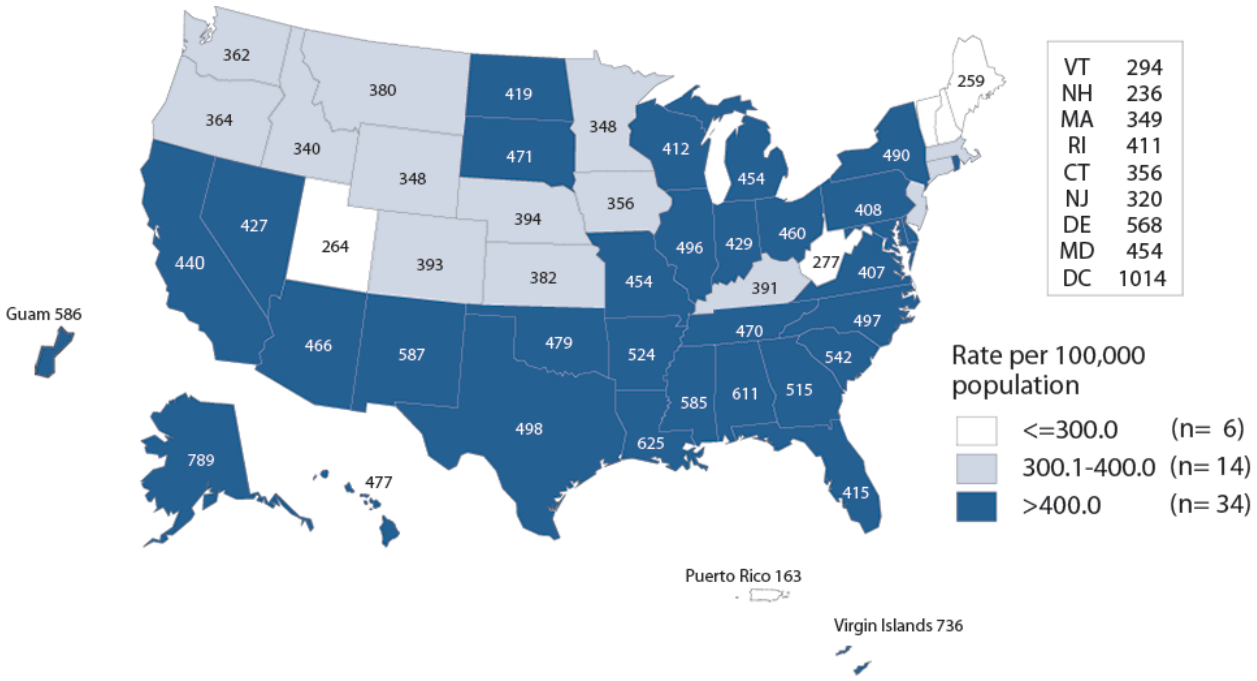

Figure 1. Chlamydia – Rates of Reported Cases by State, United States and Outlying Areas, 2013 (CDC, 2015c)

Prevalence estimates suggest that young people aged 15–24 years acquire half of all new STDs (Satterwhite, Torrone, Meites, Dunne, Mahajan, Ocfemia, et al) and that 1 in 4 sexually active adolescent females have an STD, such as chlamydia or HPV (Forhan, Gottlieb, Sternberg, Xu, Datta, McQuillan, et al). Chlamydia prevalence among sexually-active young persons aged 14-24 years is nearly three times the prevalence among persons aged 25-39 years (Weinstock, Berman & Cates, 2004). The higher prevalence of chlamydia among adolescents, especially in the 15-24 age group, could reflect multiple barriers to accessing quality prevention services, which might include lack of transportation to clinics/healthcare, discomfort or embarrassment with facilities and services offered, and confidentiality concerns. A substantial racial/ethnic

disparity in chlamydial infections also exist. The prevalence among non-Hispanic blacks are approximately five times the prevalence among non-Hispanic whites (CDC, 2011a).

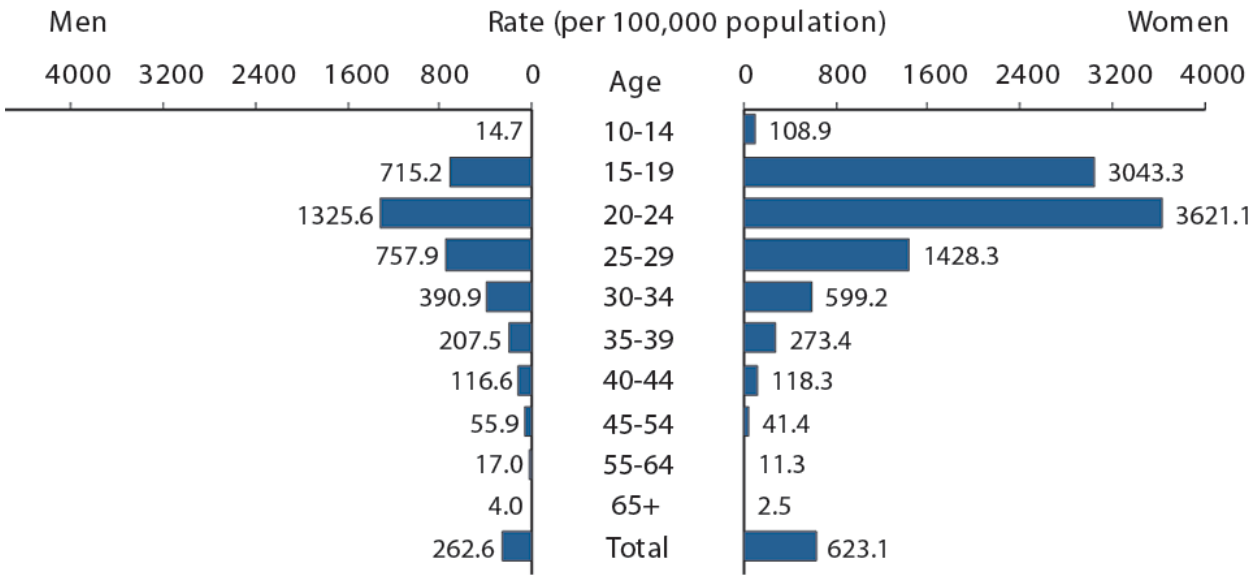

Figure 2. Chlamydia- Rates of Reported Cases by Age and Sex, United States, 2013 (CDC, 2015b)

Reported case rates have increased likely due to increased screening and improved test technology. Case report data do not represent trends in disease burden, only trends in case detection (Miller WC, 2008). See Figure 2 for chlamydia rates of reported cases by age, as well as gender. An important caveat in chlamydia rate reporting is that increases in reported infections may reflect true increases in disease, but may also reflect expanded screening, use of increasingly sensitive diagnostic tests, increased emphasis on case reporting from providers and laboratories, and improvement in the information systems for reporting (County Health Rankings, 2015d).

Purpose Statement

Using information gathered from key informant interviews, along with secondary data sources, this CNA seeks to 1) outline and understand challenges to reducing the chlamydia rate in the Montgomery County, TN area; and 2) recommend additional control measures to prevent, as well as, reduce chlamydial infections in this community using a social ecological approach. As mentioned earlier in this report, one of the most commonly reported sexually transmitted diseases in the United States is chlamydia and is one of the major causes of tubal infertility, ectopic pregnancy, pelvic inflammatory disease, and chronic pelvic pain, according to the CDC. Chlamydia has become a hidden epidemic with tremendous health and economic repercussions. This disease is hidden from public view because many Americans are reluctant to address sexual health issues in an open way and because of the association with biological and social factors (Institute of Medicine, 1997).Screening for this infection and educating adolescents at an early stage in life is vital for its prevention and control within the Montgomery County community.

This CNA plans to answer the following questions:

1. What are the current chlamydia rates in the Montgomery County area?
    - How do these chlamydia rates compare to other county and national rates?
2. What factors contribute to the increasing rate of chlamydia in the Montgomery County, Tennessee community?
    - Are these factors similar to other similar communities with increasing rates?
3. What current chlamydia prevention and control efforts/resources exist and how effective are they?

4. What possible recommendations can be made based on data collected throughout this assessment from a social ecological approach?

The main goal of answering these questions is to provide healthcare professionals and prevention practitioners at all levels of influence with a full scope of current chlamydia prevention efforts in the Montgomery County area. This will aid in creating future, practical frameworks used to reduce the rates of chlamydia in the community.

Statement of Significance

Chlamydia is of great public health importance throughout this county, as rates have increased dramatically over the past several years. Data reports derived from the Disease Intervention Specialist at the Montgomery County Health Department reported 1,337 cases in 2011 and by 2014, this number grew to 1,834. Due to this county's' diversity and constant population turnover, it is important to identify and understand the driving force and reasoning behind the rising rate chlamydial infections.

Currently, Montgomery County ranks among the worst in the state for STDs (93rd out of Tennessee's 95 counties). Many make the quick assumption that the high and increasing rates are due in part to the military base and university housed within the county. Reducing chlamydia rates in the Montgomery County, TN area will require a joint effort and true understanding of infection prevention efforts that are currently in place. It will also demand an in-depth study of replicated barriers to prevention efforts.

Montgomery County, Tennessee

The Montgomery County, Tennessee area is located about 30 minutes northwest of Nashville at the Tennessee-Kentucky state line. It is one of the most historic, yet progressive, counties in the region and home of the fifth largest city in the state. In 2013, Montgomery County held 184,119 residents of Tennessee's 6,497,269 total population (US Census, 2015).

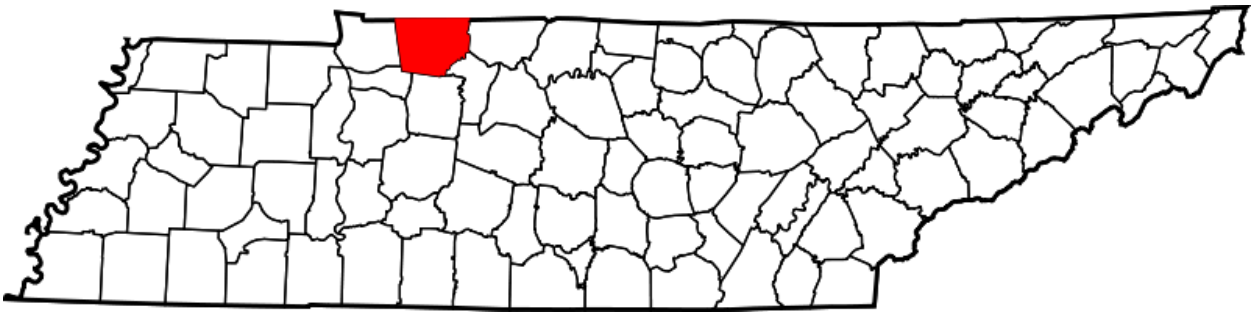

Figure 3. Montgomery County, Location in the state of Tennessee (FamilySearch, 2015)

Montgomery County is unique in its composition as it is the home of one of the largest military bases in the United States - Fort Campbell, which is 105,000 acres with nearly two-thirds of the base in Montgomery County and the remaining portion in Christian County, Kentucky. Since this military base straddles along the Tennessee-Kentucky line, this document will also include information about Christian County, KY chlamydia rates and any prevention efforts in place.

Owing to the proximity of the Fort Campbell Army Base, Montgomery County is also home to a large number of veterans (13.6% of the county's total population), as well as families of active duty service men and women (Vanderbilt, 2013). Beyond this, it is home to Austin Peay State University as well. Both have a significant public health impact on the community.

Montgomery County is also part of a metropolitan statistical area (MSA), along with Christian County and Trigg County, both located in Kentucky. The total population of this MSA changed from 261,827 in 2010 to 272,579 in 2013, a change of 10,752 (4.11%) and is projected to have a total population in 2020 of 325,371 (ProximityOne, 2015).

Community Needs Assessment

A community health needs assessment gives the opportunity to investigate the gap between what is and what should be (Community Tool Box, 2015). Failing to take advantage of community resources not only represents taking on a problem without using all the tools at your disposal to solve it, but misses an opportunity to increase the community's capacity for solving its own problems and creating its own change. Other community needs assessments have been completed in recent years within Clarksville and Nashville cities in Tennessee but have not focused specifically on chlamydia prevention efforts. It is the hope that this assessment will achieve a deeper understanding of the community and provide its members the opportunity to voice any opinions, hopes and/or fears about the hidden epidemic of chlamydia.

Social Ecological Approach

Based on the data outlined in the Statement of Significance within this document, it has become evident that gaining a more thorough understanding of the chlamydial infection issues require an examination of the interrelated contextual risk factors that influence related behaviors. Social ecological models that describe the interactive characteristics of individuals and

environments that underlie health outcomes have long been recommended to guide public health practice (Golden & Earp, 2012). Chlamydia is a sexually transmitted disease that is most often known to be behavior-linked, resulting from unprotected sexual practices. The socio-ecological approach recognizes that an individual's decisions and behaviors result from interactions with his/her social and physical surroundings (Richard L, et al). Although the multiple barriers to chlamydia prevention seem formidable, intervening and directing attention to the individual, interpersonal, organizational, community, and policy levels will reach people at different points of influence, thus increasing the impact of chlamydia prevention efforts in the Montgomery County area.

Summary

- ❏ *Chlamydia trachomatis* is the most commonly reported notifiable disease in the United States and the most common in the young adult population.
- ❏ Reported chlamydia rates in the Montgomery County area have increased over the years and continue to rise.
- ❏ Reducing the rate of chlamydia would require strong, multi-level support from the Montgomery County community and an expansion and increased awareness of screening opportunities among the young adult population.

CHAPTER 2: REVIEW OF THE LITERATURE

This assessment seeks to offer healthcare professionals, as well as chlamydia prevention practitioners at all levels of influence with a full scope and context of the current chlamydia prevention efforts existing in the Montgomery County community. This will aid in the development of future, practical frameworks used to reduce the rates of chlamydia in the community. Understanding the current magnitude of chlamydia in this community is important.

Chlamydia in Montgomery County

As mentioned in this document, Montgomery County currently ranks among the worst in the state for STDs (93rd out of Tennessee's 95 counties). Chlamydia, specifically, is of great public health importance in the Montgomery County community, as it has been for several years. In 2011, there were 1,337 cases reported and by 2014, this number grew to 1,834. The sexually transmitted infection (STI) rate is measured as chlamydia incidence (the number of new cases reported) per 100,000 population. Figure 4 shows county, state, and national chlamydia trends from 2007- 2012.

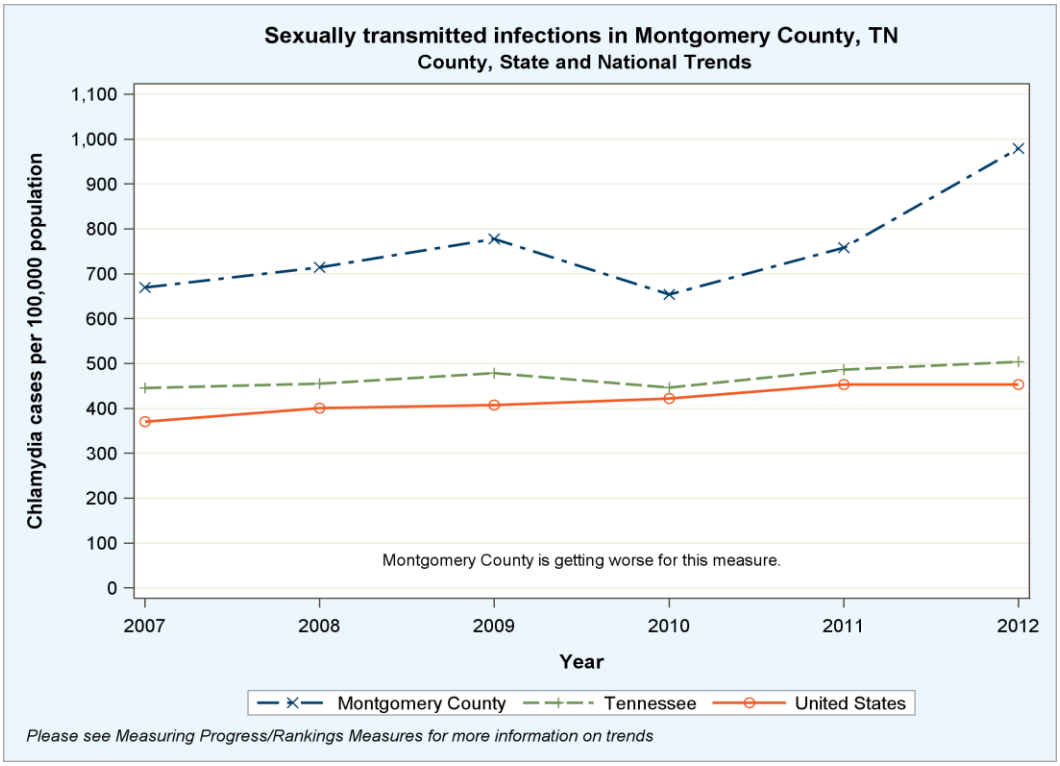

Figure 4. Sexually Transmitted Infections in Montgomery County, TN (County Health Rankings and Roadmaps, 2015e)

The case incidence was 758 per 100,000 in 2011 but has increased 20% since then. Chlamydia rates were highest in not only Montgomery County, but other southwestern counties of Tennessee such as Shelby, Hardeman, Madison, Haywood and Lauderdale. In communities with higher STD rates, sexually active adolescents have a greater chance of contracting an STD because they have greater odds of selecting a partner who may be infected. As mentioned earlier, one distinguishing characteristic of this community is the constant, changing population of young adults on the military base and university campus. The military is "unique" in the American labor force in the extent to which it "expects" its personnel and their families to

relocate about every 4 years (Segal D. and Segal M., 2004). The university is also unique as it brings in new students each year from all over the world. The link between military and civilian populations is important. The various locations active duty military are stationed at around the world and their frequent travel between distant lands provide a higher risk for spread of chlamydia and other STD agents than that of a civilian. Due to this diversity and constant population turnover, it is important to identify and understand the driving force and reasoning behind the rising rate of chlamydial infections.

Current Montgomery County Goals and Progress

In order to progress, a goal must be set. Developing goals that strengthen community capacity, encourage more health education and ultimately prevent STDs and their complications is vital to any community. Table 1 outlines treatment and partner service goals for chlamydia in the Montgomery County area. Within the Mid-Cumberland region, Montgomery County has the highest number of reported cases with 37% of those cases interviewed.

2014 CHLAMYDIA GOALS & PROGRESS (Oct. - Dec.)

Goals

- Treatment
  - ≥ 50% of all cases treated within 14 days
  - ≥ 90% of all cases treated within 30 days
- Partner Services
  - ≥ 80% of cases will be interviewed

Progress

Mid-Cumberland Region Counties	# of Cases	# Treated (%)				Partner Services	
		≤ 14 days	% ≤ 14 days	≤ 30 days	% ≤ 30 days	# Cases Interviewed	% of Cases
Cheatham	26	24	92%	25	96%	4	15%
Dickson	30	29	97%	30	100 %	25	83%
Houston	10	9	90%	10	100 %	7	70%
Humphreys	24	24	100%	24	100 %	21	88%
Montgomery	**453**	**433**	**96%**	**449**	**99%**	**166**	**37%**
Robertson	58	51	88%	56	97%	8	14%
Rutherford	299	276	92%	292	98%	122	41%
Stewart	10	10	100%	10	100 %	4	40%
Sumner	115	100	87%	110	96%	44	38%
Trousdale	7	5	71%	7	100 %	1	14%
Williamson	73	68	93%	69	95%	11	15%
Wilson	81	70	86%	78	96%	12	15%
TOTAL:	**1,186**	**1,099**	**93%**	**1,160**	**98%**	**425**	**36%**

Table 1. 2014 Chlamydia Goals and Progress, October – December 2014 (Montgomery County Health Department, 2015)

Healthy People 2020

The *Healthy People 2020* goal, as it relates to STDs, is to promote safe sexual behaviors, strengthen community capacity, and increase access to quality services to prevent STDs and their complications.

Objectives:

1. Reduce the proportion of adolescents and young adults with Chlamydia trachomatis infections.
2. Increase the proportion of sexually active females aged 24 years and under enrolled in Medicaid plans who are screened for genital Chlamydia infections during the measurement year.
3. Increase the proportion of sexually active females aged 24 years and under enrolled in commercial health insurance plans who are screened for genital Chlamydia infections during the measurement year.

Healthy Tennessee 2020

Healthy Tennessee 2020 is an initiative to develop a comprehensive, statewide health promotion and disease prevention agenda with the single, overarching purpose of promoting health by preventing illness, disability, and premature death (Tennessee Institute of Public Health, 2014). Healthy Tennessee 2020 is built on the highly successful "Healthy People" model, which has, since 1980, served as the Nation's comprehensive ten year health planning report. To help create a successful Healthy Tennessee 2020 plan, the Tennessee Institute of Public Health

(TNIPH) identified 16 leading health challenges facing the state of Tennessee. For each of these challenges, two ten-year "targets" were established for the State to achieve.

TENNESSEE TOP SIXTEEN LEADING HEALTH INDICATORS

Behavioral Factors

A) Alcohol and Substance/Prescription Drug Abuse

B) Overweight and Obesity

C) Physical Activity

D) Tobacco Use

E) Unhealthy Diet

F) Responsible Sexual Behavior

Chronic Disease

A) Cancer

B) Diabetes Mellitus

C) Heart Disease and Stroke

D) Mental Health/Depression

Social Conditions

A) Access to Health Care including Preventive Care

B) Economic Opportunity

C) Educational Achievement

D) Health Disparities

E) Infant Mortality/Low Birth Weight

F) Occupational/Environmental Safety

By identifying the 16 leading health challenges, Healthy Tennessee 2020 will serve as a State-specific set of ten-year health objectives for Tennessee to achieve and as a roadmap for health planners, medical practitioners, educators, elected officials, and others who strive to improve the public's health and quality of life in Tennessee.

Chlamydia in Christian County, Kentucky

As mentioned in Chapter 1 of this document, two-thirds of the Fort Campbell military base lie in Montgomery County, while the remaining portion lies within Christian County, Kentucky. According to data collected from the County Health Rankings in 2015, Christian County has 475 chlamydia reported cases with an elevated rate of 630. According to a Christian County Health Department Health (CCHD) Educator, this community has the highest chlamydial

infection rate in the state of Kentucky. In 2012, the Community Health Assessment Coalition in conjunction with CCHD staff identified five strategic planning priorities to serve as a guide for a Community Health Improvement Plan. One of those strategic plans involved encouraging healthy lifestyles in children ages 6-18. This strategy provided health education with the aim of preventing teen pregnancy, STDs, and risky behaviors with Alpha Alternative, a pregnancy care center, along with CCHD acting as the responsible parties. Partnerships, as well as prevention and control efforts are vital for residents who live in both Montgomery and Christian counties, along with residents on the Fort Campbell military base.

Selected Demographics of the Montgomery County Area

Montgomery County is very unique in its composition, especially with the presence of the Fort Campbell military base and Austin Peay State University. A backdrop of the demographic characteristics are reported in Table 2. Data shown in this table are from 2013.

County Health Rankings & Roadmaps	Tennessee	Montgomery (MG)
Demographics		
Population	6,495,978	184,119
% below 18 years of age	23.0%	27.2%
% 65 and older	14.7%	8.5%
% Non-Hispanic African American	16.8%	18.4%
% American Indian and Alaskan Native	0.4%	0.7%
% Asian	1.6%	2.3%
% Native Hawaiian/Other Pacific Islander	0.1%	0.4%
% Hispanic	4.9%	9.2%
% Non-Hispanic white	74.9%	65.8%
% not proficient in English	1.5%	1.2%
% Females	51.2%	50.2%
% Rural	33.6%	19.7%
Health Care		
Uninsured adults	20%	18%
Uninsured children	6%	5%
Health care costs	$10,159	$10,036
Could not see doctor due to cost	17%	11%
Other primary care providers	1,059:1	1,644:1

Table 2. Montgomery County Demographics (County Health Rankings, 2015c)

Fort Campbell Military Base

Fort Campbell supports thefifth largest military population in the Army and the seventh largest in the Department of Defense (Military Installations, 2014).

- Active Duty Military 31,092
- Family Members 53,116
- Retirees and their Family Members and Reserve Component 155,591

Area Population: FY014

- Clarksville TN (Montgomery County): 135,990
- Hopkinsville KY (Christian County): 31,798
- Oak Grove KY (Christian County): 7,427
- Total Estimated Area Population: 175,215

Austin Peay State University

Student enrollment at Austin Peay State University has slightly decreased over the past several years, with a head count of 10,873 in 2011 and 10,111 in 2014. Table 3 represents data from undergraduate student enrollment during the 2014-2015 academic year.

Percent who live in college-owned, -operated, or -affiliated housing	15%
Percent who live off campus or commute	85%
Percent of students age 25 & older	34%
Average age of full-time students	24%
Average age of all students (full- & part- time)	25%

Table 3. Austin Peay State University Demographics (APSU, 2014)

Religion

With the large and very diverse population in the Montgomery County area, hundreds of churches exist in and around the Clarksville area. In 2010, the population of the county was 172,331 and 47.2% of the residents belonged to one of 206 congregations (Association of Religion Data Archives, 2010). Abstinence is a subject often taught in religious settings primarily directed towards young adults, however, abstinence-only education may result in substituting intercourse with other risky behaviors, such as oral sex. Educating young adults about abstinence, as well as the consequences of other sexual behaviors is important, especially since chlamydia is also transmitted by engaging in oral sex.

Similar Areas

Many speculate that the chlamydia rates are high in this community due, in part, to the large military base and university within the county of Montgomery. Other countries around the United States have a similar foundation such as Chatham County, Georgia. Chatham County is home of Savannah State University, as well as the Hunter Army Airfield military base. This county also has a high chlamydia rate. Other similar areas are mentioned in Figure 5.

County	Military Base/ University	Population	# of Chlamydia Cases	Chlamydia Rate
Montgomery (TN)	Fort Campbell/ Austin Peay State Univ.	184,119	1,807	980
Chatham (GA)	Hunter Army Airfield/ Savannah State Univ.	278,434	2,428	878
El Paso (TX)	Fort Bliss/ Univ. of Texas (UTEP)	827, 718	5,014	606
Leavenworth (KS)	Fort Leavenworth/ Univ. of Saint Mary	78, 185	260	335

Figure 5. Chlamydia Cases and Rates of Similar Areas. (County Health Rankings, 2015a)

Chlamydia Prevention

As mentioned at the beginning of this document, chlamydia trachomatis is the most commonly reported nationally notifiable disease in the United States. Abstinence from any sexual contact is the only absolute way to prevent chlamydial infections (MedicineNet, 2013). If one is sexually active, prevention/risk reduction strategies that may decrease the chance of contracting this disease include:

- Asking partner(s) if they have ever had a chlamydial infection
- Using condoms
- Avoiding any sexual activity with a partner who has signs of chlamydia
- Asking partner(s) to get tested prior to engaging in sexual activities
- Being educated and aware of signs and symptoms of chlamydia

The use of condoms is one of the most emphasized risk reduction strategies used for the prevention of chlamydia and several other STDs, however, it does not provide absolute protection against the infection. Chlamydia agents are spread through genital secretions and condoms help provide a greater protection because they create a barrier against the secretions that cause them(CDC, 2015d). In a review by the CDC of 45 studies conducted between 1966 and 2004, most studies found that condom use was associated with reduced risk of gonorrhea and chlamydia in men and women. According to Youth Risk Behavior Surveillance, among the 34.0% of currently sexually active student nationwide, 59.1% reported that either they or their partner had used a condom during last sexual intercourse (Kann, L., Kinchen, S., Shanklin, S., et.al, 2014).

Epidemiologic literature does not allow an accurate assessment of the degree of potential protection against chlamydia offered by correct and consistent condom usage (NIH, 2001). Also, evaluating the exact magnitude of protection would be difficult to quantify due to methodological challenges such as studying private behaviors, which cannot be directly observed or measured. Because most reproductive complications of chlamydia occur in females and majority of infections are asymptomatic, the foundation of chlamydia prevention should be educating adolescent females about risks as early as possible.

Healthy People 2020 point out several emerging issues in STD prevention, such as:

- A need to address system-level barriers to the implementation of expedited partner therapy for the treatment of chlamydia infections.

- Enhanced data collection on demographic and behavioral variables, such as the sex of an infected person's sex partner(s). This is essential to understanding the epidemiology of infections and guidance for prevention efforts.
- Innovative communication strategies for addressing issues of disparities, facilitating HPV vaccine intake, and normalizing perceptions of sexual health and STD prevention.
- Coordination of STD prevention efforts with the health care delivery system to leverage new developments provided by health reform legislation.

Chlamydia Treatment

To detect chlamydial infections, health-care providers frequently rely on the performance of screening tests. Treatment for chlamydia is rather simple and in most cases, very effective. However, reinfection is common, in part because of reinfection from an untreated partner (Batteiger, Tu, Ofner, et al). The CDC, along with the U.S. Preventive Services Task Force (USPSTF), and numerous professional medical associations recommend annual chlamydia screening for all sexually active females aged <25 years and for females aged ≥25 years if they are at increased risk for infection (CDC, 2011a). Although females are known to have a higher rate of chlamydia cases, treatment for males is imperative as well. Male partners of females infected with chlamydia have the highest prevalence of infection and should be the top priority for chlamydia testing and treatment efforts among males (CDC, 2010). Highly efficacious treatment options may include single-dose oral azithromycin or a 1-week course of doxycycline.

Chlamydia Test Technology

Technology used in chlamydial testing has changed over the years with several new tests being developed. A nucleic acid amplification test (NAAT) is one method commonly used to test for the chlamydia infection, especially due to its superior sensitivity. NAATs could also be utilized for urine specimens, allowing non-invasive testing. This test is also easy to administer, as they can be performed on collected specimens, such as urine or vaginal swabs. The ability of NAATs to detect chlamydial infections without a pelvic examination or intraurethral saw specimen (for males) is a key advantage of NAATs, and this ability facilitates screening males and females in other than traditional screening venues (e.g., STD and family planning clinics) (CDC, 2002). One disadvantage of this particular test is that specimens can have amplification inhibitors that could possibly result in false-negative results.

Current Chlamydia Control Efforts

Several chlamydia control efforts in the Montgomery County area are based on specific, measurable, evidence-based strategies used to reduce the likelihood of infections. Such strategies include education, risk assessments and counseling, which all can be utilized to create changes in sexual behaviors. Other strategies may include identifying asymptomatic infected persons, as well as persons with symptoms associated with the chlamydial infection. Effective diagnosis, evaluation, treatment and follow-up counseling are important methods needed within health resources provided in the Montgomery County community.

Community Health Resources

Health services in the Montgomery County community are concentrated in Clarksville, the county's only city. In 2013, the primary care provider rate was at 42.36. There is one hospital, 3 medical group practices, one community health center, one public health center, 7 community based outpatient surgery centers, 6 home health agencies and 4 nursing homes. The following resources assist community residents in its efforts to improve the health of all residents but also aid in chlamydia prevention efforts.

➢ Montgomery County Health Department

Location/Mission/Services

The Montgomery County Health Department is located in Clarksville, Tennessee about one mile away from the downtown area. According to the Montgomery County, Tennessee website, its mission is to "identify and respond to the public health needs that affect the community." It provides several basic health services with the goal to keep county residents healthy, as well as to care for those who are ill. Services offered include child health, children's special services (CSS), a dental clinic, family planning, food and general sanitation, health education, immunizations, nutrition services, prenatal, primary care, sexually transmitted diseases, WIC and several others. Services for STDs are available without parental consent and include free confidential testing and treatment for chlamydia, gonorrhea, syphilis, and HIV.

Target Populations

The Montgomery County Health Department serves a large amount of residents that reside within the area. Due to the diversity of the county, patients are provided with medical interpreting services, which are used on a daily basis, for residents speaking limited English. Dental services are provided for children with TennCare (Tennessee's Medicaid program) under the age of 21 and adults needing emergency assistance.

Chlamydia Specifics

Effective communication with patients regarding sexual health is a critical skill and appropriate training in communication and counseling skills is needed for effective outcomes.Highly trained, professional Disease Intervention Specialists (DIS), supervisors and managers are staffed at the Montgomery County Health Department and serve as an essential link between clinic services and infected persons and others at risk for acquiring STDs. Some of their core responsibilities include:

- confidential counseling, testing, and treatment of those persons who are infected or who have been exposed to a sexually transmitted disease;
- verification of diagnosis and treatment of all reportable STDs from public and private providers;
- partner referral services which provides notification, screening and treatment to sexual partners;
- educational and counseling services to those at risk for sexually transmitted diseases as well as the community in general (Tennessee Department of Health, 2015).

These core responsibilities aid in reducing, along with preventing, the incidence of STDs that have the potential to spread.

The health educators also assist with the promotion, maintenance and improvement of individual and community health behaviors. They also identify specific needs of the community in the field of adolescent health, especially as it relates to teen pregnancy prevention and comprehensive sex education. Majority of their work happens within county schools, at awareness events and other community settings that promote health.

➢ Matthew Walker Comprehensive Health Center (MWCHC)

Location/Mission/Services

In January 2008, the Matthew Walker Comprehensive Health Center opened their Clarksville location in response to a federal call for community health centers to fill the gap in medical treatment in under-served communities (MWCHC, 2015). Its primary facility is located in Nashville, TN. Their website gives useful and detailed information and also states their mission, which is "to provide quality healthcare services, health education and to promote wellness." On-site healthcare services include internal medicine, pediatrics, geriatric medicine, immunizations, physicals, and preventative and restorative dental care. It has 10 exam rooms, 4 dental chairs and employs 15 or more health care professionals. Employees work hard to supply multiple areas of service to the surrounding community while continuing to uphold their commitment to enrich the lives of the Middle Tennessee area.

Target Populations

MWCHC ensures that necessary healthcare services provided are accessible and affordable to the Montgomery County community. The center is a federally funded nonprofit healthcare provider that serves residents with TennCare, Medicare and most private health

insurance.Patients who visit the center without insurance are given the option to apply and have the cost of visits, labs and medications reduced based on verified income. A minimal co-payment is required at time of service. The center recognizes that to effectively care for its patients, its staff must go beyond the walls of MWCHC and into the community.

Chlamydia Specifics

MWCHC coordinates health screenings in the community and promotes numerous health and wellness educational programs. Several of the programs and services are offered at locations such as:

- Community events
- Health fairs
- Community-based organizations
- Child Care and senior centers
- Faith-based organizations
- Government organizations
- Business associations
- Schools/PTSAs

➢ Austin Peay State University (APSU) Health Services

Location/Mission/Services

Austin Peay State University's main campus is located about 45 minutes away from Nashville, TN in the downtown Clarksville area. Other campuses are located on the Fort

Campbell military base, as well as Springfield, TN. The mission of A. R. Boyd Health Services is, ”to ensure delivery of affordable, accessible and high quality acute primary health care, integrated with the promotion of the healthy lifestyles leading to a lifelong wellness for the APSU community (APSU, 2015).” Students attending APSU are given the opportunity to access primary and preventive care, women’s and men’s health, immunizations and allergy shots at Boyd Student Health Services, located on the University campus.

Target Populations

All services that are provided at the University Health Center are specifically for the student population of the APSU community.

Chlamydia Specifics

Gynecology services offered include STD testing, annual pelvic exams and pap smears for women by appointment only. Office visits with the university’s medical staff, which includes physicians, nurse practitioners, nurses, a pharmacist, medical office personnel and graduate assistants, is free of charge. Although office visits, testing/screening and exams are free of charge, it is voluntarily, which could urge most students not to take advantage of the offer. Cost is only acquired for medications, laboratory work resulting from testing, procedures, and medical supplies if necessary. The University strongly encourages every student to maintain health insurance coverage while attending college or to purchase a student insurance plan, which is contracted through the Tennessee Board of Regents (TBR).

Although APSU gives each student the opportunity to access health services as needed, sexual risk behavior data are difficult to obtain. To date, studies on sexual practices and sexually transmitted infections (STIs) among college students have been limited (James, A., Simpson, T.,

Chamberlain, W., 2008). There is a strong need for unique strategies, specific to the APSU community, to increase the awareness in reducing chlamydia and other STI transmissions.

- Blanchfield Army Community Hospital (BACH)

Location/Mission/Services

The Blanchfield Army Community Hospital is conveniently located on the Fort Campbell military base. The mission of the Blanchfield Army Community Hospital, as stated on the website, "to support ready Soldiers and healthy Families through high quality, safe, accessible health care; while relentlessly pursuing improvement, providing outstanding service, leveraging innovative technology and developing the next generation of Army health care leaders." A wide array of services are provided to ensure the health of the community. Some services include behavioral health, cardiology, dermatology, an emergency clinic, gastroenterology, general surgery, immunizations, pathology, urgent care, radiology, urology, women's health, orthopedic, pharmacy, physical therapy, podiatry, neurology, nutrition, occupational therapy, and optometry.

Target Populations

BACH healthcare professionals strive to serve all military veterans, soldiers, as well as their immediate families. A current proof of military identification must be presented in order to access services available.

Chlamydia Specifics

The Department of Women's Health includes the Women's Health Clinic (OB/GYN), Labor and Delivery Unit, Mother-Baby Unit and Special Care Nursery. This clinic offers wellness care appointments designated for female patients who require a visit for a wellness/or preventive health concern. During this appointment, screening for STDs are administered if necessary, as well as other specific education/information about a patient's' concerns.

- ➢ Gateway Medical Center

Location/Mission/Services

Gateway Medical Center is a community health care provider located right off a major interstate exit that offers a 270-bed facility with 1,100 healthcare professionals on staff. Its mission is, "to deliver services in a safe, healing environment and in a manner that exceeds the expectations of those served." The center provides its residents with a wide range of inpatient and outpatient, medical, diagnostic and surgical services.

Target Populations

At Gateway Medical Center, employees are committed to providing preventative, diagnostic and clinical services that support the health and wellness of women of all ages.

Chlamydia Specifics

Although the center provides services for women in the community, little attention is given to STD education and testing. The women's health services provide bone densitometry/ osteoporosis screening, breast health, labor and delivery and a neonatal intensive care unit.

- ➢ Good Samaritan Medical and Dental Ministry

Location/Services

The Good Samaritan Medical and Dental ministry is located minutes away from Downtown Clarksville. This primary care facility provides family practice, dentistry and optometry through a rotation of volunteer doctors. Dental services are extractions only (excludes wisdom teeth) and the eligibility criteria may vary based on program. Medical services include chronic illness such as high blood pressure, diabetes, and asthma. Residents that request services must also meet federal income guidelines with a proof of household income required.

Target Populations

This medical ministry provides medical care and dental extractions for patients throughout the community without insurance and below poverty level. The health care services are available for all ages while the dental care services are provided to individuals 18 years to 60 years of age. Patients are seen by appointment only.

Chlamydia Specifics

The services provided within this ministry do not include STD screening and education.

Summary of Community Health Services

Efforts to promote health, as well as prevent illness and disease in the Montgomery County community must be directed not only to individuals, but to the environments which people live in as well. These health services mentioned above assist in providing and improving

the availability, accessibility and quality of life in the community studied in this needs assessment.

Barriers and Related Risk Factors

Barriers exist in implementing chlamydia prevention strategies in the Montgomery County community, as well as nationwide.Emotions such as embarrassment, shame and guilt play important roles in influencing individuals' decisions to seek treatment for suspected STIs, and also their experiences of attending sexual health services if they choose to act on these decisions (Cunningham S, Tschann J, Fortenberry J, Ellen J, 2002). These emotions can act as significant barriers to accessing appropriate healthcare advice and treatment(Goldenberg S, Shovellera J, Koehoorna M, Ostry A, 2007). In addition, young adults (i.e., those aged 20--29 years) remain the largest uninsured group in the United States, with associated underutilization of health care (CDC, 2011a). There may also be a chance that some clinicians or healthcare professionals might have limited knowledge about chlamydia and screening recommendations, might lack information about the rising county chlamydia rates, and might believe their patients are not at high risk (Wiesenfeld H, Dennard-Hall K, Cook R, et al, 2005). Another barrier may be high deductibles and copayments for chlamydia related clinic visits, laboratory services, and medications.

Reinfection

Chlamydial reinfection is quite common, especially since this disease can go months without being detected. Approximately 14% of women with an initial chlamydial infection will be reinfected within the year following diagnosis (range: 0% to 32%) (Hosenfeld C, Workowski K, Berman S, et al). Signs and symptoms that continue after diagnosis may be caused by another chlamydial infection, rather than a diagnosis or treatment failure. Reinfection also can increase the risk for PID and other complications resulting from chlamydia. To help minimize the risk for reinfection, infected patients should be instructed by healthcare professionals to abstain from sexual intercourse until all sex partners are treated. Recommendations to rescreen women, as well as men, testing positive is vital.

Expenses

An estimate of nearly 20 million new STIs in the United States occurs each year, resulting in a $16 billion strain on the health care system (CDC, 2013a). STIs present have a high economic burden on society and communities around the world. Estimated tangible costs of chlamydia illness in the United States exceed $2.4 billion annually (Sutton T, Martinko T, Hale S, et al). The economic burden of chlamydial infections are associated with both direct and indirect cost. Direct healthcare expenditures may include the costs for healthcare professionals, laboratory services and hospitalizations, while an indirect expenditure may possibly include lost wages due to consequences of an infection. Psychological, as well as emotional, injury caused by infertility or ectopic pregnancies are also vital when accounting for intangible costs. Treating these infections at its earliest stage can help save thousands of dollars, as it may help avoid developing STI-related diseases that require costly, and sometimes lifelong, treatments.

Over the past several years, there has been increased funding available for chlamydia screening in publicly funded family planning and STD clinics. The highest level of infection tends to be seen in areas where screening and treatment have not been as widely implemented. The greatest declines have generally been in areas of the country with the most effective and prolonged screening programs (CDC, 2004).

Health Care Access

According to the Institute of Medicine, having access to health care means "the timely use of personal health services to achieve the best health outcomes" (Institute of Medicine, 1993). Health insurance coverage is often one barrier that enables individuals to obtain professional assistance in order to prevent potential exposures to chlamydia and to seek care for other suspected STDs. Health insurance coverage can also influence where people obtain STD services. Even those residents of the community with adequate insurance coverage may sometimes be reluctant to obtain care for potential chlamydial infections from their regular health care providers due to the social stigma associated. Also, residents who have private insurance may, as well, be reluctant to bring chlamydial exposures to the attention of their family doctor and may prefer the anonymity of a public STD clinic.

Summary

- ❏ A substantial burden exist not only in Montgomery County, but in the United States, as it relates to chlamydial infections.
- ❏ Although there are several health services that exist throughout the community, very few give the needed, direct attention to chlamydial infections and screening.
- ❏ Barriers exist in implementing chlamydia prevention strategies in the Montgomery County community that must be evaluated and addressed.
- ❏ More education and resources are needed outside of the health care setting to gain the attention of those with inadequate health care access.

CHAPTER 3: METHODOLOGY

Research Design

This CNA will include methodologies from information gathered during interviews with key informants, state and local health department reports and data from recognized health organizations. To describe the health status of the Montgomery County area, methods of secondary data collection will derive from a number of credible sources.

Key Informant Interview Methodology

Individuals identified as key informants will include community leaders and decision makers who are knowledgeable about the Montgomery County area and can accurately identify priority needs and concerns. An interview guide (see Appendix B) will be designed to understand the community perspective on chlamydia prevention and control efforts. Face-to-face interviews will be conducted if time is allowed.

Key informant diversity is important to prevent one-sided or biased results. Interviews from a variety of sectors allows for varying perspectives and a better understanding of underlying issues or problems. This public health activity is meant to benefit the participants' communities within the local government areas believed to be endemic.

The Emory University Institutional Review Board (IRB) determined that this portion of the study did not require IRB review because it does not meet the definition of "research" with human subjects or "clinical investigation" as set forth in Emory policies and procedures and federal rules.

Secondary Data Sources

To fully describe and explain the health status of the Montgomery County population, information will be drawn from secondary data sources. These sources include US Census Bureau, Centers for Disease Control and Prevention, the County Health Rankings, the County Health Department, the local newspaper, the military hospital (Blanchfield Army Community Hospital), the local community health center (Gateway Health System), as well as community outreach programs/organizations that aim to prevent and/or control chlamydia. Some of the data collected throughout this assessment is assessed directly from the County Health Department. When necessary, secondary data are compared by county to state and national averages, as well as Healthy People 2020 goals. Healthy People 2020 goals are 10-year, science-based goals used as benchmarks which have the intention to improving the health of all Americans.

Limitations

The findings presented in this document are subject to several limitations due to its attempt to gain a variety of perspectives. Interviewees that are used for interviews were selected based on the author's knowledge of local key informants and existing community resources. Where interviews were used to gather information from a variety of key informants, the additional use of focus groups, and possibly surveys, would have been beneficial to gain further insight and collect more data. However, time, as well as very limited availability of public health professionals, inhibited the ability to utilize a mixed methods approach. Resource restrictions, such as access to data collection from the community's Army Hospital, was not deemed to be readily attainable.

Summary

- ❏ Methodologies from information gathered during interviews with key informants, state and local health department reports and data from recognized health organizations will be evaluated throughout this assessment.
- ❏ To describe the health status of the Montgomery County area, methods of secondary data collection will serve as the primary methodology for this study.

CHAPTER 4: RESULTS

This chapter will provide perspectives of chlamydia prevention efforts in the Montgomery County, Tennessee area, as well as areas surrounding the Fort Campbell Army base. This chapter will also summarize specific information and data gained during interviews with key informants, as well as the collection of secondary data. This chapter will attempt to answer the following questions:

- What current chlamydia prevention and control efforts/resources exist?
    - If any exist, how effective are they?
- What obstacles, if any, must be overcome to prevent chlamydia infections in the Montgomery County community?

Results from the interviews and secondary data collected were analyzed and discussed to identify key findings during this study. Ultimately, answering these questions will help guide the development of recommendations that can provide local chlamydia prevention practitioners with a comprehensive framework for successfully reducing chlamydia rates in their communities.

Key Informant Interview Findings

Key informants interviewed during this study described several great characteristics of living in the Montgomery County community and surrounding areas. Some spoke of the very family-oriented living, active duty military population which creates a sense of protection, job availability and affordable housing. Others spoke of the community as being very connected to partnerships. Through these partnerships, the community has been very active in promoting positive changes such as the development of public transportation that ensures access to

resources, community walking trails that promote physical activity, city wide smoking ordinances, and community farmers' markets.

All key informants interviewed also reported that the high level of chlamydia infection rates are of major concern within their community. This recognition of the problem by all who wereinterviewed undoubtedly acts as a facilitator to the implementation of chlamydia prevention programs and creative educational efforts. Other major concerns included obesity, crime and cancer/smoking rates.

Barriers to preventionefforts are identified later in this chapter.

Health Departments

The main source for chlamydia prevention information and resources are made available at the local health departments for residents within and around the Montgomery County community. Education materials are given in print,which include pamphlets, brochures and posters. Information can also be found on the Health Department's website. Posters with STD statistics are typically posted in nurse clinic rooms, waiting rooms, and patient areas.

One key informant stated that although the education materials are available at the health department and online, little attention is given to them, especially with the younger generation (ages 15-24). On the other hand, the younger generation who visit the Montgomery County Health Department are well aware of the easy access to birth control options such as condoms, which aid in the prevention of STDs. The "brown paper bag" can be requested and picked up at the front receptionist desk, which is composed of a large amount of condoms that come in all sizes and textures.

Chlamydia Testing/Screening

According to one key informants' response, from as little as 2 to about 20 positive chlamydia tests are received on a daily basis at the Montgomery County Health Department. If someone comes in who only desires to be tested for chlamydia, a urine screening is taken but if they come in with symptoms of the infection, they automatically receive a vaginal swab. Patients' charts are pulled for past history findings such as treatments and symptoms. Patients who are not treated and test positive are immediately given treatment and told to notify partner(s) involved to come in for treatment as well to prevent reinfection. In cases where the patients' treatment is working, the health care provider will provide expedited partner therapy (EPT) to the partner, which is a clinical practice of treating sex partners of patients diagnosed with chlamydia or gonorrhea. This method of treatment provides prescriptions or medications to the patient to take to his/her partner without the health care provider first examining the partner. Unfortunately, the Blanchfield Army Community Hospital does not use this method of treatment.

Pregnant women, who test positive to the chlamydia infection, are priority at the Montgomery County Health Department. Interviews are performed to this population due to the severity of the issue. Untreated chlamydial infection has been linked to problems during pregnancy, including *preterm labor*, *premature rupture of the membranes* surrounding the baby in the uterus, and *low birth weight*(Andrews WW, Goldenberg RL, Mercer B, Iams J, Meis P, Moawad A, et al).

Treatment

When a patient test positive for chlamydia, an immediatesingle-dose of oral azithromycin is given. Key informants expressed during interviews that this particular drug is used like a

candy, as it is given several times a day and often to the "frequent flyers" or the same person over and over again. There are worries that this will not work much longer due to a large amount of patients returning untreated. Beliefs thata resistance development to the drug have been speculated due to repeat treatments. At that point, a one-week dose of doxycycline is provided.

Barriers Identified

Although health educators, nurse practitioners, disease intervention specialists, and other public health practitioners are heavily involved in chlamydia prevention efforts throughout Montgomery County and its surrounding areas, several barriers remain in place at local and state levels.

Partner Notification

Chlamydia partner notification is extremely important and beneficial to not only the partner(s), but to the community as well. Research suggests that individuals who are infected with STDs and unaware of their infections contribute disproportionately to ongoing disease transmission in the community. Patients who receive testing at health departments are usually nervous about results after being screened for chlamydia. As a result, patients often call several times to request information concerning their results. The Montgomery County healthcare professionals work hard to tract down partners of infected patients. Technology such as Facebook, Twitter and other social media sites are utilized to locate partners, as well as home visits and state-issued cell phones, which can be used for text messaging. Without partner information provided, this task can become difficult.

One key informant discussed how several patients are often too embarrassed to notify their partner(s), therefore leading to further reinfections. Other times, patients become furious about their positive chlamydia test result and blame their partner(s) for their pain and suffering. This also contributes to the difficulty involved in partner communication with healthcare professionals.

Gaps in Knowledge

The spectrum of health care professionals responsible for providing chlamydia and other STD-related information to the general public in both Montgomery and Christian counties are the health educators who are continuously educating children in school settings, community settings, and churches about STD prevention and ways to combat this issue. Visual learning strategies, such as PowerPoint presentations, are used to capture and maintain attention. More education and health promotion in the schools was a barrier mentioned by all key informants interviewed.

Another key informant explained a focus group experience that consisted of local educators. During the focus group, a statement was made about students and how several adolescent females view pregnancy as a "badge of honor". Many students are no longer as worried about getting pregnant and therefore, unaware of the additional risks that come along with unprotected sex, such as chlamydia. Gaps also exist in parent-child communication regarding safe sex practices was highlighted several times during interviews. Several students in the community are often without parents in the home that discuss the risks of sex and several other parents are not familiar with *how*to talk with their children about safe sex. Because of this,

children are left to find out about risky behaviors on their own, most often coming from peers who may also be uneducated.

Location

In Christian County, located in the Pennyrile Region of Southwestern Kentucky and in close proximity to Fort Campbell (FTC) Army Installation, the rates for two reportable and curable STIs, chlamydia and gonorrhea, are significantly elevated in comparison to the rest of the state. U. S. active duty military personnel, the majority being less than 35 years of age, continue to be disproportionately affected by this epidemic compared to the general population and may suffer significant morbidity, serious complications, and limitations to military service duties (Sanchez et al., 2013).

All key informants spoke about the location being a key factor to the increasing rate of chlamydia in Montgomery County and the surrounding areas. The close proximity to the Army base and the big university (APSU), which is composed of a much younger (15-24) population, has been the assumption of the rising STD rates.

Awareness Campaigns and Programs

There have been a variety of community-based initiatives that have been implemented with the ultimate goal of reducing the prevalence of chlamydia, and other STIs, in the United States. One initiative in particular isthe STD Awareness Month, which is observed by the Montgomery County Health Department. This annual observance calls attention to the impact of STDs and promotes STD testing across the country.

Christian County Health Department, who have plans to partner with the Montgomery County Health Department staff, offers a youth education program that specifically focuses on STDs. This program is appropriate for an 8^{th}-12^{th} grade audience, parental permission is required and is scheduled through a Wellness Nurse at the health department. Teaching tools used during this program include educational PowerPoint presentations with pictures, as well as an educational fact game.

One key informant mentioned the importance of partnerships between the Christian County Health Department, the Montgomery County Health Department, and the FTC Preventive Medicine clinic frequently coming together for initial discussions about what has been deemed a regional problem. The CDC emphasizes the need for collaboration among all stakeholders and a focus on prevention that is three-fold; educate the public about STIs; promote the utilization of effective strategies for STI risk reduction; and encourage STI testing (CDC, 2013a; CDC, 2014c). They also emphasize that strong leadership, innovative thinking, partnerships, and adequate resources will be required.

Although initiatives are in place and are offered to the residents in Montgomery County, a barrier still exist in participation of target populations. Another key informant discussed one previous chlamydia prevention and awareness effort developed specifically for studentsof Austin Peay State University. Due to the lack of resources, marketing, and student/patient participation, this events' outcome was unsuccessful and "not worthwhile". Therefore, future plans pertaining to chlamydia prevention efforts have not been developed on the university campus, which includes a substantial amount of the target population.

Today's Technology

During interviews, key informants discussed digital technology as an emerging risk factor for STD infections. Mobile apps continue to develop that are easy to access and download with just the click of a button and with no parental restrictions involved. Several apps mentioned during interviews are listed below:

- DOWN: This app allows one to search through pictures of people and decide whether or not they want to "get down" (hook up) or "get date" (have a relationship). There are currently over 1 million people using this app. Exclusive hook-up parties are also featured on this site.
- Cosmopolitan's SEX POSITION OF THE DAY: This app shows images and written instructions that explain how to get into each position, along with a "carnal challenge" rating system that helps users find the most difficult positions.
- SEXULATOR: This app is basically a calendar for tracking a user's sex life.
- PURE: This app allows one to meet someone to "hook up" with in a quick and easy way.

Adolescents and young adults are especially vulnerable to sexual risk because they are undergoing rapid cognitive, behavioral, emotional, and social development. Targeting youth who are using emerging digital technology is important for ensuring sexual health equity for adolescents (CDC, 2015a).

Secondary Data Findings

The Leaf Chronicle

In 2010, a report was released in the county newspaper, *The Leaf Chronicle*, pertaining to the rise in STDs throughout the community. This newspaper is published daily and read by several residents throughout the Clarksville, Tennessee community. Several important statements in this article, *County Sees Rise in Cases of STD*, were made by a Disease Intervention Specialist, along with a health educator, at the Montgomery County Health Department. Statements in the article included:

> *"The two major factors are the college and the military base,"* said Susan Thomas, a registered nurse at the Montgomery County Health Department and disease intervention specialist. *"We still have more chlamydia cases than Rutherford and Williamson counties although they have higher populations and there are also colleges there."*

She also stated that any STD cases detected at Fort Campbell would also be reported to the local Health Department if the soldier lives in Montgomery County.Patti Hill, a health educator for the Montgomery County Health Department, discusses how the message of being tested for STDs is taken to high schools, middle schools, churches, civic clubs and other social setting throughout the community.

> *"I promote testing and the medical treatment, and I also assure them that their privacy is protected,"* Hill said. *"Because most of those contracting STDs are between 15 and 24 and these young people fear their parents will learn of their sexual activity. They can come in the health department without their parents and*

get tested," Hill said. *"The testing is free and the treatment is free, which is important for young people to know because they don't have any money."*

This article also discusses other strategies used by local health officials that aid in prevention efforts of chlamydia. Two strategies mentioned, which are used locally and across the state of Tennessee involve the "GYT-Get Yourself Tested" campaign simple methods to try to getthe word out about STD Awareness Month, which resides in the month of April.

Tennessee Department of Health

The Tennessee Department of Health has an aim to work with and educate Tennesseans on ways to reduce the burden of preventable infections, especially during STD Awareness Month. During this month, awareness is increased about the impact of STDs and the importance of preventing, testing for and treating (TN Dept of Health, 2010). The TN Department of Health website also plays a role in preventing chlamydia and other STDs among residents of Tennessee. It provides the following information:

- STD Diseases and Prevention Information
- STD Fact Sheets for Teens
- Methods of contacting sexual partners
- State of TN STD/HIV Hotline

In 2010, the Tennessee Health Commissioner, Susan R. Cooper, MSN, RN, spoke briefly about this in a report released on the TN Department of Health website. She mentioned, *"People don't like to talk about these diseases, but they will not go away if we ignore them. We urge Tennesseans to learn how to prevent sexually transmitted infections and to talk to their health*

*providers to learn if they are at risk."*Currently, the Tennessee Health Commissioner is John Dreyzehner, MD, MPH, FACOEM, who started his term in 2011.

Since Dr. Dreyzehner's appearance, the HIV/STD program has assembled guidelines with the goal of assisting public health department staff in both the metropolitan and rural regions of Tennessee with STD prevention and intervention efforts. Information found in these guidelines come from state and local STD programs across the country and in Tennessee involving strategies and recommendations that have proven effectiveness over time in STD intervention efforts (TN Dept of Health, 2012). Areas of emphasis in the STD Prevention program include:

- Surveillance and Data Management
- Outbreak Response Plan
- Medical and Laboratory Services
- Partner Services
- Community and Individual Behavior Change Services
- Program Evaluation
- Leadership and Program Management
- Training and Professional Development

The areas of emphasis mentioned above are vital to reducing rates of chlamydia in the Montgomery County community.

Prevention Campaigns

As mentioned earlier in this chapter, the "GYT- Get Yourself Tested" campaign is one strategy used as a prevention effort throughout Montgomery County. This particular campaign was launched in 2009 and is a youthful, empowering social movement to encourage young people to get tested and treated, as needed, for STDs and HIV (CDC, 2015e). The GYT campaign is a partnership between MTV Networks, the Kaiser Family Foundation, Planned Parenthood Federation of America and the CDC. GYT also stands for "Get Yourself Talking", an element of the campaign targeting young people who may be uncomfortable or uncertain about asking medical providers for sexual health services or talking to their partners or friends about testing.

Summary

- ❑ Perspectives of previous and current chlamydia prevention efforts were summarized throughout this chapter using both key informant interview findings and secondary data.
- ❑ In Montgomery County, the health department is the main hub for prevention services.
- ❑ All key informants interviewed were well aware of the issue throughout the community.
- ❑ Barriers to chlamydia prevention and control efforts are also presented, which include lack of sex education/knowledge, location, today's technology, partner notification, and particiaption in prevention awareness campaigns and programs.
- ❑ The Tennessee Department of Health, as well as the County newspaper have released reports concerning this issue.

CHAPTER 5: CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

The rates of chlamydia are particularly high in the Montgomery County area compared to other rates in the state of Tennessee. Reducing these rates is a priority among *some* public health professionals and agencies, but not all in Montgomery County. The sexual health status of this community is a reflection of the general health that has the potential to affect future generations. Although prevention methods exist, rates appear to be worsening. Reversing these trends requires continued understanding of the current scope of chlamydial infections, participation from levels of influence and recommended prevention practices in order to develop and implement effective interventions.

The following chapter summarizes the key findings from this study and recommends specific strategies for preventing Chlamydia infections in Montgomery County, as well as its surrounding area from a social ecological perspective. This will help highlight the importance of understanding current prevention practices and barriers.

Brief Summary of Key Findings

The ultimate aim of this study was to provide chlamydia prevention practitioners at multiple levels of influence with a full scope and context of existing chlamydia prevention efforts in the community to further create a comprehensive framework for reducing the rates of chlamydia infections throughout the area. Key findings of this assessment included:

- **Chlamydia rates in the Montgomery County community are high.**
- **Current chlamydia prevention efforts are in place.**

- **Several barriers remain in place despite heavy involvement of local public health professionals.**
- **Key informants are well aware of the issue.**
- **Community partnerships with neighboring health services are developing.**
- **Community buy-in, trust, and participation towards chlamydia prevention is severely limited.**

These specific key findings from this assessment indicate the need for focused interventions, partnership planning, community engagement planning, and the revitalization of current prevention efforts in Montgomery County.

Recommendations

Because successful and effective public health programs and initiatives to assist residents of the Montgomery County community maintain health and reduce disease risks require behavior change at several levels, the recommendations outlined in this chapter are based on the social ecological approach. As mentioned earlier in Chapter 1, the social ecological approach recognizes that an individual's decisions and behaviors result from interactions with his/her social and physical surroundings. Although barriers mentioned in the previous chapter seem formidable, intervening and directing attention to the individual, interpersonal, organizational, community, and policy levels will reach people at different points of influence, thus increasing the impact of chlamydia prevention efforts in the Montgomery County area.

Individual/InterpersonalLevel

A fundamental step in reducing the spread of STDs is educating individuals about their susceptibility to these diseases and the adverse outcomes of the risky behavior involved. While there are many factors that may influence a person, ultimately the decision to engage in chlamydia infection preventive behaviors is a choice made strictly by the individual. By considering the Montgomery County residents as individuals who all encompass unique sets of personal risk factors, characteristics, and beliefs, specialized intervention efforts would be most successful.The determinants of health at the individual level are important as they provide insight on the personal factors driving the increasing rate of chlamydia infections among the Montgomery County community. However, individuals are influenced by their surrounding environment, including various interpersonal relationships.

The development of a program strictly focusing on condom usage among adolescents would succeed on this particular level. For example, an expansion of the "brown paper bag" idea used at the Montgomery County Health Department mentioned in Chapter 4, would be ideal. Distribution of free condoms by street outreach workers may increase condom use in high-risk populations (Denno, 2012). Combining condom distribution programs with other interventions may have greater effects on condom use than distribution programs alone (Charania, 2011). Condom availability in the public schools may also assist in an increase in condom usage among adolescents. More than 400 public schools in the US have made condoms available to students (County Health Rankings, 2015b).

In addition, education-based programs, specifically targeted toward the young college and military population, would help modify individuals' beliefs about their susceptibility while encouraging accountability to improve health outcomes. The development of these programs will

act as a bridge to existing educational strategies offered at county health departments in the surrounding community.

Organizational Level

Factors which contribute to the chlamydia rate have qualities that can be addressed or influenced by the "behavior" of organizations. There are varied public health organizations which have specific charges to prevent certain negative health outcomes. One example of an organization that focuses on chlamydia prevention, with similar community dynamics, is the Adolescent Health and Youth Development (AHYD) program implemented in Chatham County, GA where chlamydia rates are also high. This particular program enhances skills and improves the health status of adolescents throughout the Coastal Health District. This program also provides various opportunities and programs for youth who live within the district. Collaborations with families, communities, schools and other public and private organizations throughout the district involve parents, youth, and others in promoting positive youth development. Below is a current AHYD program.

Personal Responsibility Education Program (PREP):

The Personal Responsibility Education Program (PREP) is a program through the Georgia Department of Public Health (DPH) and is partnering with the Georgia Department of Families and Children (DFCS). The program provides youth aged 10-19 years old with resources and skills for pregnancy prevention and sexually transmitted infections, including HIV/AIDS. The purpose of the program is intended to change behavior, by delaying the onset of early sexual

activity, to increase condom or contraceptive use for sexually active students and to reduce pregnancy among students (GA Department of Public Health, 2015).

Community Level

The community can play a very important role in reducing chlamydial infections. Successful prevention of chlamydia in the Montgomery County area can ultimately be achieved through community engagement in the planning and implementation of community-based programs. Furthermore, participation and cooperation among various stakeholders, including health departments, physicians, and the public is vital to capitalize on prevention efforts.

One key informant interviewed in this study has future plans that are heavily involved in chlamydia prevention efforts in and around the Montgomery County area. This project will involve the development and implementation of a population-focused STI education and awareness program specifically targeting United States active duty military personnel stationed at the Fort Campbell (FTC) Army Installation and neighboring counties, Montgomery (TN) and Christian (KY).

In the first phase of the program implementation, public health educators will be trained and evaluated in the delivery of a culturally sensitive STI education and awareness program. Adult learning principles, teach-back methods, case studies, and simulated scenarios will be used to assess and evaluate understanding of the content related to a population-based STI education and awareness program. A one-day training workshop will be offered to the public health educators of the Montgomery County Health Department (MCHD), Christian County Health

Department (CCHD) and the FTC Preventive Services Clinic. In the second phase of the program implementation following the training, public health educators will present the program to the U.S. active duty military personnel stationed at FTC in a pilot study.

As mentioned earlier in this chapter, one key finding from this assessment was low community buy-in and participation in local community prevention efforts. An initiative solely focused on community engagement strategies is imperative. The Community Approaches to Reducing Sexually Transmitted Diseases (CARS) initiative, funded by the CDC, is one to model and adapt for the Montgomery County area. This initiative focuses one community engagement methods and partnerships to build local STD prevention and control capacity with a purpose to support the planning, implementation, and evaluation of innovative, interdisciplinary interventions to reduce STD disparities, promote sexual health, and advance community wellness (CDC, 2014b). This evidence-based initiative will not only assist with the lack of community buy-in in Montgomery County, but build on existing initiatives.

Public policy level

Interventions at this level are often complex, as they are affected by the external, political climate and their implementation is often not time sensitive. However, policy interventions and recommendations impact other levels tremendously. Effective public health interventions work best when multiple levels of influence are applied to the community. At the policy level, the PRECEDE-PROCEED Model could inform interventions. The word PRECEDE stands for Predisposing, Reinforcing, and Enabling Constructs in Educational/Environmental Diagnosis and

Evaluation, and is solely based on the premise that a particular "diagnosis" should precede an intervention plan. The word PROCEED stands for Policy, Regulatory, and Organizational Constructs in Educational and Environmental Development. This was later added to the model, as it recognizesthe importance of key factors as determinants of health and health behaviors. This method encourages intervention planners to think logically about a desired end point and work "backwards".

At this level, mandating age-appropriate coverage of chlamydia infections and related risks in school health education curricula would help close the gap in knowledge, a barrier mentioned in Chapter 4. Although health educators perform this task in both Montgomery and Christian counties, the inclusion of this curriculum would provide more time and opportunity to educate adolescents in other settings.

General Limitations

As mentioned in Chapter 3 of this document, key informant interviews were used as a data collection method to help accurately identify priority needs and concerns throughout the Montgomery County community. Formal contact, using corresponding scripts reviewed by the Institutional Review Board (IRB), was made to each key informant selected by e-mail and in some cases, by phone. Many of the subjects to be interviewed were unavailable or unresponsive when offered the opportunity to discuss the impact of current chlamydia prevention efforts within their respective geographical areas throughout Montgomery County. Therefore, the sample size for this data collection method was limited and may not be representative of the population studied in this assessment.

In conclusion, the disparity between the amount of key informants interviewed and the amount of key informants unresponsive can be considered a direct correlation to the lack of Montgomery County chlamydia prevention efforts.

Continued Improvements

This community needs assessment was performed with the goal to reduce chlamydia infections in the Montgomery County community is intended to be a tool for community health improvement planning and a framework for action. As no community health need remains static, and the evidence basis for population-level intervention is ever evolving, it is recommended that this document be viewed as in "perpetual beta." Intervention innovation and new, better sources of data should be added to this assessment as soon as they become available. In this way, short-, medium-, and long-term community health goals can be achieved through the foundation of continuous and iterative assessment processes.

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APPENDIX A:

INFORMED CONSENT STATEMENT

Title: A Community Needs Assessment of Chlamydia Prevention Efforts in the Montgomery County, Tennessee Area

Principal Investigator: Christina Newby

Funding Source: N/A

Introduction

You are being asked to be in a research study. This form is designed to tell you everything you need to think about before you decide to consent (agree) to be in the study or not to be in the study. **It is entirely your choice. If you decide to take part, you can change your mind later on and withdraw from the research study. You can skip any questions that you do not wish to answer.**

Before making your decision:

- Please carefully read this form or have it read to you
- Please ask questions about anything that is not clear

You can take a copy of this consent form, to keep. Feel free to take your time thinking about whether you would like to participate. By signing this form you will not give up any legal rights.

Study Overview

The purpose of this study is to identify Montgomery County's STD prevention needs, specifically focusing on chlamydia. It will also examine resources that are available to reduce the burden. Ultimately, this data may be presented in a thesis paper submitted to the Rollins School of Public Health at Emory University.

Procedures

If you choose to participate in this research study, the interview will need to be within two (2) weeks after consent. You will only interview one time throughout this study. The approximate time required for completion is thirty (30) minutes to one (1) hour, or longer if necessary. You will be given the choice for the location of the interview. You will be asked to answer questions

pertaining to the subject at matter but will be given the option to refuse or skip any question at any given time during the interview. This study will not include any individual names. Interviews will be recorded to ensure quality but will only be accessed and used by the researcher for educational purposes and will be destroyed/erased at the end of the study on August 2, 2015.

Risks and Discomforts

During recruitment, you may experience pressure from supervisors to participate, not to participate, or to respond to a study in a way the employer or union may promote or perceive as advantageous to the organization. The conversations might involve your opinions, beliefs and suggestions about chlamydia prevention efforts that might make some individuals feel uncomfortable. Again, participating in this interview is completely voluntary. You can decide not to answer questions or to stop the interview at any time.

Benefits

This study is not designed to benefit you directly. This study is designed to learn more about valuable information as it relates to the surrounding community using first- hand knowledge, as well as assist in providing insight on the nature of the existing problem. The study results may be used to help others in the future.

Compensation

You will not be offered payment for being in this study.

Confidentiality

Certain offices and people other than the researchers may look at study records. Government agencies and Emory employees overseeing proper study conduct may look at your study records. These offices include the Emory Institutional Review Board. Emory will keep any research records we create private to the extent we are required to do so by law. An identification code rather than your name will be used on study records wherever possible. Your name and other facts that might point to you will not appear when we present this study or publish its results.

Voluntary Participation and Withdrawal from the Study

You have the right to leave a study at any time without penalty. You may refuse to answer any questions that you do not wish to answer.

Contact Information

Contact Christina Newby at christina.swann@emory.edu:

- if you have any questions about this study or your part in it, or
- if you have questions, concerns or complaints about the research

Consent

Please, print your name and sign below if you agree to be in this study. By signing this consent form, you will not give up any of your legal rights. We will give you a copy of the signed consent, to keep.

_____

Name of Subject

_____ _____

Signature of Subject Date Time

_____ _____

Signature of Person Conducting Informed Consent Discussion Date Time

APPENDIX B:

KEY INFORMANT INTERVIEW GUIDE

Topic: **Chlamydia Prevention Efforts in the Montgomery County, Tennessee**

Background

Montgomery County is rather unique in its composition as it is the home of one of the largest military bases in the United States - Fort Campbell. Beyond this, it is also home to Austin Peay State University. Both have a significant impact on the community. Due to this county's diversity and constant population turnover, it is important to identify and quickly respond to specific health needs affecting the community. One of those health needs is chlamydia prevention, as chlamydia rates in the community have rapidly increased over the years.

Introduction:

Thank you for agreeing to participate in this interview. The insights gained from these interviews will be used by myself (the researcher) as a guide to evaluate the perspectives, beliefs and possible barriers in chlamydia prevention efforts within this community. I want to remind you that any identifiable information will be removed and the responses you provide cannot be linked to you in any way. However, if you do not feel comfortable answering any specific questions, please let me know and we will move on. I will be audiotaping the interviews to ensure the accuracy of notes. These tapes/recordings will be in the sole possession of the researcher and will be destroyed at the end of the project.

Do I have your consent to move forward with the interview?

Question 1: Briefly describe what you do and how it is associated with chlamydia prevention efforts in this community?

Question 2: Briefly describe the best things about living in this community?

Question 3: In general, what are some major concerns in this community?

Probe: What makes it a major concern?

Question 4: What are the major health concerns in this community?

Question 5: Did you know about the steadily increasing rate of chlamydia in the Montgomery County community and surrounding areas?

Probe: If yes, how did you find out about it?

Question 6: What factors do you feel contribute to the increasing rate of chlamydia in the community?

Question 7: How serious are chlamydia infections compared to other problems in the community?

Question 8: Do people in your community feel that they are at risk of getting infected with Chlamydia? *Probe: Why or why not?*

Question 9: Who are the people in your community you feel are most at risk of getting infected with Chlamydia?

Probe: What methods could be used to reach them?

Question 10: What do you think is going on in the community that puts people at risk for chlamydia infection?

Probe: What do you think can be done to reduce these risks?

Question 11: What current chlamydia prevention and control efforts/resources already exist within your community?

Question 12: How do people feel about STD testing in this community?

Probe: What are the reasons why someone would not want to get tested? Why or why not?

Question 13: Is it rather easy to get tested for STDs in this community?

Question 14: How do people feel about condom use in this community?

Probe: *What do you think are the advantages and disadvantages of using condoms*? Are they easy to get? Why or why not?

Question 15: What do you think can be done to help residents of the community learn about chlamydia and other STDs?

Question 16: Do any organizations or businesses within the community provide information about STDs or condoms?

Probe: *If yes, which ones?*

Probe: *If yes, what do they provide?*

Question 17: Have there been past attempts to address STD prevention in this community?

Probe: *What succeeded and what failed in prior program(s)?*

Probe: *What made efforts successful or not successful?*

Closing

That is the extent of my questions. I would like to reiterate that I greatly appreciate your willingness to spend your time assisting me with this research project.

Before we end this interview, do you have any additional information that you feel would be helpful to provide? Do you have any questions you would like to ask of me?

THANK YOU FOR YOUR PARTICIPATION