**Critically Appraised Topic (CAT)**

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| **Project Team:**  |
| **1B-4** |
| **Project Team Participants:**  |
| **D1: Emma Cullen****D2: Doris Yang****D3: Tanner Menard****D4: Magdalena Hornik** |
| **Clinical Question:** |
| What is the best material for long term durability and survival of anterior single unit crowns? |
| **PICO Format:** |
| **P:** |
| **Patients indicated for an anterior single tooth crown restoration**  |
| **I:** |
| **Metal-ceramic crown** |
| **C:** |
| **All-ceramic crown** |
| **O:** |
| **Clinical long term survival** |
| **PICO Formatted Question:** |
| In patients requiring anterior crowns, do PFM anterior crowns have significant increased long-term survivability compared to all-ceramic anterior crowns? |
| **Clinical Bottom Line:** |
| * ***For an anterior single crown, the evidence shows that there is on statistically significant difference in 5-10 year survival rates between PFM and all-ceramic options. Therefore, choice of material will be decided on other factors including esthetics, biocompatibility and technical complications. All this considered, I would recommend lithium disilicate as the material of choice for an anterior single crown restoration.***
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| **Date(s) of Search:**  |
| **09/20/2020** |
| **Database(s) Used:** |
| **PubMed** |
| **Search Strategy/Keywords:** |
| **Crowns, esthetics, dental prosthesis, ceramics, metal ceramic alloys** |
| **MESH terms used:** |
| **Crown, anterior, material** |
| **Article(s) Cited:** |
| 1. Sailer I, Makarov NA, Thoma DS, Zwahlen M, Pjetursson BE. All-ceramic or metal-ceramic tooth-supported fixed dental prostheses (FDPs)? A systematic review of the survival and complication rates. Part I: Single crowns (SCs) [published correction appears in Dent Mater. 2016 Dec;32(12 ):e389-e390]. *Dent Mater*. 2015;31(6):603-623. doi:10.1016/j.dental.2015.02.011
2. Pieger S, Salman A, Bidra AS. Clinical outcomes of lithium disilicate single crowns and partial fixed dental prostheses: a systematic review. J Prosthet Dent. 2014 Jul;112(1):22-30. doi: 10.1016/j.prosdent.2014.01.005. Epub 2014 Mar 24. PMID: 24674802.
3. Aziz A, El-Mowafy O, Paredes S. Clinical outcomes of lithium disilicate glass-ceramic crowns fabricated with CAD/CAM technology: A systematic review. Dent Med Probl. 2020 Apr-Jun;57(2):197-206. doi: 10.17219/dmp/115522. PMID: 32673449.
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| **Study Design(s):** |
| 1. Systemic Review
2. **Systematic Review**
3. **Systematic Review**
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| **Reason for Article Selection:** |
| 1. **High level of evidence and directly supported the PICO question**
2. **Article was selected due to high level of evidence and focus on a particularly popular clinical material of choice for anterior crowns**
3. **This piece of research was selected due to its high level of evidence and its clinical relevance to changing practices in regard to the increased use of CAD/CAM technology to fabricate crowns.**
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| **Article(s) Synopsis:** |
| * **1)This systematic review examined over 67 studies which analyzed long term survival rates of single unit anterior crowns. The major point of this study was to see if there was a difference in clinical durability between metal-ceramic (PFM) and all-ceramic restorations.**
* **2) The purpose of this systematic review was to analyze the short-term (1- to 5-year) and medium-term (5- to 10-year) survival rates of lithium disilicate single crowns and partial fixed dental prostheses. 12 clinical studies were included in the review. All referenced tooth-retained lithium disilicate restorations.**
* **3) This systematic review focused on the short-medium term survival rates of LD ceramic crowns that were fabricated using CAD/CAM technology.**
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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[ ]  **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**[x]  **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):** |
| 1. **The conclusion of the study indicated that there was no statistically significant difference in long term survival between the metal-ceramic and all-ceramic options. Although, it did state that all-ceramic crowns (particulally lithium disilicate) did perform better biologically and led to overall superior esthetic outcomes.**
2. The 2-year cumulative survival rate for single crowns was 100% . The five year survival rate was 97.8%. The 10 year survival rate was 96.7%.

Ultimately, the authors came to the conclusion that lithium disilicate is a solid choice for a long term anterior single tooth restoration.1. This review indicated that the medium-term survival rate of LDGC CAD/CAM crowns was high. Further multicenter studies with longer follow-ups and larger sample sizes are needed in order to augment the data already in existence.
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