Clinical Practice Guidelines for Oral Health Management in HIV Patients

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Abstract
In 1983, the human immunodeficiency virus (HIV) was first isolated and later it was identified as the cause of acquired immunodeficiency syndrome (AIDS). The major cause for the spread of HIV is through unprotected sex, during pregnancy from mother to foetus, through contaminated needles and infected blood transfusions. Contact with infected blood or other potentially infectious body fluids from HIV seropositive individuals are the main mode of transmission. Today, with the advancement of antiretroviral therapy, patients with HIV can live longer and have a better quality of life. Nevertheless, incorporating oral care as a part of their general health care is essential. HIV-positive patients can receive routine dental care and the dentist can follow the same rule as treating conventional healthy patients. Obtaining and reviewing a comprehensive medical history may help identify patients who may require treatment plans adapted to their unique medical conditions. Dentists and all staff with direct patient contact should comply with all standard precautions for all patients.
Keywords: AIDS, Dental Treatment, Immunocompromised Patients, Oral Care, Principles, Recommendations.

1. Introduction

In 1983, the human immunodeficiency virus (HIV) was first isolated and later it was identified as the cause of acquired immunodeficiency syndrome (AIDS). The major cause of spreading of HIV is through unprotected sex, during pregnancy from mother to foetus, through contaminated needles and infected blood transfusions. Contact with infected blood or other potentially infectious body fluids from HIV seropositive individuals are the main mode of transmission.[1] Initially, HIV infection commences as a momentary acute retroviral syndrome that transitions to a chronic illness over a period of years, progressively depletes CD4 T-lymphocytes, which are critical for maintenance of effective immune function. Over time, in the absence of effective treatment, progressive depletion of CD4 T cells can result in symptomatic, life-threatening immunodeficiency known as AIDS. AIDS is a chronic disease which is characterised by a low CD4+ T lymphocyte count (<200 cells/mm3) or places individuals at higher risk of acquiring opportunistic infections.[2]

While no cure for HIV currently exists, with effective medical treatment and care, HIV replication can be suppressed and controlled. The medicine used to treat HIV is termed antiretroviral therapy. When initiated early after the infection and taken every day, antiretroviral therapy can dramatically prolong the lives of those with HIV, keep them healthy, and greatly lower their chance of transmitting the virus to others. Today, a person who is diagnosed with HIV, treated before the disease is far advanced, and stays on treatment can live nearly as long as someone who does not have HIV.[3]

Oral lesions are among the earliest and most common clinical signs of HIV, and detection of oral lesions may signal progression of HIV disease or increase in the plasma HIV-1 RNA level. Still, oral abnormalities alone are not diagnostic of HIV infection. HIV infection can be diagnosed by serologic tests that detect antibodies against HIV-1 and HIV-2 and by virologic tests that detect HIV antigens or ribonucleic acid (RNA).[4] Our team has extensive knowledge and research experience that has translated into high quality publications [1–15]

Testing begins with a sensitive screening test, usually an antigen/antibody combination or antibody immunoassay. The serologic tests currently available are both highly sensitive and specific. Rapid HIV tests enable clinicians to make a preliminary diagnosis of HIV infection within 30 minutes. Since rapid antibody assays are less able to detect HIV in the first three months after HIV-exposure, follow-up testing after a negative result from a rapid antibody assay should be conducted to verify results.[5]

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Prevalence of HIV Infection

In 1986, the first cases of HIV infection was reported in Chennai among female sex workers. Currently, global prevalence of HIV infection is 0.2% and the national prevalence is about 0.26%. There is an increase in prevalence with the highest burden in the following countries: South Africa, Nigeria, Mozambique, India, Kenya and the United States. In India, the epicentre of the epidemic lies in the states of Maharashtra and Tamil Nadu which together comprise about 50% of HIV positive cases while North-East state of Manipur accounts for 8% of all cases.[6]

Need For Dental Care in HIV Patients

With the increased availability of antiretroviral therapy, there has been a major reduction in the mortality associated with the disease, especially after the introduction of highly active antiretroviral treatment (HAART). Subsequently, HIV infection is changing into a chronic disease, so there is an increasing demand for health care, including dental care services. However, it is important that healthcare professionals incorporate oral care as part of their general health care.[7] Due to the increased awareness among the patients of their infected state, there is a concern about their oral health, which leads them to improved hygiene routines. This inturn leads to increased frequency of visits to the dentist and mostly they are for conventional dental therapy rather than for treatment of oral manifestations of HIV infection.

2. Legal Implication

Discrimination and stigmatisation among HIV patients present within the family, community, workplace and the health care system. There were studies from India that analysed the social responses to the epidemic which concluded that there was an immense negative social reaction to people with AIDS. The law in India is still underdeveloped.[8] There is no legislation to protect the rights of the People Living With HIV/AIDS. The Indian Dental Association code of ethics elaborates on the ethical obligations of dentists while dealing with patients with blood borne pathogens. There is a general obligation for a dentist to provide care to those in need and a decision denying dental care to an individual because the individual is infected with HIV is highly unethical. The confidentiality of the patient must be maintained at all times and proper consent should be obtained before sharing confidential medical or dental information to other medical or dental providers.[9]

Dental Care in HIV Patients

In general, the dental treatment of patients with HIV infection should follow the same rules for a conventional healthy patient. The dentists are required to take a proper patient's medical history which includes full medical history, current status of the disease, CD4 count, viral load, and current medications. Patients who are under antiretroviral therapy and have their infection under control can tolerate routine dental treatment well. But patients with advanced stages of disease may require certain modifications in their treatment and a specialised individual treatment plan should be developed for dental procedures.[10]

A comprehensive extraoral examination of TMJ and lymph nodes followed by intraoral examination of soft tissues and hard tissues of the oral cavity should be performed as an initial assessment for all HIV-positive patients. Over time, dentists should monitor the oral health of the patient constantly for assessing disease progression. In the presence of oral manifestations of HIV, then priority should be given to relieve pain and treat this infection. Preventive programmes such as health education, nutritional counselling and oral hygiene regimens can be taught to the HIV patients by the dentist to prevent further spread of disease. Patients can also be educated on the modifiable risk factors, such as tobacco, alcohol, or other drug use that may increase risk of oral abnormalities or complications. Prevention is even more important for HIV-positive patients, who are more susceptible to oral disease. Patients who have signs and symptoms suggestive of HIV infection should be referred to undergo investigatory tests.[11]

All dental practitioners should be able to perform routine oral care for adult or paediatric HIV patients. Majority of the HIV patients can undergo routine dental care and oral surgeries without much complications. But still, dental treatment planning must be done on an individual basis, in conjunction with consultations with the patient and their physician as appropriate.

For the HIV-infected patient, there is no data supporting the need for routine antibiotic coverage to prevent bacteremia or septicemia arising from dental procedures. In fact, patients with AIDS have shown a higher incidence of allergic reactions to antibiotics and other medications, so it may endanger the patient's health by over-prescribing antibiotics. Prophylactic antibiotics should not be prescribed routinely for the dental visit when the HIV infection is well controlled.[12]

Haematological Investigations for Dental Procedures

Due to impaired regulation of the immune system and the potential side effects of antiretroviral agents, there is also an increase in haematological disorders among these patients. A complete hemogram, platelet count, haematocrit, viral load, and CD4 count need to be investigated before initiating a dental treatment (Figure 1). HIV and antiretroviral therapies may be associated with increased tendency for bleeding, glucose intolerance and hyperlipidemia, which may be identified through

consultation with the patient and their physician. Modifications of dental treatment are required in conditions such as reduced platelet count <60,000 cells/mL, which may affect clotting, or white-blood-cell neutrophil counts <500 cells/mL, which may require antibiotic prophylaxis. However, antibiotic use may predispose patients to adverse drug reactions, superinfection and drug-resistant microorganisms, so antibiotics should be used judiciously, not routinely.[13] In select circumstances, it may be appropriate to consult with the patient's physician to determine if there are any recent abnormal laboratory findings that may require dental treatment modification or the provision of invasive procedures in a hospital setting.

Figure 1: Blood Investigations for HIV patients undergoing Dental Procedures

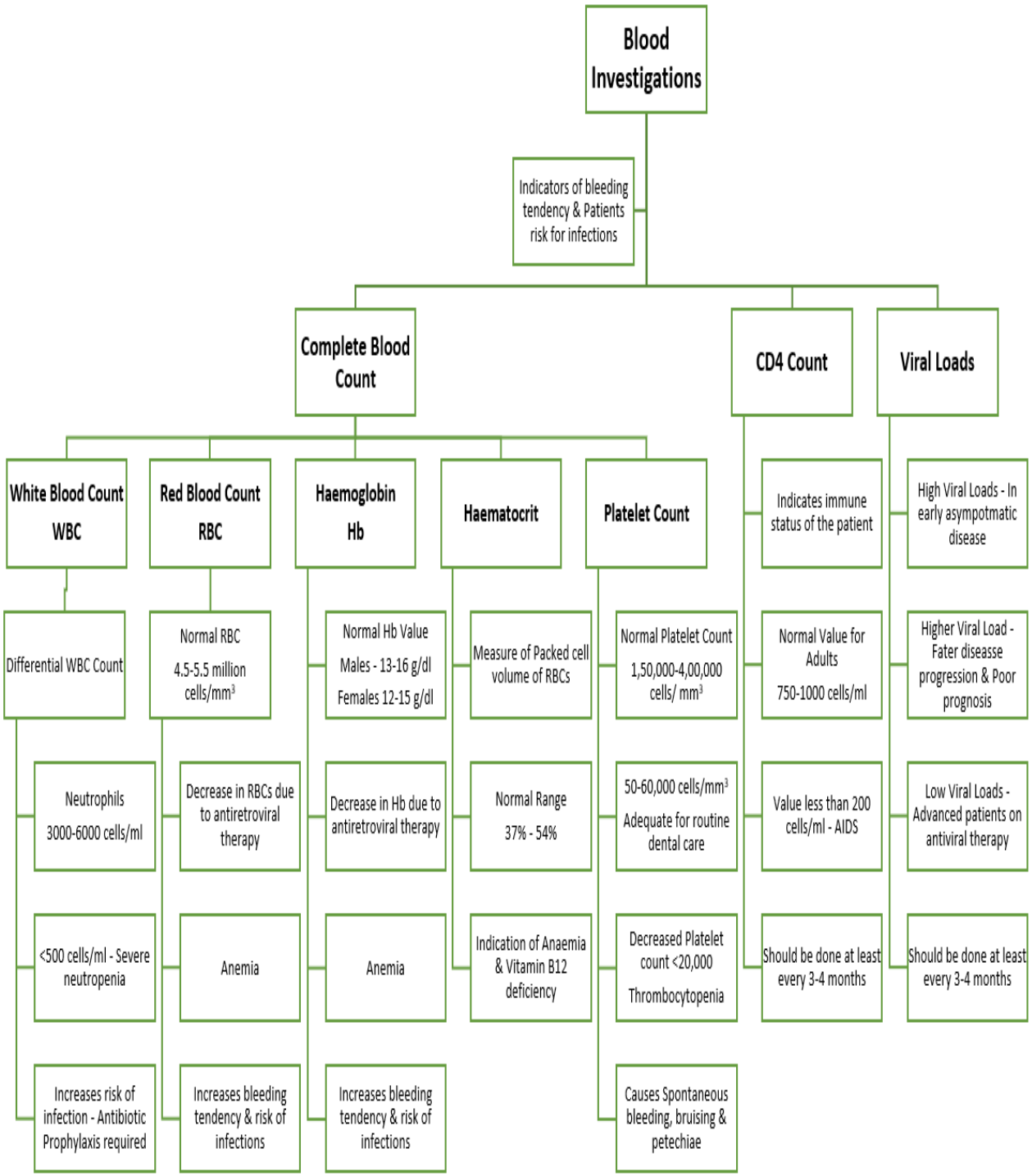

Figure 1 depicts all the haematological investigation and their normal range required for a HIV patient who needs to undergo dental procedures

Infection Control in Dental Setting

The Dentist should follow standard precautions and infection control methods with all patients, whether or not they have been diagnosed with HIV. Dental teams need to protect themselves and their patients against HIV infections during dental treatment by taking adequate measures. Since HIV is a bloodborne infection, the primary mode of preventing transmission is by avoiding exposure to blood and bodily fluids in dental care settings. However, saliva gets contaminated with blood

during dental procedure, which in turn increases the risk of HIV transmission from the contaminated saliva. Dental teams should protect themselves by wearing protective barriers such as gloves, facemasks, protective eyewear and scrubs whenever they anticipate contact with body fluids, non-intact skin, or mucous membranes.[14] Disposal of the personal protective equipment after exiting the dental clinic, and gloves must never be reused. Percutaneous injuries are the greatest occupational risk for HIV transmission and the average risk of HIV transmission through needle stick injury is approximately 0.3% per exposure. By meticulously following standard precautions, wearing personal protective equipment, having control over sharp instruments, and following safe injection practices we can greatly reduce the percutaneous injury and transmission of HIV infection. If direct contact with potentially infectious material is suspected, then it requires clinical evaluation. Oral health care providers should have thorough knowledge on protocols for immediate management of occupational exposure to HIV pathogens and post exposure prophylaxis.[15]

Invasive Dental Treatment in HIV Patients

Indications for dental extractions and other oral surgical procedures are the same for HIV-positive patients as for any other patient. A dentist who will perform dental surgery needs to consider following these precautions: a) Obtain a very detailed medical history, b) Assess the health risk, and c) Investigate drug interaction. Preoperative scaling may be performed to help reduce the risk of postoperative complications. All procedures must be performed in a manner to minimise bleeding and avoid bringing oral pathogens into the deeper fascial planes and oral spaces. The main immunological characteristic of patients with untreated HIV/AIDS is a decrease in CD4+ lymphocytes. These cells form the last barrier in the immune response of the organism. Thus, untreated HIV/AIDS individuals are highly susceptible to infections. Additionally, haematological disorders can be present too, such as: anaemia, leukopenia, and thrombocytopenia. Thus, simple procedures such as extraction and periodontal surgery can present a hemorrhagic risk in HIV/AIDS patients due to a low haemoglobin concentration and the frequent use of anticoagulant medication for prevention of thromboembolisms and cardiovascular disease. For dental surgical care, the dentist needs to check the viral load and CD4 count before being able to provide patient care without problems. Before dental extractions, the dentist needs to ensure that CD4 counts are in normal range and viral loads should be low.[16]

Platelet count (important for homeostasis), haemoglobin level, and absolute neutrophil count have direct effects on invasive dental care. Some authors are against the use of prophylactic preoperative therapy unless patients have neutropenia < 500 cells/µl or are at risk of developing bacterial endocarditis. It is also important to know if the HIV/AIDS patient is already taking antibiotics against opportunistic infections. This is especially important to determine if the HIV/AIDS patient is in a late or advanced stage of the disease. Medicinal mouthwashes are recommended before and after treatment to avoid oral infections. Thus, oral solutions containing chlorhexidine gluconate 0.12% can be used. The patient can rinse the mouth prior to the procedure and for at least three days after treatment to help reduce and prevent the proliferation of oral microbes.[17]

Functional cellular immunity is required for normal wound healing. HIV infection affects wound healing adversely. Thus, individuals with untreated or uncontrolled HIV infection are more susceptible to post-surgery complications. These problems may occur due to failure of the defence mechanisms. A risk of complications after dental surgical procedures exists, especially in patients with HIV/AIDS. Sloniak et.al. has described two dental surgical procedures in patients with HIV infection. The first patient was subjected to a simple dental extraction. The second case involved a more invasive surgical procedure because multiple teeth were removed simultaneously. In both cases, none of the patients developed postoperative complications or fever. This reinforces the fact that regular dental surgical procedures can be performed if the dentist takes some care and the patient's disease is well-controlled before the procedure.[18]

Several factors need to be considered when planning a simple surgical procedure, such as a tooth extraction. The type and location of the oral surgery, number of extractions, the amount of oral microbes present, the patient's age, and lifestyle (smoking and drinking) are factors that can influence healing in the postoperative period.[19]

Some postoperative complications can occur after a dental procedure such as dry socket, pain, infection, bleeding, and prolonged healing. According to Simon and Matee, the frequency of post extraction complications is low (1.1%). These complications are mainly due to infected sockets (48.7%), bleeding sockets (41.0%) and retained roots (10.3%). Thus, the dentist must be prepared to treat these complications that can occur in healthy patients as well as in medically compromised individuals.[20]

Finally, the following recommendations should be followed before performing any dental surgery in patients with HIV: a) Perform a complete anamnesis, b) Respect biosecurity rules, c) Be aware of possible interactions between drugs, d) Request and evaluate laboratory tests in order to verify the health state of the patient, e) Plan the surgical procedure, f) Perform an appropriate surgical technique that is less traumatic, and g) Perform a postoperative follow-up.[21]

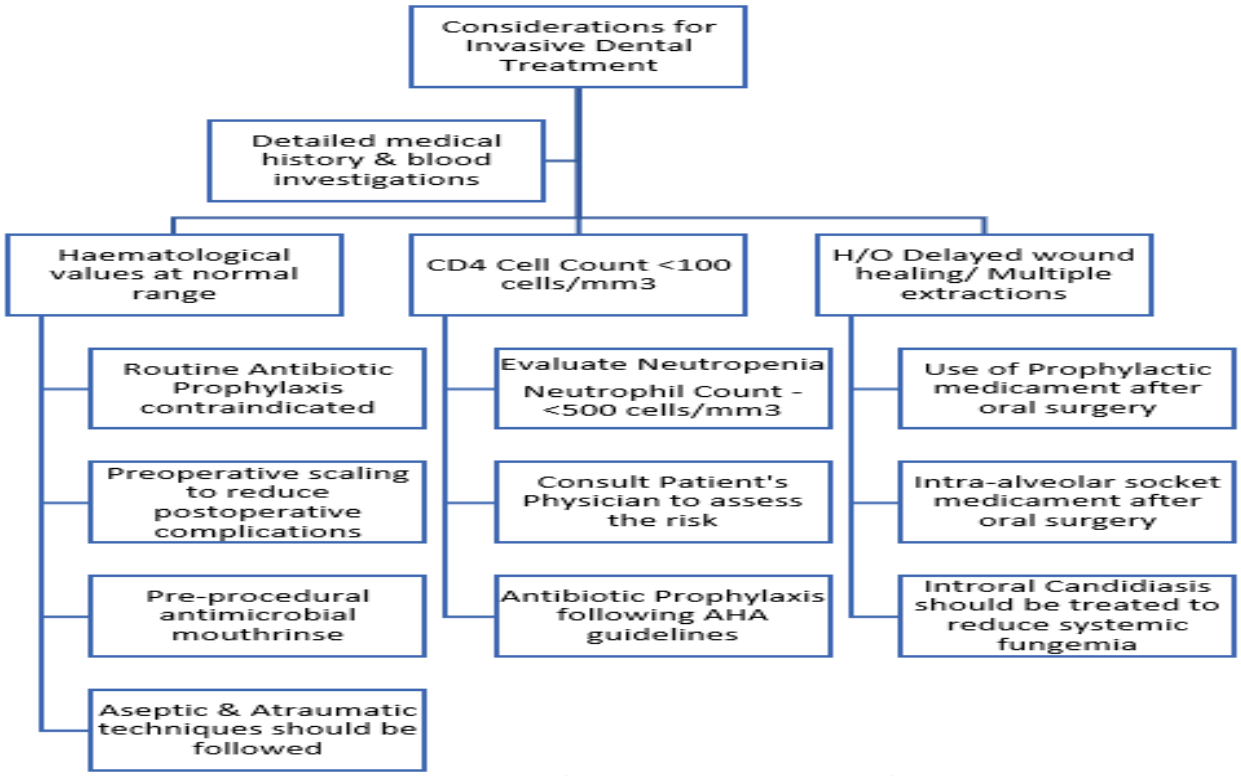

Figure 2 depicts considerations for invasive dental treatment for HIV patient

Controlled HIV-infected patients undergoing HAART may be candidates for dental surgeries and implant rehabilitation, as long as their serum HIV viral load and CD4+ T lymphocytes count are within the parameters that indicate immune stability. Because of their increased risk of manifesting dental problems, dental surgical care of patients with HIV should naturally be conducted by dentists.[22]

Sulfamethoxazole + trimethoprim is a common first-line treatment for many types of infections. An important indication of sulfamethoxazole + trimethoprim is prophylaxis against the immunosuppression-induced pneumonia caused by P. jirovecii. However, there have been cases of methemoglobinemia reported among patients with HIV infection, especially those making use of trimethoprim. Some drugs used in dentistry have a high risk of inducing methemoglobinemia, including local anaesthetics such as benzocaine and prilocaine.[23]

Figure 2: Dental Treatment Consideration for HIV patients undergoing Dental Procedures

Post Exposure Prophylaxis (PEP)

If an exposure incident occurs to material known or suspected to be infected with HIV, the incident should be reported to a supervisor (if applicable) and the exposed individual should consult with a doctor immediately.[24] Antiretroviral drugs may be prescribed as post-exposure prophylaxis (PEP) within the first 72 hours of exposure in order to help prevent HIV infection.[25] The sooner PEP is started, the more effective it is.

3. Conclusion

Patients who are HIV-positive can receive routine dental care. Obtaining and reviewing a comprehensive medical history may help identify patients who may require treatment plans adapted to their unique medical conditions. Dentists and all staff with direct patient contact should comply with all standard precautions (e.g., wearing appropriate personal protective equipment and disinfecting all equipment and surfaces after each patient) for all patients.

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Conflict of Interest

There are no conflicts of interest.

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