Health Screenings for the Potential Opportunistic Infections: Tuberculosis and Pneumocystis Pneumonia Among HIV Patients and Prophylactic Treatments

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Introduction

Human Immunodeficiency Virus (HIV) affects millions of people in the world today, but unlike back in the 1980’s when the virus first became prevalent; people with HIV are living longer, fuller lives ("HIV/AIDS," 2012). Current research regarding antiviral medications and prophylactic vaccinations for pneumonia and screening for tuberculosis (TB) have aided in taking the death sentence off the table for patients with HIV. Health maintenance is the key to keeping opportunistic infections like pneumocystis pneumonia and tuberculosis from infecting the immunocompromised patient (Haburchak & Greenfield, 2011). Through guidelines set forth by the Center for Disease Control (CDC) and the World Health Organization (WHO) regarding immunizations and screenings for opportunistic infections HIV patients have the ability to sustain a healthy lifestyle and live a longer life while fighting a disease that once claimed the lives of millions thirty years ago.

Patients infected with HIV do not have the ability to fight infections like those of us who have a healthy immune system. This decrease in immunity opens them up to be infected by conditions that could be fatal, so prevention of such infections is paramount to patients infected with HIV. The two most prevalent opportunistic infections associated with HIV are tuberculosis and pneumocystis pneumonia (Haburchak & Greenfield, 2011). However, both of these diseases are preventable through prophylactic vaccination and annual screenings. The importance of maintaining optimal health among individuals with a chronic illness like HIV involves education by the healthcare provider to the patient and to the patient’s support system. Through educational seminars the patient can learn about their disease and the affects it will have on their life, in addition, the healthcare provider can use this platform to teach patients about how to prevent other diseases or illnesses from further complicating their current health status. Health promotion is the most critical aspect of a provider’s job when treating patients, especially patients who are living with a chronic healthcare problem.

Tuberculosis

The United States has seen a drastic decline in tuberculosis over the last three decades, however persons affected with HIV are at a greater risk of contracting TB due to their lack of lymphocytes, particularly their T-lymphocytes. T- lymphocyte depletion is the hallmark of the HIV infection, and with a decrease in your T-lymphocytes you are at an increased risk for infections like TB. Tuberculosis is a disease that is also characterized by a T-lymphocyte decrease. Untreated TB is still the leading cause of death among HIV-infected individuals worldwide ("Tuberculosis and HIV," 2006). This is the reason that proper annual screening for TB through a TB skin test is so important in the immunocompromised patient. The TB skin test provides the healthcare provider with a simple solution to check patients for latent TB infection, and if completed annually will provide for early detection and treatment of the disease. Since TB can prove to be fatal in an HIV-infected person the necessity for a annual screening schedule gives the patient an improved chance at heading off this disease before it can cause lethal effects to their health status.

The recommendations of the CDC and the WHO regarding TB screening for HIV patients is the annual TB skin test with follow-up 48-72 hours following the intradermal injection of purified protein derivative (PPD) to assess for any reaction. A reaction is constituted as induration of the skin surrounding the injection site of 5mm or greater in persons infected with HIV. If the patient has a positive TB skin test they will need to have a chest X-ray to further confirm whether or not they have the disease. If the chest X-ray further confirms the patients diagnosis of latent TB treatment must be started immediately due to the fact that patients who are immunocompromised tend to transition to active TB much quicker than those who have a healthy immune system ("PPD Skin Test," 2011). Since TB can drastically shorten the lifespan of a client with HIV, annual TB skin tests should be routine for this patient population.

Pneumocystis Pneumonia

Pneumonia is a common respiratory issue that affects millions of individuals worldwide annually, and typically does not lead to death in patients with a normal immune system. However, in the patient with immune deficiencies, pneumonia can prove to be fatal. HIV-infected patients have long faced the potential to contract pneumonia infections since the early 1980’s, but the inception of powerful, combination antiretroviral drug therapies in the 1990’s caused a steep decline in the number of reported pneumonia cases among this population. Antiretroviral medications were only a small part of the decline in pneumonia diagnoses in clients affected by HIV. A pneumonia vaccine was established to combat the infection in citizens over the age of 50, but proved to be an excellent prophylactic tool in immune suppressed hosts, as well (Pederson, Lohse, Ostergaard, & Sogaard, 2011).

The introduction of the pneumonia vaccine as a prophylactic agent against pneumocystis pneumonia (PCP) in patients with a decreased immunity allowed for better health outcomes in such individuals. Patients with a known HIV diagnosis saw a decline in the incidence of PCP after receiving the pneumonia vaccine thus decreasing the number of PCP-related deaths. PCP is still the leading cause of death in citizens with HIV, however the statistics suggest that those deaths are usually in citizens who were unaware of their HIV status. For patients to receive the maximum immunity from pneumonia requires that they receive two pneumonia vaccinations; the first should be administered at the time of diagnosis with HIV and the second should be administered five years following the first vaccination ("You Can Prevent PCP," 2007)(www.health.state.tn.us). The two-step vaccination process ensures that the patient receives the maximum immune benefits based on their lack of immunity against opportunistic infections that can result in death.

According to the WHO, in 2007, there were 1.37 million new TB infections worldwide among HIV-infected individuals and 456,000 deaths. However, in 2009 the world TB report showed 1 in 4 TB deaths was HIV related ("Tuberculosis," 2012). At the state level, Tennessee reported 7 cases of active TB involving HIV-infected patients out of a total of 1100 HIV-infected patients that were tested (www.health.state.tn.us). According to the UNAIDS guide of 1998 on HIV-related opportunistic diseases pneumocystis pneumonia was prevalent in 64% of HIV patients in the United States and 3% had been infected with TB. Also, according to the CDC the mortality rates for persons affected by HIV that contract PCP for the first time is 5-20% ("HIV/AIDS," 2012). Thus, indicating a need for prophylactic immunization against the opportunistic infection and education of patient’s, family members, and caregivers of persons infected with HIV.

Chattanooga CARES Clinic

Chattanooga CARES (Council on AIDS, Resources, Education and Support) a nonprofit agency, in Chattanooga, TN opened its doors in 1988. The center was established to shed light on the HIV epidemic and to provide a safe, confidential outlet for local citizens to receive care for their disease. Chattanooga CARES not only provides medical care to its clients, but also provides free HIV testing, financial aid for living expenses, mental health services, and numerous community outreach programs designed to educate and increase awareness of HIV and its impact on the local community. The primary goal of the center is to fight HIV through prevention with the hopes of finding a cure, and one day being able to close its doors (http://chattanoogacares.org/index.html).

Education Program Implementation

The need for health promotion among patients with HIV is to ensure that each individual is provided with the tools to live a life that is full and not cut short due to a disease that no longer defines a death sentence. Patients are seen in the Chattanooga CARES clinic an average of three times annually to assess the progression of their HIV disease. The fact that patients would routinely be in the clinic every four months provided a stage for education and health promotion. The health promotion and education was specifically geared toward immunocompromised patient needs and provided the client with information pertinent to their current health status. Through research and collaboration with Dr. James Sizemore, Infectious Disease physician at the Chattanooga CARES HIV clinic, a health promotion campaign was designed to give the clinic patients material to increase their odds of living a longer, healthier life.

Education Program Design

The primary goal of the health promotion program is to educate the patient’s of Chattanooga CARES, the HIV clinic serving Hamilton County and the surrounding area, about the value of receiving annual TB screenings and receiving a pneumonia vaccine and a booster five years following the initial pneumonia vaccine. Achieving this goal will involve educating the clinic staff first through a visual presentation that will also be utilized for the clinic patients and any non-clinic employees of the clinic who has direct contact with HIV clients. The program will also target individuals involved in the care of patients who are seen in the Chattanooga CARES clinic. The strategy behind a visual presentation is based on the fact that visual interest keeps the audiences attention and this is a good way to display a large amount of information broken up into distinctive segments. The visual program will also incorporate a question and answer session following each section of information. This strategy allows for the participants to further gain knowledge about the subject and to initiate discussion on each topic. Patients, family members and caregivers can use this time to voice concerns surrounding the topic or to gain a better perspective on the information being presented. In addition to a discussion/Q&A period, the conclusion of the program will include a short quiz. The quiz is designed to reinforce the information presented and to establish the audience’s comprehension of the program. HIV patients and those engaged in providing them care need to be well versed in what it takes to maintain their health outside of the patient’s daily anti-viral drug regimen. HIV is still a very serious disease that has continued to affect millions worldwide, but through proper medical care, annual health screenings and prophylactic vaccinations we will continue to see a decline in deaths caused by HIV.

Education Program Evaluation

There were five objectives that were to be achieved through the educational seminars and visual presentation concerning TB screenings and pneumonia vaccinations. The objectives were gauged toward the participant’("Tuberculosis," 2012)s ability to understand the importance of the annual TB skin test screening, and the need for the patient to follow-up with their infectious disease doctor to discuss their immunization status regarding the pneumonia vaccine. In addition, the program should have provided the participant with the knowledge that even if they have received a pneumonia vaccine in the past that they need to receive a booster vaccine five years following the initial vaccination. The main point of the presentation centered around information about the opportunistic infections tuberculosis and pneumocystis pneumonia and the importance of preventing those opportunistic infections in the immunosuppressed individual. Evaluating the participants understanding of these objectives was achieved through the discussion time after each section of information, the end of the presentation quiz, and by surveying Chattanooga CARES charts over the month of October to see if there was an increase in the number of pneumonia vaccinations and TB skin test screenings. Participants were also asked to fill out a Likert Scale Questionnaire following the programs to evaluate the presentation and the presenter. By using several methods of teaching and evaluating, it is easier to disseminate whether or not the audience has understood the information since there are many different styles of learning.

The results received from the Likert Scale Questionnaire revealed that the information presented was helpful and applicable to the participant’s current health status. The fact that the participants actively interacted in the trivia quiz and were able to accurately answer the questions asked proved that they retained information from the presentation. The survey of the Chattanooga CARES clinic charts over the month of October did not show any significant increase in the number of patients who scheduled a TB screening or a pneumonia vaccine, however, the time between the presentation and the review was less than a month. Further evaluation is needed to better determine if the outcome of the health promotion lesson made a significant impact on the client base of the Chattanooga CARES HIV clinic.

Conclusion

If I were to present this material again I would provide more time for discussion of the topic among the participants. The time spent on discussion was very valuable to the group that attended because they were able to ask questions in an intimate setting with their peers and they could talk about their own lives without prejudice because HIV affected everyone in the group either directly or as a caregiver of a person with HIV. Future presentations would require the most up to date evidence on TB skin tests and pneumonia vaccines, but the current presentations data is based on research that is applicable to the incidence of opportunistic infections associated with HIV. The only other change I considered for this project was a speaker who was an expert in the field of HIV or an HIV-infected patient who had experienced the effects of an opportunistic infection to communicate to the group the significance of maintaining their health for the best long-term outcome.

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