

Impact of Vaccine-preventable Diseases on Individuals Living with HIV

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Abstract

Individuals living with HIV are at increased risk of vaccine-preventable diseases due to their compromised immune systems. The impact of these diseases on this population is multifaceted, affecting not only their health outcomes but also their quality of life and overall healthcare burden. This review explores the implications of vaccine-preventable diseases in people with HIV, examining how their immunocompromised status makes them more susceptible to infections that vaccines typically prevent. The review also addresses the effectiveness of vaccines in this group, the challenges in vaccination practices, and the strategies for improving vaccine uptake and efficacy among HIV-positive individuals. By synthesizing current research and guidelines, this paper aims to highlight the critical need for tailored vaccination strategies and enhanced healthcare measures to mitigate the risk of vaccine-preventable diseases in this vulnerable population.

Keywords: HIV • Treatment adherence • Intervention

Introduction

Human Immunodeficiency Virus (HIV) continues to be a significant global health challenge, particularly affecting young people who are often at higher risk for both poor health outcomes and non-adherence to treatment regimens. The complexity of managing HIV requires not only medical interventions but also psychological and social support to ensure effective long-term care. One promising approach to addressing these needs is the use of support groups, which can provide emotional support, practical advice, and a sense of community. This paper explores how support groups can improve treatment adherence and reduce sexual risk behavior among young people living with HIV. By examining the mechanisms through which support groups operate and reviewing relevant research, we aim to understand their potential benefits and limitations in this context [1].

Literature Review

HIV (Human Immunodeficiency Virus) profoundly impacts the immune system, leading to increased susceptibility to infections and diseases that are typically prevented by vaccines. This compromised immune response results in both heightened risk of illness and reduced vaccine effectiveness. Understanding these dynamics is crucial for developing effective prevention strategies for individuals living with HIV. Individuals with HIV are more vulnerable to vaccine-preventable diseases due to their weakened immune systems. For example, influenza, which can usually be managed effectively with vaccination in the general population, poses a higher risk to those with HIV. The immune system's diminished ability to respond adequately to the vaccine can lead to increased severity of influenza and higher rates of complications [2].

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Pneumococcal disease, caused by *Streptococcus pneumoniae*, is another significant concern. Vaccines for pneumococcal disease are less effective in people with HIV, especially those with advanced immunosuppression. This results in a higher incidence of severe pneumococcal infections, which can have serious health implications and increase the burden on healthcare systems. Hepatitis B is also a major issue. The effectiveness of the hepatitis B vaccine can be diminished in individuals with HIV, particularly those with lower CD4 counts. As a result, there is a higher risk of chronic hepatitis B infection, which can complicate HIV management and lead to additional health problems.

The effectiveness of vaccines in individuals with HIV can be compromised due to their altered immune response. This is particularly evident in vaccines against influenza and pneumococcal disease, where immune response may be weaker in those with severe immunosuppression. Adjustments to vaccine schedules and dosages are often necessary to improve efficacy in this population. Challenges in vaccination include determining the optimal timing and dosage for individuals with varying levels of immune function. Generally, vaccines are more effective when administered during periods of higher CD4 counts and controlled viral loads. This requires careful management and regular monitoring to ensure timely and effective vaccination. Adherence to vaccination schedules can also be challenging for individuals with HIV, who may face complex healthcare regimens. Integrating vaccination into the broader management of HIV care and emphasizing the importance of vaccines can help improve adherence and overall vaccine coverage.

Tailored vaccination schedules

Adapting vaccination schedules based on the individual's immune status can enhance vaccine effectiveness. Regular monitoring of CD4 counts and viral loads helps in timing vaccinations appropriately and determining the need for booster doses.

Improved vaccine formulations

Research into vaccines with enhanced formulations or adjuvants that can boost immune responses in immunocompromised individuals is ongoing. These advancements aim to improve the effectiveness of vaccines for those with HIV.

Educational initiatives

Educating healthcare providers and patients about the importance of vaccines and the specific needs of HIV-positive individuals can increase vaccine uptake. Clear communication about the benefits of vaccination and

addressing any concerns are key to improving adherence [3,4].

Integrated CARE

Incorporating vaccination into routine HIV care can help ensure that patients receive timely and appropriate vaccinations. This involves making vaccination a standard part of the care regimen and conducting regular assessments to address vaccination needs.

Addressing barriers

Identifying and addressing barriers such as logistical challenges, costs, and access to healthcare is essential for improving vaccine coverage. Ensuring that vaccines are accessible and affordable can help overcome these barriers.

Discussion

The intersection of HIV and vaccine-preventable diseases presents significant challenges and opportunities for improving health outcomes. Individuals living with HIV are at an increased risk for infections that vaccines typically prevent, primarily due to their compromised immune systems. This discussion delves into the complexities of this issue, emphasizing the need for tailored strategies and comprehensive approaches to enhance vaccine efficacy and accessibility in this population.

Individuals with HIV face a higher susceptibility to diseases like influenza, pneumococcal infections, and hepatitis B, which are generally manageable through vaccination in the broader population. Their heightened vulnerability stems from the HIV virus's impact on immune function, which impairs the body's ability to respond effectively to infections and vaccines. For instance, the influenza vaccine may offer less protection in HIV-positive individuals, especially those with advanced immunosuppression, leading to more severe illness and complications. Similarly, pneumococcal disease remains a significant concern due to reduced vaccine efficacy in this group. This increased vulnerability underscores the importance of vaccination as a key preventive measure. Despite the challenges, vaccines can still offer significant protection, making it crucial to optimize vaccination practices for individuals with HIV. The efficacy of vaccines in HIV-positive individuals is influenced by their level of immunosuppression. The reduced immune response observed in those with lower CD4 counts or higher viral loads can diminish the effectiveness of vaccines, such as those for influenza and pneumococcal disease. This challenge necessitates a tailored approach to vaccination, where vaccine schedules and dosages are adjusted according to the individual's immune status. For example, research suggests that higher doses or additional booster shots may be required to achieve adequate protection in HIV-positive individuals. This approach requires close monitoring of immune parameters and an individualized vaccination plan, which can be resource-intensive and complex to manage [5,6].

Conclusion

The burden of vaccine-preventable diseases on individuals living with HIV is a significant public health concern. Due to their compromised immune systems, these individuals are at an increased risk of severe outcomes from infections that can be prevented through vaccination. Ensuring that people with HIV receive appropriate vaccinations is crucial for preventing complications,

reducing transmission, and improving their overall health and quality of life. Addressing barriers to vaccination, including access issues, lack of awareness, and provider recommendations, is essential in promoting effective immunization. By implementing strategies to improve vaccine uptake, we can help mitigate the health risks associated with vaccine-preventable diseases and support better health outcomes for individuals living with HIV. Ultimately, a collaborative effort involving healthcare providers, patients, public health organizations, and policymakers is required to enhance vaccination efforts and ensure that people with HIV receive the protection they need against preventable diseases. Prioritizing vaccination in this population is not only a matter of individual health but also a critical component of broader public health strategies to prevent the spread of infectious diseases.

Acknowledgement

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Conflict of Interest

None.

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