Alive and Aware: Meningitis Prevention and Management

A Health Education Program for College Students

Mehar Anand

University of Georgia

Table of Contents

1. Program Mission Statement………………………………………………………1
2. Goals and Objectives……………………………………………………………..1
3. Logic Model…………………………………………………………………………3
4. Needs Assessment…………………………………………………………………4
5. Statement of Problem, Target Population, and Setting………………..7
6. Program Description………………………………………………………………8
7. Theory…………………………………………………………….…………………..8
8. Implementation……………………………………………………………………15
9. Evaluation Plan…………………………………………………………………….17
10. Marketing Plan……………………………………………………………………..25
11. Resources and Budget……………………………………………………………27
12. References……………………………………………………………………….….33

**Program Mission Statement**

**Alive and Aware: Meningitis Prevention and Management** is committed to reducing the overall prevalence of meningitis among freshman college students in the Athens Technical College region of Athens-Clarke County.

Through increased education and knowledge, we aim to raise awareness among these students, discussing the significance of receiving certain vaccines and the potentially devastating effects of meningitis. This is to reduce the overall rate of infection among the freshman student body.

Our ultimate goal is to improve health outcomes for freshman college students. This program utilizes educational intervention methods to demonstrate to students more preventative and hygienic health behaviors, and the significance of why these behaviors help reduce the spread of meningitis.

**Goals with Objectives**

1. By the end of the program, 50% of students will be knowledgeable on meningitis prevention and management.
   * 1. Increase knowledge about risks of exposure to meningitis due to social settings and large areas.
     2. Increase knowledge and familiarity among students regarding prevention strategies and management, treatment and therapies available, and vaccination available.
     3. Develop and online website comprised of educational modules for freshman college students and faculty.
     4. Host a panel at the freshman student orientation to increase awareness among students regarding the dangers of meningococcal disease, preventative care, hygienic practices, and encourage screenings and vaccinations.
2. Improve physician-patient communication regarding meningitis prevention, potential signs and symptoms, treatment options, and vaccination.
   * 1. Increase the students’ self-efficacy to communicate with their physician.
     2. Provide educational curriculum and modules for the students on how to discuss their concerns with their physician.
     3. Students will report to the Athens Technical College Health Center if they test positive for meningitis and Health Center will keep track of how many positive cases they test.
3. Increase rates of immunization/vaccination among college freshman students by 15% by the end of the 2-year period.
   * 1. Increase knowledge about the MenACWY and MenB vaccines vaccination for meningitis, and their potential risks and benefits.
     2. Recruit a speaker from National Meningitis Association to inform students about the organization and the disease, while discussing preventative measures, changes being made to combat the disease, and an anecdotal testimony from someone affected by meningococcal disease to reinforce the danger of the disease.
     3. The program health educators will produce and distribute pamphlets after the orientation program that encourages students to visit the Health Center in order to get screenings and vaccinations. The pamphlet will also contain information on the Health Center for the benefit of the students.

Figure 1. Logic Model

Situation and Priorities

Outcomes and Impact

Outputs

Activities and Participants

Inputs

External Factors:

Health Center policies, social and cultural norms that influence prevalence rates and vaccination, self-efficacy to encourage screenings and lifestyle and behavioral practices

Assumptions:

Program staff and providers are prepared to invest resources and time into the program

Direct Products:

Prevalence and analyses of meningitis among freshman students at the beginning and end of the year

Partnerships with local Athens clinics

Pamphlets that describe how to navigate college endeavors with meningococcal disease, how to practice preventative care, especially around large student groups, and recovery and follow-up care after meningitis and meningococcal septicemia, health center location and opening and closing times

Identify factors influencing meningitis outbreak-related practices among freshmen college students and areas around the college campus

Administer educational online modules with completion tests

Deliver program presentation and panel during freshman orientation

Distribute curriculum-based pamphlets to freshman students

Maintain consistent communication between Athens Clarke County Health Department and Athens Technical College Health Center

Participants and

Population:

Female and male college freshman, aged 18

College freshmen are seven times more likely develop meningitis due to the nature and organization of the college campus. Throughout most of Georgia, meningitis prevention strategies are limited in number and fail to address the correlations and long-term impacts of meningitis. Additionally, there is a lack of vaccine and medication-based curriculum in order to educate freshman on how to improve health outcomes.

Budget: $200, 000

Stakeholders/ Investors - Funding for the program, resources, equipment, and market campaigns

Project Director -Instruction of program intervention and online resources

Health Educators -Develop curriculum and market awareness through panels

Data Analyst – Interpret results and evaluate the program

Local Partnerships:

Athens Technical College Health Center

Athens-Clarke County Health Department

National Meningitis Association as presenters

Long-Term:

Reduced prevalence of meningitis among freshman college students in Athens Technical College between the first and last educational panels and modules by 60% at least 2 years post-intervention

Lowered mortality and morbidity rates among college freshmen

Students are reporting the effectiveness of the program for improving their overall health, relative to meningitis prevention and management

The educational modules are effective and accessible in delivering materials and resources to those who had access to use it

Intermediate:

Continuation of online educational modules and resources

Improved patient and provider communication regarding screening, treatment, and therapy

Increased self-efficacy of students to regularly get screenings and wellness checks

Short-Term:

Increased knowledge regarding preventative care, proper hygiene practices, and alterations in students’ lifestyles

Increased knowledge regarding preventative care during peak seasons

Improved attitudes regarding vaccination and medication for meningitis

Improved awareness involving follow-up care after meningitis and meningococcal septicemia

Increased awareness about exposure to meningococcal disease, especially around large student groups

Mission: Alive and Aware: Meningitis Prevention and Managementis committed to reducing the overall prevalence of meningitis among freshman college students in Athens Technical College of Athens-Clarke County.

Priorities:

Awareness and education

Improve health outcomes: reduce the number of meningococcal disease cases

What we will invest:

Online educational program and preventive care resource materials

Pamphlets that encourage screenings and vaccinations for students

24-month period

**Needs Assessment**

College students are more likely to contract certain bacterial and viral strains of diseases [3]. This is especially true for meningococcal meningitis and meningococcal septicemia, caused by the *Neisseria meningitidis* bacteria [3]. In meningococcal meningitis, bacteria infect the meninges, or protective membranes, that are covering the brain and spinal cord [3]. This infection causes swelling and conditions associated with increased sensitivity to light, vomiting and confusion [3]. In meningococcal septicemia, bacteria enter the bloodstream which then proceed to reproduce and cause damage to blood vessels [3]. Since the blood vessel loses functionality in its structure due to damage, internal bleeding can occur. This is potentially dangerous when the bleeding leaks into areas of other organs or pooling intensely throughout the skin [3]. *Neisseria meningitidis* bacteria are spread through respiratory droplets, normally through mediums that are close or serve as direct contact with saliva and respiratory secretions [3]. College students, specifically college freshman are seven times more likely to become infected with the *Neisseria meningitidis* bacteria and develop meningitis due to the nature and organization of the college campus [6]. College students are at their highest risk of exposure when they are within close proximity and near contact with other students, especially in dormitories and classrooms [6]. In addition, college students are surrounded by large groups of people during organized social events, and they share many of their personal belongings through unhygienic behavior [6]. This also heightens their risk for contracting meningitis. Approximately 1 in 10 students contract meningitis throughout their undergraduate college lifetime, and the current prevalence rate is approximately 15% [19]. These students can physically show symptoms or may be asymptomatic [6].

Becoming more frequent, meningococcal disease develops rapidly and can claim lives of healthy individuals in as little as one day after the first symptoms appear.Meningococcal disease, which includes meningitis, bacteremia (severe blood infection) and pneumonia, is spread through respiratory droplets [12]. Common everyday activities can facilitate transmission of the bacteria that cause the disease, including kissing, sharing utensils and water bottles, being in close quarters, such as living in a dormitory or staying at a sleep-away summer camp [12]. Athletes can be at greater risk of exposure to meningococcal disease, since many sports involve physical contact and equipment sharing [20]. In addition, participating in group practices, being in cramped locker rooms, and taking long bus trips can facilitate the spread of germs from person to person [12]. Data from the CDC have shown that, following infancy, there is a second peak in meningococcal disease incidence among adolescents and young adults between 16 and 21 years of age [15].

Given high rates of close, non-casual, and contact exposure that occurs among college freshmen, this proposal focuses on both men and women freshmen students, aged 18. There is a lack of meningitis prevention programs, knowledge regarding the types of vaccines available, and evidence-based hygienic practices that exist for incoming freshmen, so this proposal serves to increase awareness and the priority of lowering the risk of freshmen contracting meningitis. Throughout most of Georgia, meningitis prevention strategies and hygienic practices that are culturally appropriate are limited in number, are not taught regularly each year, and fail to address the correlations and long-term impacts of meningitis [21]. There is also a lack of awareness and educational materials that discuss the signs and symptoms, the recovery, and the organization of college life for a college student who has contracted meningitis [9].

Working with the Athens-Clarke County Health Department, we will work with the National Meningitis Association to create programs for meningitis prevention and recognition to be implemented for Athens Technical College in Athens, Georgia. We will also work to spread the need for freshman to receive the MenACWY and MenB vaccines from their college health centers and surrounding hospitals or clinics. This setting provides access to transportation, educational resources, hospitals and clinics, consistent communication, available health care, and a large group of freshmen students who are currently studying on campus at their college [5].

In addition, this assessment concentrates on the need to establish preventative behavior. This involves practicing good personal hygiene, as this reduces the risk of contracting the disease from an infected person. This also includes the urge to avoid sharing food, utensils, glasses and other objects with a person who may have or been exposed to the infection [7]. Washing hands often with soap and rinsing under running water will contribute towards a more stable prevalence. Antibiotics may also be considered as a part of the treatment for these students to take, especially those who live, work, or go to school with someone who has been diagnosed with bacterial meningitis [7].

In previous attempts, meningitis awareness programs for college students have been implemented, however, these programs were directed towards parents to help educate them on the danger and prevention of meningococcal disease. For example, the program, *Get in the Game: Keeping Teens Healthy* served as an initiative for parents to help raise awareness about the serious consequences of the disease and motivate parents to speak with their children's health care professional about vaccinating against meningococcal disease in advance of each sports season [14]. However, this initiative must be updated to represent the current statistical and social trends that are being demonstrated currently. In addition, this program offers suggestions, but not alternatives to practicing certain health behaviors when a student is unable to afford vaccination, or when a family lacks health care. This current needs assessment is to offer alternatives and solutions to students that fall into this category. Another source that served as an initiative was the *Meningitis B Action Project*, which focuses on strengthening the relationship between students and their health care provider [2]. This source allowed our program to build a foundation based on similar, but successful objectives. Our program used this source to develop curriculum to empower college students with information to talk to their healthcare provider about the MenB and Men ACWY vaccines, along with alternative therapies to prevent the contact and spread of meningococcal disease [2]. In our program, we aim to encourage college students to discuss Meningitis ACWY and the MenB vaccines with their healthcare providers and their parents, increase awareness of these vaccines on their college campus, and appeal to policymakers to ensure more accessibility to both of these vaccines [2]. This initiative must also be updated to represent the current statistical and social trends that are being demonstrated currently. We must also deliver this curriculum to appeal to students in a culturally appropriate tone and manner [2].

Bacterial and viral meningitis has great social relevance due to the ability to cause long-term impacts and death [13]. It is most frequently found in developing countries, especially among children and demonstrates a positive correlation with poorer living conditions [13]. Its incidence has decreased with the introduction of vaccination programs against preventable agents. However, low-income and middle-income countries with poor access to health care still have a significant burden of the disease [26]. This is especially true with the city of Athens and its increasing rate of college students developing meningitis and also being burdened by financial strains or a lack of housing [13].

Although the overall rate of meningococcal disease is decreasing in Georgia, the rate of college students developing meningitis has increased to 350 cases per 100,000 cases in 2017 [25]. In Georgia, all cases of meningococcal disease are immediately notified to the Georgia Division of Public Health [25]. Cases were reported by hospital personnel including infection control practitioners and nursing staff, lab personnel, and physicians across the state. This is significant in that the Department of Public Health demonstrated how students were likely to be in close contact with household members as well as others who might have come into contact with the saliva of a case patient through sharing of utensils, cups, cigarettes, or lip balm. These variables are likely to be seen with the current setup of in-person classroom, library, and other public campus settings [25].

To set up this program on preventative health behaviors and treatment options surrounding the dangers of meningitis in college students, various methods will be considered. Primarily, it is important to note the organization dedicated to educating the public and healthcare professionals about the causes, prevention, and treatment of infectious diseases. We will work with The National Meningitis Association, a nonprofit organization dedicated to educating the public and healthcare professionals about the causes, prevention, and treatment of infectious diseases, offers the following tips to help increase and maintain a high level of awareness about meningitis and prevention through vaccination [14]. To begin with, we will evaluate resources and determine how staff may respond to a meningitis case on campus. We will meet with relevant department administrators, student and community leaders, and healthcare professionals to discuss the level of knowledge about the disease, symptoms, potential impacts on campus [14]. This will allow us to establish relationships with local news media so that they understand the issue, can help promote information about the disease, and can help during a crisis. We will provide multiple means of obtaining access to information on all aspects of meningococcal disease, including diagnosis, treatment, transmission, and prevention [14]. Using this information, a meningococcal response team can be put together to represent health services, communications, administration, and the local community to work with the patient.

Secondly, our program’s health educators with the Athens Technical College Health Center to inform the freshman students of the dangers and consequences of contracting meningitis. This will be accompanied by instructing hygienic practices and preventative health behaviors through seminars, webinars, infographics, presentations, and video tutorials, created by the health educators [8]. The points to be reiterated to the students, found among the resources, will involve how college students, specifically freshman, are at increased risk of meningococcal disease, serious bacterial infection that can lead to lifelong complications and even death. The resources will also iterate the necessity of vaccines to protect against the viral and bacterial strains of meningitis, recommended by a healthcare professional in the US, for individuals aged 16 to 23 years [8].

It is encouraged that students and parents utilize the resources and programs we will supply the university, while discussing with their healthcare provider about meningitis about the need to help protect against and treat the disease.

Statement of Problem, Target Population, and Setting

College students are more likely to contract certain bacterial and viral strains of diseases. This is especially true for meningococcal meningitis and meningococcal septicemia, caused by the *Neisseria meningitidis* bacteria. In meningococcal meningitis, bacteria infect the meninges, or protective membranes, that are covering the brain and spinal cord. This infection causes swelling and conditions associated with increased sensitivity to light, vomiting and confusion. In meningococcal septicemia, bacteria enter the bloodstream which then proceed to reproduce and cause damage to blood vessels. Since the blood vessel loses functionality in its structure due to damage, internal bleeding can occur. This is potentially dangerous when the bleeding leaks into areas of other organs or pooling intensely throughout the skin. *Neisseria meningitidis* bacteria are spread through respiratory droplets, normally through mediums that are close or serve as direct contact with saliva and respiratory secretions. College students, specifically college freshman are seven times more likely to become infected with the *Neisseria meningitidis* bacteria and develop meningitis due to the nature and organization of the college campus. College students essentially within close proximity and near contact with other students, especially prominent in dormitories and classrooms. In addition, college students are surrounded by large groups of people during organized social events, and they share many of their personal belongings through unhygienic behavior. This also heightens their risk for contracting meningitis. Approximately 1 in 10 students contract meningitis throughout their undergraduate college lifetime, and the current prevalence rate is approximately 15%.These students can physically show symptoms or may be asymptomatic.

Given high rates of close, non-casual, and contact exposure that occurs among college freshmen, this proposal focuses on both men and women freshmen students, aged 18. There is a lack of meningitis prevention programs, knowledge regarding the types of vaccines available, and evidence-based hygienic practices that exist for incoming freshmen, so this proposal serves to increase awareness and the priority of lowering the risk of freshmen contracting meningitis. Throughout most of Georgia, meningitis prevention strategies and hygienic practices that are culturally appropriate are limited in number, are not taught regularly each year, and fail to address the correlations and long-term impacts of meningitis. There is also a lack of awareness and educational materials that discuss the signs and symptoms, the recovery, and the organization of college life for a college student who has contracted meningitis.

Working with the Athens-Clarke County Health Department, we will collaborate with the National Meningitis Association to create programs for meningitis prevention and recognition to be implemented for Athens Technical College in Athens, Georgia. Additionally, we aim to increase knowledge and awareness among the freshman student body to receive the MenACWY vaccine and the MenB vaccine from their health centers and surrounding hospitals or clinics. This setting provides access to transportation, educational resources, hospitals and clinics, consistent communication, available health care, and a large group of freshmen students who are currently studying on campus at their college.

**Program Description**

Program Theory- An Implementation of the Theory of Planned Behavior Towards Meningitis Prevention Among College Freshmen Students

The Theory of Planned Behavior has been used successfully to predict and explain a wide range of health behaviors and intentions including smoking, drinking, health services utilization, breastfeeding, and substance use, among others. In 2015, this theory was able to explain approximately 25% and 50% of the variance in intention and adherence behavior, respectively. This theory utilized educational intervention to enhance medication adherence in Mexican American high school students with schizophrenia [1]. The study demonstrated that this theory’s constructs can be used to develop an effective intervention that improves medical adherence and promotes healthy behaviors in such populations [1].

The Alive and Aware: Meningitis Prevention and Management program is based on the Theory of Planned Behavior, which states that attitude, subject norms, and perceived behavioral control, together shape an individual's behavioral intentions and behaviors [10]. This theory is an extension of the Theory of Reasoned Action, regarded as one of the many social-cognitive theories utilized to analyze the relationship between intentions and behavior [10]. The Theory of Planned Behavior utilizes five constructs to explain how an individual’s behavioral achievement depends on both motivation and ability [10]. The performance of a behavior is determined by the individual’s intention to engage in it, which is influenced by the value the individual places on the behavior [10].

Additionally, behavioral performance is also determined by the ease with which it can be performed, the views of significant others, and the perception that the specific behavior is within the individual’s control [10]. When an individual’s perceived behavioral control reflects the degree of actual control when engaging in a behavior, this perceived behavioral control can directly influence pursued engagement in the behavior. The individual’s intention to perform the behavior is an indication of the extent to which the individual is ready to perform a specific behavior, while the observed response is actually performing the behavior [11].

An individual’s attitude toward the behavior is defined as the extent to which that individual perceives engaging in a specific behavior as positive or negative. The subjective norms construct is detailed as perceived social pressure whether to engage or to not engage in the specific behavior. Lastly, perceived behavioral control is defined as the perceived ability to successfully perform a certain behavior [11].

The Alive and Aware: Meningitis Prevention and Management Program utilizes the Theory of Planned Behavior to assess the factors associated with increased prevalence of meningococcal disease among college freshmen students. The program targets these students and Athens Technical College Health Center, as advocacy for preventative care practices can empower students to make informed choices by educating them about long-term impacts, conditions, and treatment options associated with meningitis. This is also significant in that health clinic board members and legislators are well updated with current knowledge regarding the MenACWY and MenB vaccines and the recommended guidelines to improve health outcomes [5].

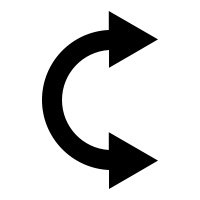
Table 1. Theory of Planned Behavior Constructs

|  |  |
| --- | --- |
| Construct | Definition and Application |
| Attitude | Attitudes are influenced by a person’s behavioral beliefs, which in turn shapes their attitudes towards specific behaviors. These attitudes demonstrate whether an individual perceives a behavior with a positive evaluation or a negative evaluation. When discussing the Alive and Aware: Meningitis Prevention and Management program, students’ attitudes towards improved knowledge surrounding meningitis-related health behaviors and preventative practices, knowledge regarding the risk of contracting and developing meningitis due to exposure in certain settings, and improved communication between students and their providers are all targeted through educational material and resources. |
| Subjective Norm | Subjective norms are influenced by an individual’s normative beliefs, cultural norms, and social norms within their current environment. This construct outlines whether an individual or a group of people will support or disapprove of a particular behavior. These are determined by perceived social pressures from surrounding individuals for a person to behave in a certain manner and that their motivation for that behavior comply with these individuals’ views. Parents, friends, partners, and classmates can heavily influence the individual to receive the MenACWY vaccine and practice hygienic behaviors, as well as follow protocol to continuously identify symptoms and participate in screenings. |
| Perceived Behavioral Control | Perceived behavioral control is the perceived ease or difficulty when performing a specific behavior. Often, perceived behavioral control is influenced by barriers, such as costs and time constraints. This is significant in that individuals will express concern over the cost of the MenACWY vaccine, medication, therapy, and other treatment options. This may influence providers at health centers and local clinics to adjust their costs so that it is more feasible for students to receive treatment and vaccines. For our program, perceived behavioral control highlights the skills and competencies of a college freshman handling a task or decision making, demonstrating that self-efficacy has a significant effect on the capability of a person to perform task behavior. This is significant in that perceived behavioral control can directly affect the intention to follow the preventive measures of meningitis. |
| Intention | Behavioral intentions are motivational factors that influence the target behavior, essentially the individual’s readiness to implement a particular behavior, based on the attitudes, subjective norms, and their perceived behavioral control. When addressing these three determinants through the presentation, speaker panel, and educational material, this intervention works towards an increased likelihood of performing a specific behavior, such as exciting a sense of urgency within the college students to practice hygienic behaviors among various social settings. For example, an individual may feel more motivated to maintain a distance when surrounded by a large group of people or sanitizing their materials when sharing with other students. |
| Behavior | Behavior is the outcome or the actual observed response of the situation. The other constructs work to influence the behavior to produce more favorable outcomes. The Alive and Aware: Meningitis Prevention and Management Program aims to increase the knowledge of freshmen college students to practice preventative care and hygienic behaviors when around other students, and to encourage these students to participate in screenings and receive the MenACWY vaccine along with other treatments to reduce the potentially deadly impacts of meningitis. Another example of behavior within this program is to overall reduce the prevalence rate of meningococcal disease among college freshmen college students. |

The Theory of Planned Behavior is significant and complex in its appeal to predict the individual’s behavior at a specific time and place through the outlining of these five constructs. TPB adds towards the concept of perceived behavioral control, originating from self-efficacy and social cognitive theory [4]. Expectations such as motivation, performance, and feelings of frustration associated with repeated failures determine effect and behavioral reactions [21]. Self-efficacy is distinguished by an individual being able to successfully execute the behavior required to produce certain outcomes [21]. In this theory, self-efficacy is highlighted through perceived behavioral control, and is significant as it is a precondition for behavioral change, heavily influenced by an individual’s confidence in their ability to perform a certain behavior [10]. Self-efficacy contributes to explaining the unique relationships between beliefs, attitudes, intentions, and behavior [10]. For example, students may feel that they have no control over contracting meningitis from another individual due to its inevitable nature and methods of transmission, so they are less likely to practice a certain health behavior as a result to losing their motivation and confidence. However, this program serves to instill early knowledge and heightened awareness regarding the dangers and preventive measures needed to be taken to reduce the risk of contracting meningococcal disease, especially during outbreaks [8]. This adequate knowledge can allow freshmen college students to perceive themselves at risk of infection which may lead them to engage in preventative practices to protect their overall health [8].

This program aims to effectively improve the rates of meningitis infection among freshmen college students by targeting their attitudes and perceived behavioral control through educational modules, presentations, hygienic practice training, and awareness towards vaccination and treatment options [12]. The knowledge about meningitis in the produced curriculum details, but is not limited to, meningococcal disease, the routes of transmission, risk and severity of infection, details on symptoms, effectiveness of vaccines, updates on confirmed cases and death, potential treatment for infection, prevention strategies, experience in handling meningitis while in college, and information on outbreak in local area [12]. The curriculum also discusses how a lack of knowledge about meningitis can worsen the recovery process for these students by increasing stress, depression, and anxiety [18].

**Theory of Planned Behavior Framework for Alive and Aware: Meningitis Prevention and Management**



Attitudes:

Students’ attitudes towards improved knowledge about meningitis-related health behaviors and preventative practices regarding the risk and exposure in certain settings, and improved communication through educational material and resources.

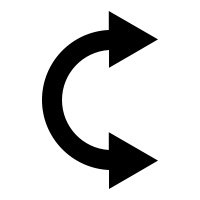
Subjective Norms:

Subjective norms include parents, friends, partners, and other classmates.

Behavioral Intentions:  
Whether or not college freshmen students intend to practice preventative care and hygienic practices, participate in screenings, and receive the MenACWY and MenB vaccines

Behavioral Control:

The prevalence of meningitis among college freshmen is reduced, the knowledge of preventative care and hygienic behaviors when around other students is increased, and the students’ participation of screenings and receiving the MenACWY and MenB vaccines are increased



**--- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - >**

Perceived Behavioral Control:

The perceived behavioral control would include costs, time constraints, skills, and competencies.

Intervention

This intervention will be delivered in four parts by two health educators from the Department of Health Science at Athens Technical College. Part I and II detail the pre-implementation and planning activities will take place. The Department of Health Science will implement the Alive and Aware: Meningitis Prevention and Management as an online educational program with modules in which all freshman will need to complete. In Part I, freshman will be notified to complete this section by the first day of classes in their first semester at Athens Technical College. This section of the online program will focus on what meningitis is, what are the dangers of developing meningitis, how to practice preventive care, and encourage the students to get recommended vaccinations.

In Part II, freshman will be notified to complete the remainder of this online program by first day of midterms in their first semester. This section of the online program will concentrate on proper hygiene practices during peak season for meningococcal disease. This section will discuss how there are various strains of Neisseria meningitidis bacteria and how certain strains are more prominent during peak season. This remainder will educate the students about preventative care practices during the winter and spring, which hare peak seasons for meningococcal disease, while also discussing the numerous vaccines based on meningococcal serogroups. Students will complete knowledge-based completion tests after finishing the modules to assess and track their knowledge and understanding of meningitis-based dangers, hygienic practices, medication and vaccinations, alterations in their lifestyle, adjustments to campus life, and interactions with other students and community groups.

For Part III, the Department of Health Science will recruit administrative staff to distribute a pamphlet to each freshman student before or after the freshman orientation at the beginning of the semester. The pamphlet will detail information about meningitis and meningococcal disease, how to practice preventative care, especially around large student groups, and recovery and follow-up care after meningitis and meningococcal septicemia. It will also encourage students to visit their health center and provide information, such as opening and closing times and location of the health center.

For Part IV, a panel at the freshman student orientation will be hosted to increase awareness among students regarding the dangers of meningococcal disease, preventative care, hygienic practices, and encourage screenings and vaccinations. We will recruit a speaker from National Meningitis Association to inform students on the organization and the disease, the Athens Technical College Health Center to discuss preventative measures, the Athens-Clarke County Health Department to discuss changes being made to combat the disease, and an anecdotal testimony from someone affected by meningococcal disease to reinforce the danger of the disease. The Athens Technical College Health Center will send out an email to the freshman student body to advertise the program and encourage attendance: once a week before freshman orientation and once the day of orientation. The Athens Technical College Health Center will produce and distribute pamphlets after the orientation program that encourages students to visit the Health Center in order to get screenings and vaccinations. The pamphlet will also contain information on the Health Center for the benefit of the students.

Table 1. Components and Major Activities of the Four Parts

|  |  |
| --- | --- |
| Part I: Pre-implementation and Planning Activities  January 2020 – May 2020 | * What meningitis is * What are the dangers of developing meningitis? * How to practice preventive care * Encourage the students to get recommended vaccinations * This will be done virtually before the semester begins |
| Part II: Online Education  June 2020 – August 2020 | * Freshman must complete the remainder of this online program by first day of midterms in their first semester * Determine proper hygiene practices during peak season for meningococcal disease: winter and spring seasons. * Discuss how there are various strains of *Neisseria meningitidis* bacteria and how certain strains are more prominent during peak season. * Educate the students about preventative care practices during peak season, while also discussing the numerous vaccines based on meningococcal serogroups * Students will complete knowledge-based completion tests after finishing the modules to assess and track their knowledge and understanding of meningitis-based dangers, hygienic practices, medication and vaccinations, alterations in their lifestyle, adjustments to campus life, and interactions with other students and community groups. |
| Part III:  August 2020- September 2020 | * The Department of Health Science will recruit administrative staff to distribute a pamphlet to each freshman student during orientation * The pamphlet will detail information about meningitis and meningococcal disease * How to practice preventative care, especially around large student groups * Recovery and follow-up care after meningitis and meningococcal septicemia * Students are encouraged to visit their health center and provide information, such as opening and closing times and location of the health center. |
| Part IV  September- November 2020 | * Organize a presentation and a panel at the freshman student orientation to increase awareness among students regarding the dangers of meningococcal disease, preventative care, hygienic practices, and encourage screenings and vaccinations * We will recruit a speaker from National Meningitis Association to inform students on the organization and the disease * We will recruit the Athens Technical College Health Center to discuss preventative measures * We will recruit the Athens-Clarke County Health Department to discuss changes being made to combat the disease * We will recruit an anecdotal testimony from someone affected by meningitis |

**Implementation Plan**

The intervention will be conducted through the partnerships with the Athens Technical College Health Center, the Athens-Clarke County Health Department, local Athens clinics, and the Department of Health Science at Athens Technical College to deliver the most effective and communicative sources of information regarding meningitis prevention and treatment to the freshman college students. The investors for the program, the Program Director, the Health Educators, and the Data Analyst will be recruited to conduct this program, due to their education, experience, and communication with the students. The intervention will be delivered through both online resources and in-person presentations. Factors influencing meningitis outbreak-related practices will be identified among freshmen college students and areas around the college campus through the administration of educational online modules with completion tests. Program presentations and panels during freshman orientation regarding the health and safety of students and their susceptibility of contracting meningitis will be delivered. We must maintain consistent

communication between Athens-Clarke County Health Department and Athens Technical College Health Center to measure the prevalence rate of meningitis among college freshman students, and whether the program implementation is effective or not. Space needs require the usage of a large platform or auditorium within the college campus to deliver the presentation and conduct the panel. Each participating student will need to have access to completing the educational modules and curriculum using computers, or the program directors will arrange for them. The program’s duration is 24 months, beginning in January 2020 and ending in December of the following year.

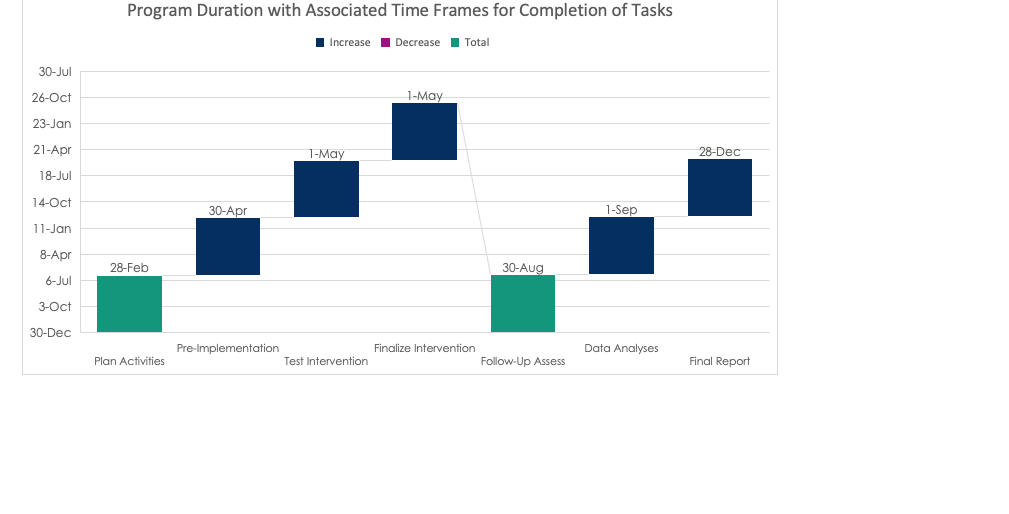


Chart 1. Program Duration with Associated Time Frames for Completion of Tasks

**Evaluation Plan**

Evaluation Goal

The goal of this evaluation is to determine the effectiveness of the Alive and Aware: Meningitis Prevention and Management program in reducing the overall prevalence of meningitis among freshman college students in Athens Technical College in Athens, Georgia. This will evaluate the accomplishments towards the Alive and Aware: Meningitis Prevention and Management program’s goals and objectives. Additionally, this evaluation will analyze the operations of the program. The evaluation will identify which areas are being conducted most efficiently, but also which gaps need improvement to be successful in future replications [16].

Formative Evaluation

* Have preliminary meetings with participant focus groups to assist in the development and cooperation of the program. This will allow the team to categorize potential needs for freshman college students based on meningitis survivors. This will be used to identify overall themes for use among the focus groups.
* Have initial meetings with local and community partners to be conducted early on in the program. This will ensure clear expectations for partnership involvement, operations of the program and how they will be conducted, and the responsibilities of the partners. These meetings will occur individually, occurring in early August, with the Department of Health Science of Athens Technical College Administrative Staff, Athens Technical College Health Center, and National Meningitis Association [5].
* Have initial meetings with the investors and stakeholders to be clear on expectations, and that educational materials and resources are provided

Process Evaluation

* This evaluation will be conducted regularly throughout the program using post-module quizzes and surveys, to assess and track the students’ knowledge and understanding of meningitis-based dangers, hygienic practices, medication and vaccinations, alterations in their lifestyle, adjustments to campus life, and interactions with other students and community groups. This addresses program objectives that measure if the students have increased knowledge about risks of exposure to meningitis due to social settings and large areas.
* These quizzes will also serve as means to track the correlation between the educational modules and the health outcome being measured [17]. This will address program objectives that discuss the development and online website and the educational modules for freshman college students and faculty. The effectiveness of the website and modules will be measured here.
* Surveys will be sent out after students complete every five online modules and after attending each panel session. These will investigate students’ comfort and comprehensibility when students are participating, and the competency of educator when discussing meningitis-related health behaviors and prevention strategies, and suggestions or concerns that students need to express to improve the efficiency of the program.
* College freshman participation will be measured through attendance taken at the conducted panels for both Health Educators to determine participant attendance and effective marketing of the program.
* Additionally, college freshman participation will be measured by the website by tracking the completion of the modules and the viewing of uploaded resources, curriculum, and statistics. This is to determine participant attendance.
* When reaching the midpoint of the evaluation, there will be a data outline detailing the progress of the first health panel completed, tracking of completed educational modules, and the post-module and post-panel surveys completed to demonstrate to the program investors and the stakeholders the effectiveness of the program [5].
* Throughout the program, administrative staff, along with the program team, will revise and check that all program operations are running as planned and expectedly.
* The students will be asked about how well the Health Educators were received by the students, if the Health Educators were beneficial in expanding their awareness regarding meningitis prevention and management, if they were comprehensible and organized, if they were succinct and professional, and if they covered necessary and sought out topics efficiently [22].
* Were the online educational modules effective in delivering materials and resources to those who had access to use it? Are the students able to access the modules feasibly, securely, and in a timely manner?
* At the end of the program, students will participate in focus groups conducted by the Project Director to determine the overall effectiveness of the program. The focus group will be prompted with questions to discuss the quality improvement and suggestions for future implementations of the program.
* Successful components of the program will be identified so that the program can be replicated in the future.

Impact Evaluation

* This program will be assessed using pre-program surveys and post-program surveys. This will be administered through SurveyMonkey software, reaching out to the students through their email. This is to assess Goal 1: By the end of the program, 50% of students will be knowledgeable on meningitis prevention and management. This will also be used to address objectives that detail how this program (1) aims to increase knowledge about risks of exposure to meningitis due to social settings and large areas, (2) increase knowledge and familiarity among students regarding prevention strategies and management, treatment and therapies available, and vaccination available, and (3) increase the students’ self-efficacy to communicate with their physician [17].
  + Short Term Outcomes:
* Does Athens Technical College demonstrate an increase in their students referring a variety of prevention strategies, alternative medicine, techniques on improved healthy living for meningitis survivors?
* Do students feel they have acquired increased awareness about exposure to meningococcal disease, especially around large student groups [23]?
* Do the students feel they have acquired increased knowledge regarding preventative care, proper hygiene practices, and alterations in their college lifestyles?
* Do the students feel they have acquired increased knowledge regarding preventative care during peak seasons?
* Do the students feel they have improved attitudes regarding vaccination and medication for meningitis?
* Do the students feel they have improved in their awareness involving follow-up care after meningitis and meningococcal septicemia [23]?
* Did the program improve the students’ self-efficacy to regularly communicate with their providers regarding their health practices, potential signs and symptoms, and managing current conditions related to meningitis with their physicians?
  + Long Term Outcomes:
* Did the program improve patient and provider communication regarding screening, treatment, and therapy?
* Did the program increase self-efficacy of students to regularly get screenings and wellness checks?
* Did the program lower mortality and morbidity rates among college freshmen due to meningitis?
* Reduced prevalence rates of meningococcal disease among freshman college students by 60% at least 2 years post-intervention?

Outcome Evaluation

* To address Goals 2 and 3, physician-patient communication regarding meningitis prevention, the students’ survey answers will be analyzed from before and after the program, comparing the conditions and the effectiveness of the program [18].
* To address objectives that discuss the immunization rates for meningitis among freshman college students and decrease affiliated morbidity and mortality, the students’ survey answers will be analyzed from before and after the program, comparing the effectiveness of the program and the current prevalence of meningitis and affiliated mortalities and morbidities [18].
* Additionally, the participants feedback will be utilized to address if they have acquired knowledge and familiarity among students regarding prevention strategies and management, treatment and therapies available, and vaccination available.
* Through statistical analyses, the Project Director will measure if the Alive and Aware: Meningitis Prevention and Management program reduced the overall prevalence of meningitis among freshman college students in Athens Technical College between the first and last educational panels.

Summative Evaluation

* The students’ feedback will be used to objectively and analytically evaluate the program. These students will receive a pre-program survey before the first educational online module and panel and post-program survey after the final educational module and panel of the program, calculated by the Data Analyst. The feedback will be compared with the students’ answers at the end of the program, along with performing statistical analyses and data collection for the final report.
* The surveys will ask the students questions regarding their current knowledge of meningitis awareness, exposure to the disease, prevention strategies, and treatment therapies available as resources. The answers will be compared with the students’ answers at the end of the program, along with conducting statistical analyses and assessment for the final report.
* The survey questions will ask the students questions based on their attitudes towards meningitis prevention and access to the MenACWY and MenB vaccines [8]. The students’ answers will be compared with their answers at the end of the program, along with conducting statistical analyses and assessment for the final report.
* The survey questions will ask the students regarding the atmosphere of openly discussing the risk factors due to exposure from the bacteria and virus. These answers will be compared with the students’ answers at the end of the program and will be utilized in determining results for the final report.
* Statistical analyses will be conducted to determine the significance of the program. This will measure the correlations between the educational modules, the panels, and the educational resources provided and the overall prevalence rate of meningitis among freshman college students, done by the Data Analyst.
* The pre-program surveys and the post-program surveys will additionally be used to determine how effective the program was, measuring the trends of attitudes and knowledge demonstrated.

Evaluation Design

Investor/Stakeholder Requirements

* Athens Clarke County Health Department will receive the data analyses, the statistical analyses, and a report of the overall health outcomes that discusses the effectiveness of the program.
* The investors and the stakeholders will receive the data analyses, the statistical analyses, and a report of the overall health outcomes to determine whether to implement and establish this program in other areas.
* These investors will receive analyses regarding the trend in attitudes, increased knowledge of meningitis prevention and management, and self-efficacy to promote physician-patient communication and treatment options.

Evaluation Design

* The pre-program and pre-module surveys and the post-program and pre-module surveys will be used to evaluate the program. The trends among the changes in attitudes, knowledge of meningitis prevention and management, and self-efficacy reported from the students will aid in determining the effectiveness of the program [7].

|  |  |  |  |
| --- | --- | --- | --- |
| Goals and Objectives  Table 1: Program Evaluation of Goals and Objectives | Program Staff | Evaluation Period | Evaluation Measures |
| Goal 1: By the end of the program, 50% of students will be knowledgeable on meningitis prevention and management. | Project Director and Data Analyst | Impact Evaluation: Measured in early February 2020 and early November 2021 | Pre-program and post-module surveys evaluating hygienic practices, risk factors associated, and treatment options available with exposure to meningitis |
| *Objective i*: Increase knowledge about risks of exposure to meningitis due to social settings and large areas | Project Director and Health Educators | Impact Evaluation: Measured in early February 2020 and early November 2021  Process Evaluation: measured December 2021-This determines whether the program curriculum and online modules have been implemented as intended and resulted in a reduced rate of meningitis cases. | Pre-program and post-module surveys that analyze the knowledge of and attitudes towards risk and associated topics |
| *Objective ii:* Increase knowledge and familiarity among students regarding prevention strategies and management, treatment and therapies available, and vaccination available | Project Director and Health Educators | Impact Evaluation: Measured in early February 2020 and early November 2021 | Pre-program and post-module survey that examines the knowledge of prevention strategies and management, treatment and therapies available, and vaccination available |
| *Objective iii*: Develop and online website comprised of educational modules for freshman college students and faculty | Project Director, Health Educators, and Data Analyst | Formative Evaluation: January-February 2020  Process Evaluation: November -December 2021 | The website developer will be tested and launched for the modules to be accessible and properly working properly online  Continuous monitoring of the website and the educational modules, and access and security to the site |
| *Objective iv*: Host a panel at the freshman student orientation to increase awareness among students regarding the dangers of meningococcal disease, preventative care, hygienic practices, and encourage screenings and vaccinations. | Health Educators | Impact Evaluation: January-February 2020 | Documentation of each educational panel delivered  Pre-program and post-module survey that examines the knowledge of prevention strategies and management, treatment and therapies available, and vaccination available |
| Goal 2: Improve physician-patient communication regarding meningitis prevention, potential signs and symptoms, treatment options, and vaccination | Project Director and Health Educators | Outcome Evaluation: Measured in early February 2020 and early November 2021 | Contacting patients to measure their willingness to discuss risk factors associated, preventative practices, and treatment and therapies |
| *Objective i*: Increase the students’ self-efficacy to communicate with their physician. | Health Educators and Data Analyst | Impact Evaluation: Measured in early February 2020 and early November 2021 | Pre-program and post-module surveys evaluating hygienic practices, risk factors associated, and treatment options available with exposure to meningitis |
| *Objective ii*: Provide educational curriculum and modules for the students on how to discuss their concerns with their physician -participant attendance and qualitative data analyzed for improvements in physician-patient communication | Project Director, Health Educators, and Data Analyst | Formative Evaluation: January-February 2020  Process Evaluation: November-December 2020 | The website developer will be tested and launched for the modules to be accessible and properly working properly online  Continuous monitoring of the website and the educational modules, and access and security to the site |
| *Objective iii*: Students will report to the Athens Technical College Health Center if they test positive for meningitis and Health Center will keep track of how many positive cases they test. | Data Analyst | Process Evaluation: November-December 2020 | Documentation of specific cases for infection, maintaining contact with program staff  Inventory review of resources and the educational modules, and access and security to the site |
| Goal 3: Increase rates of immunization/vaccination among college freshman students by 15% by the end of the 2-year period. | Project Director, Health Educators, and Data Analyst | Outcome Evaluation: Measured in early February 2020 and early November 2021 | Review records of educational intervention sessions, participation, and resources  Revise the reports health educators outlining all content covered |
| *Objective i*: Increase knowledge about the MenACWY and MenB vaccines vaccination for meningitis, and their potential risks and benefits | Health Educators | Outcome Evaluation: Measured in early February 2020 and early November 2021  Process Evaluation: measured December 2021- This determines whether the program curriculum and online modules have been implemented as intended and resulted in a reduced rate of meningitis cases. | Review records of educational intervention sessions, participation, and resources  Revise the reports health educators outlining all content covered |
| *Objective ii*:  Recruit a speaker from National Meningitis Association to inform students about the organization and the disease, while discussing preventative measures, changes being made to combat the disease, and an anecdotal testimony from someone affected by meningococcal disease to reinforce the danger of the disease. | Project Director and Health Educators | Outcome Evaluation: Measured in early February 2020 and early November 2021 | Documentation of specific cases for infection and death, maintaining contact with program staff  Review of resources and the educational modules, and access and security to the site |
| *Objective iii*: The program health educators will produce and distribute pamphlets after the orientation program that encourages students to visit the Health Center in order to get screenings and vaccinations. The pamphlet will also contain information on the Health Center for the benefit of the students. | Project Director and Health Educators | Impact Evaluation: Measured in early February 2020 and early November 2021  Process Evaluation: measured December 2021 | Review records of educational intervention sessions, participation, and resources  Revise the reports health educators outlining the curriculum all covered |

**Marketing Plan**

Target Population, Inclusion Criteria, and Exclusion Criteria

The Alive and Aware: Meningitis Prevention and Management Program is designed to impact meningococcal health involving college students, mainly to reduce the overall prevalence of meningitis among freshman college students attending Athens Technical College. Through means of education and heightened knowledge, this program aims to augment competencies and awareness regarding the detrimental effects of meningitis and reduce the overall rates of infection among the freshman student body. The Alive and Aware: Meningitis Prevention and Management Program is partnering with Athens Technical College Health Center, National Meningitis Association, and the Department of Health Science of Athens Technical College Administrative Staff, as these organizations play an active role in advocating for preventative care, proper hygiene practices, healthier lifestyles for students, and the risks associated with exposure to meningococcal disease, especially around large student groups. This program is specific to meningococcal disease and the health care that is accessible for college students, as this field is often overlooked due to misdiagnosis or delay in treatment. Due to these factors, this program targets all freshman college students, aged 18 years old attending Athens Technical College. The ideal population of our program will consist of 2,500 students. Our team aims to ultimately expand and pursue clinics and universities throughout Athens-Clarke County, to further decrease the rates of overall prevalence of meningitis among freshman college students. This program’s participants must be able to complete all the educational modules and attend the panels, with an exception towards emergencies and pressing circumstances. This programs also involves working with health educators from nonprofit organizations and health centers, so this program recognizes that these individuals may be unavailable at times.

Marketing and Recruitment Strategy:

We will establish a working relationship with our three partners within the community at the beginning of the Alive and Aware: Meningitis Prevention and Management Program.

o Athens Technical College Health Center

o National Meningitis Association

o Athens-Clarke County Health Department

These participants will be contacted by the Project Director of the Alive and Aware: Meningitis Prevention and Management Program, who will establish relationships and ensure their participation in this program. There will be primarily four methods of recruitment involved in this program:

1.) The Project Director and the investors will discuss the necessary details of the program, including the engagement of the three partners. This preliminary meeting will occur over the phone. Another meeting will occur in-person, in which the Project Director and the investors will confirm the program implementation and participation.

2.) The faculty and staff at the Athens Technical College Health Center will send out emails to the investors and to demonstrate and detail a brief overview of the program, scheduling and meetings of the educational sessions, and the significance and benefits of the program. These emails will include promotional flyers to place up around the school and throughout campus to encourage participation by investors and staff.

3.) The faculty and staff at the Athens Technical College Health Center will send emails to the freshman student body. The freshman college students will be able to view the overall program, the scheduling and meetings of the educational sessions, and the significance and benefits of the program. Additionally, the emails will include promotional flyers to place up around the school and throughout campus to encourage participation by college students.

4.) Lastly, the Project Director and health educators from the National Meningitis Association and Athens Technical College Health Center will develop and distribute promotional handouts, pamphlets, and flyers. The flyers will provide a general information and the scheduled educational panels, while the pamphlets will describe specific program curriculum. The handouts will inform the students of specific healthy behaviors and program content, while addressing how students can inquire about prevention, treatment, vaccines, and alternative therapy from their health center and physician.

We aim to maximize student participation and engagement through utilization of these recruitment strategies.

Retention Plan

The Alive and Aware: Meningitis Prevention and Management Program lasts for approximately 24 months, so we aim to advocate for the educational modules on the program’s website that includes content provided by the program for the students. The website will have designated pages for students to navigate their questions regarding program content, scheduling, location, and concerns. The website will also have a header page that discusses general public knowledge regarding meningitis and the risks associated with its exposure, especially among a college setting. Notifications will be sent out three days prior to the event, and then another the day of the educational session and panel from the Project Director. These notifications will serve as reminder emails for the students, along with pre-program surveys, post-module surveys, and follow-up surveys to these same students. For better attendance for the educational panels, this plan also includes to provide food from a local restaurant in Athens-Clarke County. The Project Director will follow-up with program students and participants to ensure that the program is delivering appropriate content and materials to the students. To encourage participation, the Project Director and Health Educators will emphasize the benefits and significance that the program offers. Additionally, this program will influence and emphasize the health risk of meningococcal disease and comorbidities associated, prevalent among college students and young individuals within the community.

**Resources and Budget**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Project Title:** | Alive and Aware: Meningitis Prevention and Management | | | | | | | | |
| **Period of Performance:** | January 1st, 2020 - December 31st, 2020 | | | | | | | | |
|  |  |  |  |  |  |  |  |  |  |
| **Personnel** | **Salary** |  | **% effort** | **Calendar Months** | **Year 1** |  | **Year 2** |  | **Total** |
| Project Director: Yoongi Min | 55,000 |  | 33% | 4.0 | 18,150 |  | 18,695 |  | 36,845 |
|  | benefits @ | 43% |  |  | 7,805 |  | 8,039 |  | 15,843 |
|  |  |  |  |  |  |  |  |  |  |
| Health Educator: Namjoon Kim | 45,000 |  | 25% | 3.0 | 11,250 |  | 11,588 |  | 22,838 |
|  | benefits @ | 43% |  |  | 4,838 |  | 4,983 |  | 9,820 |
|  |  |  |  |  |  |  |  |  |  |
| Health Educator: Taehyung Kim | 45,000 |  | 25% | 3.0 | 11,250 |  | 11,588 |  | 22,838 |
|  | benefits @ | 43% |  |  | 4,838 |  | 4,983 |  | 9,820 |
|  |  |  |  |  |  |  |  |  |  |
| Data Analyst: Hoseok Jung | 40,000 |  | 15% | 1.8 | 6,000 |  | 6,180 |  | 12,180 |
|  | benefits @ | 33% |  |  | 1,980 |  | 2,039 |  | 4,019 |
|  |  |  |  |  |  |  |  |  |  |
| **Total Personnel** |  |  |  |  | **66,110** |  | **68,093** |  | **134,202** |
|  |  |  |  |  |  |  |  |  |  |
| **Equipment** |  |  |  |  | **5,200** |  | **-** |  | **5,200** |
| Laptop X4 |  |  |  |  | 4,000 |  |  |  |  |
| External hard drive for data storage |  |  |  |  | 200 |  |  |  |  |
| \*R Statistical Programming Software |  |  |  |  | 1,000 |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
| **Travel** |  |  |  |  | **-** |  | **-** |  | **-** |
| Foreign |  |  |  |  |  |  |  |  |  |
| Domestic |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
| **Supplies** |  |  |  |  | **1,263** |  | **-** |  | **-** |
| Marketing (Flyers/Pamphlets) |  |  |  |  | 263 |  |  |  |  |
| Educational Sessions and Panel |  |  |  |  | 1,000 |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
| **Other Expenses** |  |  |  |  | **6,000** |  | **-** |  | **-** |
| Website Domain |  |  |  |  | 3000 |  |  |  |  |
| Website Development Costs |  |  |  |  | 3000 |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
| **Total Direct Costs** |  |  |  |  | **78,572** |  | **68,093** |  | **139,402** |
| Indirect Costs @ | 10% |  |  |  | 7,857 |  | 6,809 |  | 13,940 |
| **Total Costs** |  |  |  |  | **86,430** |  | **74,902** |  | **153,343** |

Program Personnel and Budget Justification

Project Director: Yoongi Min – 4.0 calendar months (33% effort) over 1-2 years

Yoongi Min is a certified epidemiologist with a PhD in Epidemiology and Biostatistics. He will serve as the is the Director of Alive and Aware: Meningitis Prevention and Management and Respiratory Diseases (NCIRD). He has 7 years of experience working with college-aged students, examining the role of oxidative stress on meningococcal disease and *Neisseria meningitidis* bacteria. Since beginning his public health career in 1995 as an Epidemic Intelligence Service Officer for the Centers for Disease Control and Prevention, Dr. Min has held a number of leadership posts across CDC and within NCIRD. He has served the Meningitis and Vaccine Preventable Diseases Branch in CDC’s Division of Immunology and Disease in 2020.

Dr. Min has provided critical expansion to global health and surveillance by drafting the initial recommendations for meningococcal education modules for those individuals heading to college. He has written more than 140 articles and chapters and has received numerous awards. In 2020, he received the Philip Horne Award for scientific contributions and mentorship and excellence for his program development in Research in Immunology and Viral Diseases.

Our Program Director, Dr. Min, will carry out the following tasks for the Alive and Aware: Meningitis Prevention and Management Program:

* Establish partnerships and a collective effort with Athens Technical College and the Athens-Clarke County Health Department (Year 1).
* Partner with Athens Technical College Health Center and local offices for the National Meningitis Association (Year 1).
* Outreach to various stakeholders and program partners to continue strengthening relationships (Year 1).
* Funding for the program, resources, equipment, and media and market campaigns
* Aid in the development of online educational modules (Year 1).
* Instruction of program intervention, program technical manual and online resources
* Encourage program participation (Year 2).
* Supervise the health educators and data analyst in the collection and analysis of management data for project evaluation (Year 2).

Health Educator: Namjoon Kim – 3.0 calendar months (25% effort) over 1-2 years

Namjoon Kim, our Health Educator, has an MPH in Health Promotion and a background in health education, having worked at the National Meningitis Association for the last four years. Mr. Kim received his MPH from Duke University and worked in the university for 12 years before moving to Athens to work at the National Meningitis Association. He emphasizes the significance of current research and data collection when implementing interventions targeting meningitis.

Our Health Educator, Mr. Kim, will carry out the following tasks for the Alive and Aware: Meningitis Prevention and Management Program:

* Provide strategic direction, administrative oversight and a vision for the program and well-being initiatives including prevention, early intervention, student resiliency and recovery support services (Year 1).
* Coordinate and provide oversight for the completion of online educational modules underway within Athens Technical College Health Center (Year 1).
* Administer assistance with participant recruitment, data collection, and data analysis
* Lead focus groups regarding meningitis awareness, prevention, and treatment with a focus on meningococcal disease within college students (Year 2).
* Assist with grant proposal development and institutional review board applications (Year 2).

Health Educator: Taehyung Kim – 3.0 calendar months (25% effort) over 1-2 years

Taehyung Kim is our other Health Educator and has an MPH in Health Promotion from the University of Michigan. He places significance on leading, promoting, and facilitating programs and policies that identify and respond to public health threats, specifically meningococcal disease among college campus. He provided senior scientific and executive leadership for the Division of Infectious Diseases at the University of Michigan for Medical Sciences College in the Epidemiology Department at the College of Public Health.

Our Health Educator, Mr. Kim, will carry out the following tasks for the Alive and Aware: Meningitis Prevention and Management Program:

* Establish project procedure and intervention delivery (Year 1).
* Assist in outreach and recruitment of students to participate in this program through monthly supervision (Year 1).
* Communicate among meningitis awareness panels and work with the health center to deliver campaigns and marketing through social media (Year 1 and 2).
* Work with the health center to create meningitis awareness pamphlets to be distributed to the college students (Year 1 and 2).

Data Analyst: Hoseok Jung – 1.8 calendar months (15% effort) over 1-2 years

Our data analyst, Hoseok Jung, has an MPH in Biostatistics from Emory University. He has worked as a data analyst on numerous community-based projects, utilizing his expertise in working with R, SPSS, and SAS programming software evaluation data. Mr. Jung will assist in the analyzing evaluation methods using comparative analysis to examine multiple determinants and data trends.

Our Data Analyst, Mr. Jung, will carry out the following tasks for the Alive and Aware: Meningitis Prevention and Management Program:

* Oversee data analysis from before and after the program (Year 2).
* Examine results and find trends from the student modules, participation, and the rate of infection among the college campus (Year 2).
* Interpret and evaluate the program evaluation (Year 2).
* Analyze a report for the stakeholders and project funders (Year 2).
* Analyze the success rate of the program after its two-year term (Year 2).

Resources and Equipment

Laptop: 4x

$1000 each = $4000

The laptops will 100% be used for the program only.

Four computers will be needed for data analysis by the Data Analyst, data collection and program development for both health educators, and program development and implementation for the Program Director.

External Hard Drive for Data Storage: 1x

$200

An external hard drive will be necessary will be necessary for data storage and transfer

between the Program Director and Data Analyst.

R Statistical Software: 1x

at $100.00 per month for 12 months = $1,000 for one year

R is the statistical software package will be required for running analysis of program data at the end of the two years long program.

Supplies

Printing and posting of recruitment materials will be needed to properly advertise the Alive and Aware: Meningitis Prevention and Management program before and during the program. This involves advertising and marketing campaigns of all flyers, pamphlets, and presentations for the students.

Flyers/Pamphlets: 24 months

At $10.95 per flyer/pamphlet

1 pamphlet each month for 24 months = $262.8 for two years

Educational Panel:

As part of the marketing plan for this project, the team will host meningitis panels and sessions meetings before and during the orientation week for college students. In addition, the panels serve to educate students within a community space and disseminate information about meningitis prevention among the college campus. The panel also allows educators to provide students a health education seminar, provide information about the social media intervention to parents and students, answer health-related questions and disseminate project information. The purpose of these panels is to inform students about the organization and the disease, while discussing preventative measures, changes being made to combat the disease, with an addition of an anecdotal testimony from someone affected by meningococcal disease to reinforce the danger of the disease.

Panel: 2 years

At $1000 each panel for two years = $2000 for two years

Other Expenses

Website Domain: $3000

A website domain will be purchased for the Alive and Aware: Meningitis Prevention and Management program to promote meningitis prevention resources.

Website Development: $3000

Extra funds will be set aside for any updates or extra development costs for the online portion

of the program, as well as updating the site to show the health center and the Athens Clarke Health Department who have participated and partnered with the program.

**References**

(Akase et al.; Al-Janabi et al.; Blagden et al.; Chisale et al.; Fisher et al.; Gould et al.; Kaburi et al.; Lekhak et al.; Oldfield et al.; Singhi and Angurana; Wermers et al.)

1. Konopaske, G. (2015). Schizophrenia. Retrieved December 12, 2020, from https://www.sciencedirect.com/topics/pharmacology-toxicology-and-pharmaceutical-science/schizophrenia
2. Coffey, K. (2020, February 16). Our Mission. Retrieved December 12, 2020, from https://meningitisbactionproject.org/our-mission
3. Duffy, J., Johnsen, P., Ferris, M., Miller, M., Leighton, K., McGilvray, M., McNamara, L., Breakwell, L., Yu, Y., Bhavsar, T., Briere, E., & Patel, M. (2017). Safety of a meningococcal group B vaccine used in response to two university outbreaks. Journal of American College Health, 65(6), 380-388. https://doi.org/10.1080/07448481.2017.1312415
4. Mandal, S., Wu, H. M., MacNeil, J. R., Machesky, K., Garcia, J., Plikaytis, B. D., Quinn, K., King, L., Schmink, S. E., Wang, X., Mayer, L. W., Clark, T. A., Gaskell, J. R., Messonnier, N. E., DiOrio, M., & Cohn, A. C. (2013). Prolonged University Outbreak of Meningococcal Disease Associated With a Serogroup B Strain Rarely Seen in the United States. Clinical Infectious Diseases, 57(3), 344-348. https://doi.org/10.1093/cid/cit243
5. Moore, P. J. A., Millar, B. C., & Moore, J. E. (2020). Meningococcal ACWY vaccine uptake and awareness among student freshers enrolled at Northern Ireland universities. International Journal of Adolescent Medicine and Health, 32(1), 1-12. http://proxy-remote.galib.uga.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=psyh&AN=2020-39789-014&site=eds-live
6. Blagden, S., Seddon, D., Hungerford, D., & Stanistreet, D. (2017). Uptake of a new meningitis vaccination programme amongst first-year undergraduate students in the United Kingdom: A cross-sectional study. PLoS ONE(8). https://doi.org/10.1371/journal.pone.0181817
7. La, E. M., Talbird, S. E., Kanadanian, K. V., Huang, L., Fain, J., & Srivastava, A. (2019). Cost calculator for mass vaccination response to a US college campus outbreak of serogroup B meningococcal disease. Human vaccines & immunotherapeutics, 15(4), 978-986. https://doi.org/10.1080/21645515.2018.1556074
8. Lujan, E., Winter, K., Rovaris, J., Qin, L., & Granoff, D. M. (2017). Serum Bactericidal Antibody Responses of Students Immunized With a Meningococcal Serogroup B Vaccine in Response to an Outbreak on a University Campus. Clinical Infectious Diseases, 65(7), 1112-1119. https://doi.org/10.1093/cid/cix519
9. Joanne, M. L., Soren, G., Caroline, Q., Julie, A. B., Scott, A. H., Jill, M., Shelly, A. M., Brian, J. W., Donna, M.-C., Lingyun, Y., Kim, M., David, S., Erin, B., & Joenel, A. (2020). Randomized Trial of 2 Schedules of Meningococcal B Vaccine in Adolescents and Young Adults, Canada. Emerging Infectious Diseases, 26(3), 454-462. https://doi.org/10.3201/eid2603.190160
10. Oliver, S. E., Patton, M. E., Hoban, M., Leino, V., Mbaeyi, S. A., Hariri, S., & MacNeil, J. R. Evaluation of meningococcal vaccination policies among colleges and universities - United States, 2017. In.
11. Soeters, H. M., McNamara, L. A., Blain, A. E., Whaley, M., MacNeil, J. R., Hariri, S., & Mbaeyi, S. A. (2019). University-Based Outbreaks of Meningococcal Disease Caused by Serogroup B, United States, 2013-2018. Emerging Infectious Diseases(3), 434. Retrieved from http://proxy-remote.galib.uga.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=edsgov&AN=edsgcl.582622538&site=eds-live
12. Justine Alderfer , Raul E. Isturiz & Amit Srivastava (2020): Lessons from massvaccination response to meningococcal B outbreaks at US universities, Postgraduate Medicine,DOI: 10.1080/00325481.2020.1766265
13. Domingo, P., Pomar, V., Benito, N., & Coll, P. (2013). The changing pattern of bacterial meningitis in adult patients at a large tertiary university hospital in Barcelona, Spain (1982-2010). In (Vol. 66, pp. 147-154).
14. Ateudjieu, J., Stoll, B., Nguefack-Tsague, G., Tchangou, C., & Genton, B. (2014). Vaccines safety; effect of supervision or SMS on reporting rates of adverse events following immunization (AEFI) with meningitis vaccine (MenAfriVac[TM]): A randomized controlled trial. Vaccine(43). doi:10.1016/j.vaccine.2014.08.012
15. Elba, Ghada. "Assessment of the Appropriateness of Meningitis Management And drug Utilisation: A Prospective Audit for Implementing an Antimicrobial Stewardship Program." Journal of Pharmacy Practice & Research, vol. 49, no. 2, 2019, pp. 116-122, Academic Search Complete, doi:10.1002/jppr.1458.
16. Gould, Carolyn V. et al. "Evaluation for Arboviral Infection among Children Hospitalized in Colorado with Aseptic Meningitis and Encephalitis." The Pediatric Infectious Disease Journal, no. 11, 2020, p. 382, Gale OneFile: Health and Medicine, doi:10.1097/INF.0000000000002856.
17. Fisher, Emily A. et al. "Evaluation of Mass Vaccination Clinics in Response to a Serogroup B Meningococcal Disease Outbreak at a Large, Public University—Oregon, 2015." Journal of Adolescent Health, vol. 63, no. 2, 2018, pp. 151-156, PsycINFO, doi:10.1016/j.jadohealth.2018.03.018.
18. Lekhak, Sunil Prasad et al. "Evaluation of Multiplex Pcr Using Mpb64 and Is6110 Primers for Rapid Diagnosis of Tuberculous Meningitis." Tuberculosis, 2016, p. 1, Gale Academic OneFile, doi:10.1016/j.tube.2016.05.016.
19. Akase, Iorhen E. et al. "Cryptococcal Meningitis after Art: Need for Proper Baseline Evaluation in the Era of 'Test & Treat'." Medical Mycology Case Reports, 2019, Gale Academic OneFile, doi:10.1016/j.mmcr.2019.04.003.
20. Al-Janabi, Hareth et al. "Measuring Health Spillovers for Economic Evaluation: A Case Study in Meningitis." Health Economics, no. 12, 2016, p. 1529, Gale OneFile: Health and Medicine, doi:10.1002/hec.3259.
21. Oldfield, Neil J. et al. "Rise in Group W Meningococcal Carriage in University Students, United Kingdom." Emerging Infectious Diseases, vol. 23, no. 6, 2017, pp. 1009-1011, CINAHL, doi:10.3201/eid2306.161768.
22. Chisale, Master Ro et al. "A Comparative Evaluation of Three Methods for the Rapid Diagnosis of Cryptococcal Meningitis (Cm) among Hiv-Infected Patients in Northern Malawi." Malawi medical journal : the journal of Medical Association of Malawi, vol. 32, no. 1, 2020, pp. 3-7, MEDLINE with Full Text, doi:10.4314/mmj.v32i1.2.
23. Singhi, Sunit and Suresh Kumar Angurana. "Principles of Management of Central Nervous System Infections." The Indian Journal of Pediatrics, no. 1, 2019, p. 52, Gale OneFile: Health and Medicine, doi:10.1007/s12098-017-2583-y.
24. Blagden, Sarah et al. "Uptake of a New Meningitis Vaccination Programme Amongst First-Year Undergraduate Students in the United Kingdom: A Cross-Sectional Study." PLoS ONE, no. 8, 2017, Gale OneFile: Health and Medicine, doi:10.1371/journal.pone.0181817.
25. Kaburi, Basil Benduri et al. "Evaluation of the Enhanced Meningitis Surveillance System, Yendi Municipality, Northern Ghana, 2010-2015." BMC Infectious Diseases, vol. 17, no. 1, 2017, p. 306, MEDLINE with Full Text, doi:10.1186/s12879-017-2410-0.
26. Wermers, Rita et al. "Health Care Provider Use of Motivational Interviewing to Address Vaccine Hesitancy in College Students." Journal of the American Association of Nurse Practitioners, 2019, MEDLINE with Full Text, doi:10.1097/JXX.0000000000000281.