



College of Dental Hygienists of Manitoba's Interpretation Guideline: Cardiac Implanted Electrical Devices (CIED) and Ultrasonic Instrumentation

Purpose

To provide current guiding principles for the use of ultrasonic instrumentation and care for clients with cardiac implanted electrical devices.

Background

- The presence of a cardiac implanted electrical device (CIED), such as an implanted pacemaker or an implanted defibrillator, indicates a compromised heart condition.
- Clients who have a CIED are provided with a device identification card by their cardiologist which contains information on the model, mode of operation, serial number, manufacturer, and date of implantation, as well as medical contacts.^{1,2,3}
- Magnetostrictive ultrasonic instruments are not generally contraindicated for use on patients/clients with a cardiac pacemaker or a cardiac defibrillator due to updated and improved shielding. However, the extent of literature on electromagnetic interference (EMI) from dental equipment is inconsistent and controversial.^{1-3,5-7} Therefore, consideration should be given to the possible effects that ultrasonic or electronic dental devices could have on patients who have CIED's.^{1-3,5-7}
- In the past, it has been stated that covering pacemakers with a lead apron may offer protection from electrical interference. Current information is still inconclusive, and it has been stated that lead apron coverage **does not** provide additional protection from EMI and that such coverage provides protection from ionizing radiation only.^{2,3}

Requirements

- Consultation with the client's cardiologist responsible for follow-up of the CIED is recommended when planning any dental hygiene therapeutic services.^{1,7} This will assist in identifying any possible contraindications with ultrasonic instrumentation.
- An extensive health history is required to obtain supplemental information about the underlying condition and type of implanted device.^{1,2,3}
- Caution must be taken when using older magnetostrictive ultrasonic scalers as they pose higher EMI risk (especially with older unshielded CIED).^{1-3,4-7}



- Care should be taken **not to** place electrical cords over the client's chest or operate the magnetostrictive hand piece (such as Cavitron®) within 6 inches of the implanted cardiac device.^{2,3}
- If the use of a magnetostrictive ultrasonic is contraindicated, hand instrumentation, sonic, or piezoelectric instrument may be used.^{2,3,6}

Applicable Legislation

According to the CDHM Competencies⁴, registrants of the CDHM have the ability to:

- identify clients at risk for medical emergency (Assessment #8)
- assess the practice environment for safety risks (i.e. for clients, the dental hygienist and others) (Assessment #59)
- assess the practice environment for emergency measures (i.e. for clients, the dental hygienist and others) (Assessment #60)
- demonstrate awareness of and compliance with the policies of the practice environment (e.g. infection control procedures, safety guidelines, emergency preparedness, etc.) (Assessment #67)
- apply principles of risk management for client health and safety (e.g. universal precautions, considering latex allergies, etc.) (Implementation #56)
- ensure the provision of care in emergency situations (Implementation #58)
- document health and safety incidents (Implementation #59)
- advocate for practice policies that enhance safety and optimal provision of dental hygiene services (e.g. improved infection control protocols, zero tolerance, etc.) (Implementation #67)

*This interpretation guideline reflects current knowledge and is subject to periodic review and revisions with on-going research.



References

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3. College of Dental Hygienists of Ontario. (2016). *CDHO Factsheet: Cardiac Implantable Electrical Devices*. Retrieved from [http://www.cdho.org/Advisories/CDHO Factsheet Cardiac Implantable Electronic Dev ices.pdf](http://www.cdho.org/Advisories/CDHO_Factsheet_Cardiac_Implantable_Electronic_Devices.pdf)
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5. Elavi, C.; Lusher, S.; Nyquist, J.; et al. (2015). *Interference between dental electrical devices and pacemakers or defibrillators: Results from prospective clinical study.*, The Journal of American Dental Association., Volume 145, Issue 2, pages 121-128.
6. Trenter, SC; Walmsley, AD. (2013) *Ultrasonic dental scaler: associated hazards*. Journal of Clinical Periodontology; 30: 95–101.
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