What are the Basic Factors in Infection Control and Prevention?

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Many aspects of dental treatment require exposure of the dentist, his staff and the instruments, to infected oral tissues, saliva, and blood. Therefore, dental healthcare professionals must make sure to make cross-infection prevention from infected patients to other patients and members of the dental team a top priority. In this article, we will discuss various factors that are related to infection control and prevention in dentistry.

Awareness and Education

The fundamental requirement in control and prevention of infection is awareness. All those involved in dental treatment operations must be well aware of where and how infection can occur, and how it can be contracted or passed on. (This knowledge will help the individuals better understand how to protect against a certain type of infection). There are three parties to it:

- **The patient**- It is the responsibility of the dental professional to educate the patient about what is infection, what habits will encourage development of dental and oral infection, and how they can discourage the development of infection.
- **The Dental Professionals**- dentists carry the overall responsibility for educating their team members regarding the importance of cross-infection control. This also includes the local, national and international regulatory bodies or institutions. They are responsible for the professional development of the juniors in the profession, modifying and improving standards and recommended processes, and guidelines. Continuous Professional Development (CPD) courses are very helpful. A continuous review process must go on to keep abreast with and harvest the benefits the scientific and industrial research and development.
- **Dental Healthcare Professionals**- are responsible for keeping their knowledge updated, through all sources available, to pass profession development courses, and to educate the patient and the staff.

Moral Commitment

Education and awareness alone are not sufficient. A professional must possess a moral and professional commitment to ensure the containment of infection, and disease. Education and awareness, will of course, help develop this commitment. A young professional will be better committed to avoiding a neglect if he or she is aware of the serious consequences of that neglect. The commitment is to protect the patient, the team members and staff, and him or herself against cross-infection.

Training

Training primarily involves two factors - education, and habit formation. That is the reason dentistry, like all other professions, lays great stress on essential training. No one can enter the profession with meeting the essentials of education and practice as specified. In addition, state licenses ensure that the person has gone through the minimum requirement for that license. Control and prevention of infection is an essential part of all levels of education and training in dentistry.

Adherence to Standards and Guidelines

The state, and the senior members of the profession are responsible for providing standards and guidelines for safe practice. In the US, the Center for Disease Control and Prevention (CDC)[1] has provided guidelines which should be followed by dental professional to practice control and prevention of cross-infection in a dental setup. All dentists must adhere to the safe practices indicated. The recommendations recognize two levels of precautionary measures.

- **Standard Precautions**- are those to be taken with all patients as a routine without even knowing the infection status of the patient. These are to minimize the risk of infection transmission from the secretions, excretions, body fluids, blood, etc., from the patient. These include:

    - **Washing Hands –** this is the most important protective measure against cross-infection in dental settings. According to the guidelines of the world health Organization (WHO), all healthcare professionals should wash their hands before seeing any patients. In addition, hands must also be washed before and immediately after performing a surgical procedure. For routine examinations, washing hands with a soap or an alcohol based detergent are sufficient. However, for surgical procedures, thorough hand scrubbing along with cleansing under the nails should be performed.
    - **Protective clothing and articles** – personal protective barriers such as the gloves, masks, and the goggles, are highly effective in preventing transmission of disease in dental settings. When gloves are worn, they form a barrier against the passage of bacteria from the patients' blood and body fluids to the hands of the dental professionals. Similarly, masks and eye goggles are highly effective against preventing transmission of airborne infections. Additionally, the occupational safety and health administration recommends that oral healthcare professionals should wear long sleeves when they use gowns as protective barriers.

- **Proper management of waste** materials produced during dental procedures, so that it does not become a source of infection for the patients as well as the dental healthcare providers.
- **Handling and disposal of needles and sharps** – many dental procedures require the use sharp surgical instruments. These sharp instruments and needles can act as excellent sources of cross-infection, if they are not disposed off properly. Dental offices should have mechanisms at place to secure the working ends of disposable instruments before discarding them. On the other hand, sharp instruments that are reusable, must be properly sterilized before using on the next patient.
- **Cleaning, decontamination, and sterilization** of the equipment involved and the working environment, using the correct disinfectants at the correct strength. Sterilization ensures that all the micro-organisms including their spores present on the surface of dental instruments are killed, thereby reducing the chances of cross-infection. Sterilization cassettes are also very helpful in arranging and securing instruments in place before they are sterilized. They are also useful in safely storing sterilized instruments without the fear of accidental contamination. Details regarding the recommended methods of sterilization can be read here. http://www.dohc.ie/publications/segregation_packaging.html

- **Special Precautions for Patients who are at Higher Risk** – these precautions should be practiced in case of patients who are suffering from communicable diseases such as HIV, Hepatitis B and C. The precautions are practiced according to the possible mode of transmission:

  - **Against Air Born Infection-** This would normally demand protection against flu, active tuberculosis, or varicella. This could involve of immunized respiratory masks, preferably in rooms with negative pressure.
  - **Against droplets-** Use of eye protection respiratory masks against whooping cough or meningococcal disease.
  - **Contact Precautions-** Use of plastic aprons and gloves during operations. These would be used, for example, against MRSA, shingles, or Impetigo.
  - **Sterilization-** extra care during sterilization would be needed when the patient is known to possess transmissible Even non-disposable instruments must be incinerated.

Cleaning the Dental Unit Waterline

Another potential source of infection in a dental operatory is the waterline. A separate waterline should be arranged for sterilization, and for those instruments which require water during use, such as dental hand-pieces, ultrasonic scalers etc. Regular inspections of the waterline are also necessary to minimize the formation of biofilms that can cause infection in patients and the dental staff.

The Legal Factor

Infection control and prevention is given a solid boost by the Safety, Health and Welfare at Work Act of 2005. Under this act, the both the employers and the employees have responsibilities. The employers must ensure appropriate training for their employees, and a safe environment in which to operate. They are to ensure the safety of both their patients and the employees against cross-infection etc. All dental practices a must display a safety statement of which employees must be fully aware. The act also requires the employees to take good care for safety of themselves and their patient. They are also required to obey the safety regulations by the employer.

History Taking

Patients may not know that they carry an infection. The dental team must take proper dental and medical history to check if there is a possibility of latent infections. A frank discussion in a friendly environment will be quite conducive. If the patient is assured of confidentiality, he or she may come out with essential information which otherwise would not be available, and ignoring which could cause serious problems. Ready questionnaires are useful to avoid chances of leaving out things, but should be complemented with discussion and direct questions. Any existing history sheets must be amended in the light of additional information so obtained.

Confidentiality

Medical history records of patients must be kept confidential. A breach can mean embarrassment to the patient, and possible legal action against those who compromise patient information. However, appropriate measures must be made to prevent transmission of infection, in case a patient has an active communicable disease.

The purpose of all these measures is that prevention and control of infection must become an attitude with all the personnel involved, and the responsibility will increase with rising authority level. Dentists are entrusted with the safety of their patients and their dental team. Therefore, they should devise a comprehensive system within their practices to minimize transmission of infection, and to create a safe environment for their patients and subordinates.