**Critically Appraised Topic (CAT)**

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| **Project Team:**  |
| **6A-4** |
| **Project Team Participants:**  |
| **Drew Gottwald, Hien Doan, Christina Chen and Alice Zheng** |
| **Clinical Question:** |
| What are the clinical guidelines to safely treat an uncontrolled diabetic with a history of MI?  |
| **PICO Format:** |
| **P:** |
| **Patient with uncontrolled diabetes and recent MI** |
| **I:** |
| **Guidelines to safe dental practices/ treatment** |
| **C:** |
| **Patient who are uncompromised/ healthy** |
| **O:** |
| **Safe treatment** |
| **PICO Formatted Question:** |
| **How does the guideline for safe dental practices/treatment for patients with uncontrolled diabetes and recent MI compared to patients who are healthy?** |
| **Clinical Bottom Line:** |
| **For patients with diabetes and a recent MI, patient should not receive any dental treatment for at least 6 months after their MI episode, INR and HBA1C should be determined before treatment. Dental treatment will then be dependent on how well controlled their blood sugar levels are. Consult with patient’s physician is highly encouraged.**  |
| **Date(s) of Search:**  |
| **September 15, 2020 - September 21, 2020** |
| **Database(s) Used:** |
| PubMed |
| **Search Strategy/Keywords:** |
| **Dental Management, Type II Diabetes, Cardiovascular Disease, Myocardial Infarction (MI)** |
| **MESH terms used:** |
| **Dental management, dental guidelines, diabetes, myocardial infarction, cardiovascular complications** |
| **Article(s) Cited:** |
| 1. RAJESH V. LALLA, JOSEPH A. D'AMBROSIO. Dental management considerations for the patient with diabetes mellitus, The Journal of the American Dental Association, Volume 132, Issue 10, 2001
2. Singh, Saurabh, et al. “Dental Management of the Cardiovascular Compromised Patient: A Clinical Approach.” *Journal of Young Pharmacists*, vol. 9, no. 4, Oct. 2017, pp. 453–456. *Academic Search Complete*, EBSCOhost, doi:10.5530/jyp.2017.9.89. Accessed 23 Sept. 2020.
3. Kanchan Ganda. *Dentist’s Guide to Medical Conditions, Medications and Complications*. Vol. Second edition, Wiley-Blackwell, 2013. *EBSCOhost*, search.ebscohost.com/login.aspx?direct=true&db=nlebk&AN=588007&site=ehost-live&scope=site.
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| **Study Design(s):** |
| 1. Clinical Guideline
2. **Meta Analysis**
3. **Textbook – Expert Opinion without Explicit Critical Appraisal, Narrative Review**
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| **Reason for Article Selection:** |
| 1. Clinical Guideline by JADA – It is a credible journal from the American Dental Association
2. **Meta Analysis of 46 previous articles on appropriate management of dental patients with cardiovascular disease.**
3. **Textbook – expert’s opinion**
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| **Article(s) Synopsis:** |
| 1. For patients with diabetes, a thorough medical history should be taken because some of the medications that the patient is on can induce hyperglycemic effects. For patients with comorbidity, consulting patient’s physician is necessary since these conditions have their own effects on dental treatment. Also, scheduling patients for morning appointment is advised due to higher endogenous cortisol levels. In addition to all of that, blood glucose monitoring before treatment is crucial. Any patients with a low plasma glucose level of <70 mg/dL should be given an oral carbohydrate before treatment while patients with high blood glucose levels will need a medical consultation before performing any elective dental treatments.
2. For a patient with cardiovascular complications, it is recommended that patients are not to be seen until 6 months after the MI. After this period, treatment decisions should be dependent on the patient’s medical condition and individualized situation (i.e. comorbidities). If patients are on nitrates, then the patients are to bring that with them at every dental visit. INR (international normalized ratio) should be determined for any patients on anticoagulants (recommendation: < 3.5). If the practicioner determines that the patient can be safely treated, then during the appointment, the patient should be placed in the position most comfortable for him/her (semi-supine) to avoid orthostatic hypotension.
3. For patients with MI associated conditions, hygiene recalls should be scheduled every 3-4 months for patients with severe periodontal disease / coronary artery disease. Patients classified as ASA III/IV or on medication to manage heart failure should avoid vasoconstrictors in local anesthetics. Delay dental treatment post MI by 3 months if the MI was minimum and patient was short term hospitalization/overnight observation but delay by 6 months if patient had a massive MI that required significant hospitalization. If patient had a stent placement, angioplasty or CABG, clinicians should wait 2-4 weeks to resume dental treatments. Clinicians should always consult with the patient’s MD. For patients with diabetes, the ADA (American Diabetes Associations) states that a patients HbA1C should be determined before treatment and levels should be below 7%. (7% reflects average blood sugar level of 150 mg/dL). For well controlled diabetic patients (FBS < 120 mg/dL and HbA1C is < 7%), use 2% lidocaine or 2% mepivcaine with a max of 2 carpules. For moderately controlled diabetic patient (FBS: 120-180 mg/dL) and HbA1C is between 7-8%, then dentists should decrease the amount of epinephrine in LA (i.e. -.5% bupivacaine or 4% prilocaine with max of 2 carps). For severely uncontrolled patient (FBS > 180 mg/dL and HbA1C > 8%), defer all routine dental treatment until patient is stable and has their blood sugar controlled. Only in a dental emergency, you can treat patient with 3% mepivcaine or 4% prilocaine HCl. A low dose of antibiotic is necessary to promote healing for 3, 5 or 7 days.
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| **Levels of Evidence:** (For Therapy/Prevention, Etiology/Harm) See <http://www.cebm.net/index.aspx?o=1025>[x]  **1a** – Clinical Practice Guideline, Meta-Analysis, Systematic Review of Randomized Control Trials (RCTs)[ ]  **1b** – Individual RCT[ ]  **2a** – Systematic Review of Cohort Studies[ ]  **2b** – Individual Cohort Study[ ]  **3** – Cross-sectional Studies, Ecologic Studies, “Outcomes” Research[ ]  **4a** – Systematic Review of Case Control Studies[ ]  **4b** – Individual Case Control Study[ ]  **5** – Case Series, Case Reports[x]  **6** – Expert Opinion without explicit critical appraisal, Narrative Review[ ]  **7** – Animal Research[ ]  **8** – In Vitro Research |
| **Strength of Recommendation Taxonomy (SORT) For Guidelines and Systematic Reviews**See article **J Evid Base Dent Pract 2007;147-150**[ ]  **A** – Consistent, good quality patient oriented evidence[ ]  **B** – Inconsistent or limited quality patient oriented evidence[ ]  **C** – Consensus, disease oriented evidence, usual practice, expert opinion, or case series for studies of diagnosis, treatment, prevention, or screening |
| **Conclusion(s):** |
| **For patients with diabetes and a recent MI, patient should not receive any dental treatment for at least 6 months after their MI episode, INR and HBA1C should be determined before treatment. Recommended INR level is < 3.5 and HBA1C should be less than 7%. Dental treatment will then be dependent on how well controlled their blood sugar levels are. Consult with patient’s physician is highly encouraged. Short morning appointments are highly encouraged with patient in a semi-supined level to avoid orthostatic hypotension.**  |