

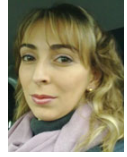
# CUSTOM-MADE MEDICAL DEVICES EXECUTION INFECTION CONTROL PROCEDURES = NARRATIVE REVIEW =



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## Introduction

Cross-infection between clinical and laboratory environments can occur in the absence of adequate biosafety procedures when carrying out Custom-made Medical Devices (CmMD).

## Objectives

Descriptive review of CmMD definition and enumeration of the main infection prevention/control methods, between clinical/laboratory environments, that can be applied to devices used when performing a CmMD.

## Methods

Search in PubMed between the years 2000-2015, with the keywords "dental prostheses", "disinfection protocols", "cross infection", "Infection control prosthodontic", "dental office", "dental impression disinfection", "sterilization", "dental laboratory." Four hundred four articles were identified. Methodology included narrative/systematic reviews and observational surveys.

## RESULTS

Twenty-six publications were selected. Infection prevention/control methods were identified for the main devices used in the several steps (impressions, records, casts) of CmMD (Figure 1) execution (acrylic and metal structures). Literature registers various methods, such as physical (autoclaving, UV, microwave, plasma), chemicals (different ranges of antimicrobial spectrum Disinfectants, by Spray and Immersion) and mixed (ultrasound) (Table 1 and 2; Figure 2).

**CUSTOM-MADE MEDICAL DEVICES (CMMD)** - medical device manufactured according to prescription (Figure 1), and qualified by its manufacturer with specific characteristics, which is intended to be used in a particular patient.

Figure 1 - CmMD, packaged for transport.



Figure 2 - Method of infection prevention/control by aspersion

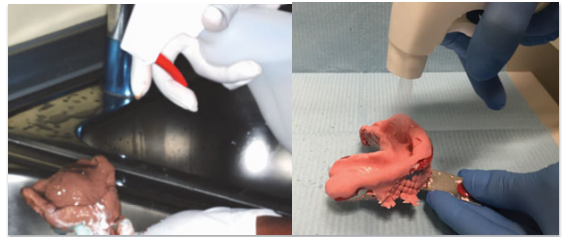


Table 2: Methods of CmMD infection control – descriptive review.

Prevention method / Infection Control	Medical devices used in performing MDCM	Orientations from literature	Bibliographic references
Ultrasounds	Titanium abutments		Cannolo (2014)
	Acrylic resin Metal structure of removable partial denture	Doesn't act in the removal of the biofilm; Use associated with disinfectant solutions	Fonseca et al. (2007) Kazuo et al. (2008)
Plasma	Titanium abutments Acrylic resin	Reduces the adherence of microorganisms	Zamperini (2010) Cannolo (2014)
Immersion	Acrylic resin	Subsequent immersion in cold water to minimize injuriously effects on the resin and metal	Kazuo et al. (2008)
	Metal structure of removable partial denture		Kazuo et al. (2008)
	Acrylic resin	Increases surface roughness	Salvia (2013) Ellakwa (2006) Da Silva (2008) Orsi (2011)
	Acrylic resin	Doesn't show any significant alterations of color or roughness	De Sousa Porta (2014)
	Acrylic resin	Discolouration when there's a daily use	Cheng et al. (2008) Nalbant et al. (2008) Salvia (2013) Da Silva (2008) Ellakwa (2006) Da Silva (2008)
	Acrylic resin	No changes in flexion endurance Effective in the removal of E. faecalis	Orsi (2011)
	Metal crowns	Prevents the increase of microbial strains in isolated applications	Orsi (2010)
	Acrylic resin Metal structure of removable partial denture	Total removal because of the existence of danger on the tissue injuries	Kazuo et al. (2008) Jagger (2002) Andrade et al (2014)
	Alkaline peroxides		

Transportation between clinical/laboratory settings should be done in container, which prevents leakage. Literature controversy over the choices that may be used when preparing for transport MD potentially contaminated and, gaps on the potential effects that these methods can produce to the used devices. Studies are needed to analyse the potential effects induced by the procedures in various stages of execution a CmMD.

Prevention method / Infection Control	Medical devices used in performing MDCM	Orientations from literature	Bibliographic references	
Autoclaving	Silicone	No dimensional change	Kollefrath (2010) Thota (2014)	
	Addition Silicone	No dimensional change	Reddy (2013) Surendra (2001)	
Microwave	Addition Silicone	Elimination of microorganisms without surface modification	Al Kheraif (2013)	
	Dental casts	The results of the same chemical disinfection	Kumar (2010) Kalabasti et al. (2013)	
UV	Addition Silicone	Without significant dimensional changes	GoDbole (2014)	
	Irreversible hydrocolloid	No change in the reproduction of details	Shambhu et al. (2010)	
Immersion	Polysulfide Addition Silicone Condensation silicone Godive	Subsequent immersion in cold water before disinfection to remove residues of saliva and blood Rinse under running water and dry after disinfection	Maranhão e Esteves (2004) Fahim (2013)	
	Polysulfide Addition Silicone Condensation silicone Godive		Maranhão e Esteves (2004)	
	Silicone Polyether Impressions compound, zinc oxid eugenol		Pinheiro (2010)	
	Addition Silicone Polysulfide Dental casts		Rampal et al. (2010)	
	Polyether		Fahim (2013)	
	Addition Silicone Polyether		Queiroz et al. (2013)	
	Irreversible hydrocolloid		No change in the reproduction of details	Shambhu et al. (2010)
	Polyether Irreversible hydrocolloid Reversible hydrocolloid Dental casts		Store in a package (10 minutes) Rinse under running water and dry before disinfection to remove residues of Saliva and blood	Maranhão e Esteves (2004) Pinheiro (2010)
	Irreversible hydrocolloid Polyether			Vidya (2007) Kaul (2012)
	Dental casts Wax		Wash and dry	

Table 1: Infection Control methods according to several medical devices used when performing CmMD, descriptive review.

## Conclusions

Infection prevention/control measures when performing a CmMD minimize cross-contamination between clinical/laboratory environments.

## Clinical Implications

Effective communication and application of appropriate biosafety procedures can promote protection of patient, professional teams involved and environments.

## References

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## Keywords

Dental prostheses  
Disinfection protocols  
Cross infection  
Infection control prosthodontic  
Dental office  
Dental impression disinfection  
Sterilization  
Dental laboratory

