Supplementary Table 1. Univariate sensitivity analyses performed

|  |  |
| --- | --- |
| **Analyses conducted** | **Rationale for analysis** |
| A sensitivity analysis has been performed in which all patients start in the ‘no disease’ health state.  | The starting distribution of the basecase modelled population among the Markov health states is based on AIHW data, and thus a substantial proportion of patients start the model in the ‘missing’ and ‘implant’ health states (Table 3 from Warren et al). Given that these patients start the Markov process in advanced health states, the model structure does not allow them to undergo any new restorative events on that particular tooth, thus potentially underestimating the incidence of future dental interventions. In this sensitivity analysis, all patients start in the ‘no disease’ health state, allowing all patients to incur the risk of new restorative events. |
| A sensitivity analysis has been conducted in which the risk of caries is increased to represent one new caries lesion per year.  | The risk of dental caries observed in the standard care arm of the original three-year RCT might be lower than occurs in clinical practice. The results of the RCT (1) indicate that the underlying risk of dental caries in Australia is low (0.33 new lesions per year in the standard care arm), which is similar to that assumed in Bader et al. (11) for low-risk patients. The risk assessment proposed by Bader categorizes medium risk as development of at least one new caries lesion per year while patients categorized as high risk would develop at least three new carious lesions per year. |
| A sensitivity analysis has been conducted in which the rate of extractions is assumed to be the same between the two treatment groups. | The model appears to accurately predict the number of extractions. It is evident from the seven-year data in Table 1 that the number of extractions was not significantly reduced. In fact, at year seven, the number of extractions was significantly higher for the CMS arm. This anomaly is unlikely to be due to the CMS itself. It is most likely due to small sample sizes and/or occurred due to pre-existing conditions given that half of the CMS extractions occurred in the first three years. To ensure consistency with the clinical data, the rate of extractions was higher in the CMS arm than the rate in the standard care arm, even though this anomaly is unlikely to be observed in clinical practice. However, a sensitivity analysis has been conducted in which the rate of extractions is assumed to be the same between the two treatment groups to correct this anomaly. |
| A sensitivity analysis has been conducted in which the incremental benefit is maintained for 20 years | In the basecase, given the per-protocol analysis is restricted to those dentists that adhere to protocols, it is reasonable that the incremental benefit of the CMS is maintained indefinitely. However, in the earlier ITT model it was assumed that the incremental benefit of the CMS ceased at 20 years due to the level of less than perfect adherence over the duration of the RCT. |
| A sensitivity analysis has been conducted in which the CMS assumed to arrest all new tooth decay and first-time fillings | The treatment goal of the CMS is to stop the progression of existing lesions, and prevent new lesions. Thus, it is possible that, if CMS protocols are followed stringently, all new tooth decay can be arrested. |
| Estimation of the incremental cost per DMFT avoided.  | The computation of the patient’s outcome (restorative events incurred) differs slightly from the authors’ earlier model (1) in which a patient’s DMFT increment also increased when patients entered a fourth health state, the enamel caries health state. This sensitivity analysis enables a comparison to be conducted with the results from the previous ITT analysis (1). |
| A sensitivity analysis has been conducted in which the frequency of monitoring caries activity in the CMS arm occurs half as regularly as per the base-case.  | The premise of the CMS is that regular monitoring of caries activity reduces the incidence of caries lesions (that is, new decay), and results in fewer operative interventions. This is consistent with the results of post-trial follow-up in which visit frequencies during years 4-7 was lower in the CMS group (0.74) than the control group (0.83).  |
| Undiscounted results | The use of this cost-effectiveness ratio enables a comparison with health systems that use different discount rates. |

D = Decayed; DMFT = Decayed, Missing and Filled Teeth; CMS = Caries Management System