

Role of Autoclaves in Protecting Dental Health and Infection Control

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Dentistry, a surgical field involving exposure to blood and infectious materials, necessitates rigorous infection control and safety measures. India is grappling with a pressing need to enhance infection control standards in dentistry, safeguarding both patients and dental professionals from life-threatening diseases. Recent studies have revealed alarming statistics regarding Hospital Acquired Infections (HAIs), with bloodstream infections topping the list at 41.80%.

Dentists and dental professionals frequently work with patients' oral tissues, which can lead to contact with blood and other bodily fluids. This exposure is why infection control and sterilisation protocols are crucial in dental practices to prevent the transmission of diseases.

Autoclaves are a pillar in the wide range of instruments and procedures that go into infection control. These essential devices play a pivotal role in sterilising dental instruments and equipment, safeguarding both dental professionals and patients from potential risks associated with contamination.

Sterilising Marvels

Autoclaves are specialised devices designed to eradicate microorganisms, including bacteria, viruses, and spores, through the application of intense heat and pressure. Operating on the principle of moist heat sterilisation, autoclaves create an environment hostile to pathogens, effectively rendering dental instruments and equipment safe for use. This process is especially crucial in dentistry, where instruments frequently come into direct contact with patients' oral tissues, making the risk of infection transmission a genuine concern.

Dental instruments requiring sterilisation

Dental instruments requiring sterilisation encompass a range of tools critical to oral healthcare. Handpieces facilitate procedures like drilling and polishing, while scalers and curettes remove plaque; forceps and elevators aid extractions; mirrors and probes aid diagnostics; syringes and needles deliver anesthesia; impression trays create molds; and even protective gear like X-ray aprons and bite blocks for imaging require thorough sterilization to ensure infection prevention and patient safety after each use.

The Autoclave Process

Autoclave sterilisation involves a precise sequence of steps designed to eliminate microorganisms effectively. First, the dental instruments are cleaned, dried, and packaged appropriately before being placed in the autoclave. Then, the autoclave chamber is loaded with the packaged instruments, ensuring that there is adequate spacing between items to allow steam to circulate evenly. Later, steam is introduced into the chamber at high pressure, raising the temperature to around 121-134 degrees Celsius (250-273 degrees Fahrenheit). This combination of heat and pressure effectively kills microorganisms, including those resistant to other forms of sterilisation. After the sterilisation cycle, the autoclave reduces the pressure and temperature, allowing excess moisture to evaporate. This drying phase helps prevent recontamination during storage.

The Importance of Class B

Medical "B Class" autoclaves are vital for upholding infection control and patient safety in orthodontics and implant dentistry. These autoclaves are cutting-edge sterilisation devices specifically designed to cater to the unique requirements of dental practices. These autoclaves are equipped with advanced features that enable them to effectively sterilize a wide range of dental instruments, including complex and intricate tools that are commonly used in dental procedures. The "B Class" classification signifies that these autoclaves adhere to the highest standards set forth by international regulatory bodies. They are capable of achieving exceptional sterilisation results by using a combination of pre-vacuum, vacuum, and drying phases. This comprehensive approach ensures that even the most resilient microorganisms are eradicated, contributing to a safe and sanitary dental environment.

How to Choose the Best

The "B Class" autoclaves are essential devices for dental practices, as they provide comprehensive sterilization capabilities that comply with the highest infection control standards. When selecting the best "B Class" autoclave dental experts need to ensure that the autoclave meets international sterilisation standards, such as EN 13060. They also need to evaluate the size of the autoclave's chamber in relation to the types and quantity of instruments they frequently use.

The autoclave should accommodate their typical instrument load while allowing for proper air circulation for effective sterilisation. It is advisable to look for an autoclave with pre-vacuum and post-vacuum cycles. These cycles remove air from the chamber before sterilization, enhancing the penetration of steam into instrument lumens and preventing the formation of air pockets that might hinder sterilization. Other factors that can determine the selection include user interface, efficiency, speed, space, swiftness, drying functionality, maintenance support, space requirements, and budget considerations. By making a well-informed decision, dental experts can ensure effective sterilization and infection control in dental procedures while optimising practice efficiency.

Proper sterilisation of dental equipment is paramount to prevent the spread of infectious diseases. Inadequate sterilisation can lead to the transmission of bacteria, viruses, and fungi, resulting in a range of potential infections. Hepatitis B and C

viruses, HIV, and even antibiotic-resistant bacteria like MRSA pose significant risks. Cross-contamination can trigger gum infections, oral abscesses, and respiratory infections. Furthermore, improper sterilisation may lead to oral health complications and compromised immune systems. Autoclaves in such cases aid in maintaining the highest standards of healthcare ensuring effective infection control. However, it is very crucial that dental experts choose the best-in-class.

The call to action resonates among experts changing the mindset toward dental instrument sterilisation and proactively adopting “ B Class” autoclaves is paramount for patient safety and the well-being of dental professionals. As India endeavors to raise its infection control standards, the spotlight shines on the critical role of advanced autoclaves in preserving smiles and lives.

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