NICE National Institute for Health and Care Excellence

2020 exceptional surveillance of dental checks: intervals between oral health reviews (NICE guideline CG19)

Surveillance report

Published: 31 March 2020

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Surveillance decision

We will not update the NICE guideline on dental checks: intervals between oral health reviews.

Reasons for the decision

Assessing the evidence

The purpose of this exceptional review was to examine the impact of the findings of the Investigation of NICE technologies for enabling risk-variable-adjusted-length dental recalls trial (INTERVAL) on the NICE guideline.

The exceptional surveillance review only considered guideline recommendations about adults because people less than 18 years old were not included in the INTERVAL trial.

We also considered the impact of the results of the Cochrane review on recall intervals for oral health in primary care patients relating to adults, which has been updated with the results of the INTERVAL trial.

INTERVAL trial methods

The study reports the findings of a UK multicentre, parallel group randomised controlled trial that compared the impact of 3 oral health review (OHR) recall intervals:

- fixed-period recall interval of 6 months
- fixed-period recall interval of 24 months
- risk-based recall interval based on risk factor variables described in NICE's guideline on dental checks.

Participants could be included in the trial if they were 18 years or older, dentate, had visited their dentist in the previous 2 years and received dental care partly or fully as an NHS patient. Exclusion criteria were medical conditions that caused increased risk of bleeding and immuno-compromised patients.

Participants were initially risk assessed by the recruiting dentist for their clinical suitability for a 24-month recall interval. Following this assessment participants were considered suitable for a 24-month recall interval or not suitable for a 24-month recall interval. Therefore, the whole sample of participants was split into 2 groups: those eligible for 24-month recall and those ineligible for 24-month recall.

For brevity these 2 groups of participants will be referred to as the eligible group and the ineligible group. Those in the eligible group were randomised to receive 6-month, risk-based or 24-month recall intervals. Those in the ineligible group were randomised to receive 6-month or risk-based recall only, resulting in 5 groups in total. Random allocation was carried out by telephone using an independent automated central randomisation service.

An online interactive training package, based on the NICE guideline was used to train participating dentists in a systematic approach to determining risk-based recall intervals. Reminders were sent to dentists to complete the training package annually during follow-up. A certificate and 2 hours continuing professional development were offered as an incentive for completion.

Clinical outcomes assessed were gingival bleeding/inflammation on probing (primary outcome), caries extent and severity, periodontal probing depth and extent of calculus (calcified dental plaque).

Patient-centred outcomes assessed were: oral health-related quality of life (OHRQoL) measured using the OHIP-14 (oral health impact profile) questionnaire (primary outcome), dental anxiety, oral health-related knowledge; attitudes and behaviours; generic QoL (EQ-5D-3L); use of and reason for use of, dental services, and satisfaction with care.

The study also included a cost–benefit assessment of the 3 recall intervals with the following outcome measures:

- NHS costs.
- Patient incurred costs.
- General population preferences, willingness to pay.
- Net benefits.
- Quality adjusted life years (QALYs).

- Cost per QALY gained.

Data were analysed using an intention to treat protocol. A sensitivity analysis to account for missing primary data (0.7% to 1.2% across all groups) did not change the outcome. Groups were comparable at baseline.

Clinical outcomes and patient-centred outcomes were assessed at 4 years post randomisation. Patient-centred outcomes were also measured annually by questionnaire. Sixty four percent of patients in the eligible for 24-month recall group and 70% in the ineligible group attended the 4 year follow-up appointment.

INTERVAL trial results

The effectiveness results are reported firstly by outcome and within that for the following comparisons:

- risk-based versus 6-month intervals for the whole sample (eligible and ineligible groups).
- 24-months versus 6-months (eligible group only).
- risk-based versus 6-months (eligible group only).
- 24-months versus risk-based (eligible group only).

The study recruited 2,372 adults from 51 practices. The group who were eligible for 24-month recall intervals included 648 participants and the ineligible group included 1,724 participants. They were randomised as follows:

Eligible group:

- Risk-based interval, n=217.
- 24-month interval, n=215.
- 6-month interval, n=216.

Ineligible group:

- Risk-based interval, n=861.

- 6-month interval, n=863.

Gingival bleeding/inflammation on probing

There was little difference in the percentage of sites with gingival bleeding between any group.

There was no significant difference in adjusted mean difference for gingival bleeding between the following comparisons:

All participants combined (eligible plus ineligible groups)

- No significant difference for risk-based versus 6-months for the whole sample 0.78, 95% confidence interval (CI; -1.17, 2.72), p=0.43.

Eligible group participants only

- 24-months versus 6-months -0.91, 95% CI (-5.02,3.20), p=0.66.
- risk-based versus 6-months -0.98, 95% CI (-5.05,3.09), p=0.64.
- 24-months versus risk-based 0.07, 95% CI (-3.99, 4.12), p=0.97.

Calculus, periodontal probing depth, caries

There was no significant difference between groups for any of the secondary clinical outcomes (calculus, periodontal probing depth in millimeters, serious caries per person and root caries) following statistical analysis.

There was a significant difference in treatment effect for probing depth that suggests those in the 24-month interval group had slightly reduced mean difference in pocket depth (mm) compared with the risk-based interval group: -0.10 95% CI (-0.18, 0.01) p=0.03. However, the mean pocket depths for these groups are very similar (2.1 mm versus 2.2 mm), strongly suggesting this is not a clinically significant result.

Oral health-related quality of life (OHIP-14)

There was no statistically significant difference in OHIP-14 scores between any comparisons.

Secondary patient-centred outcomes

Data on anxiety, attitude to dental care and satisfaction were collected annually and at 4 years' follow-up. Data on perceived behavioural control, attitude and oral health behaviour and knowledge were collected at 4 years' follow-up only.

The annually collected data remained relatively consistent throughout the duration of the trial across groups. There was little change in secondary outcomes at 4 years compared with baseline, however following analysis of mean differences in treatment effects 2 measures showed significance:

Satisfaction and self-reported bleeding were slightly reduced for the 24-month recall group for the following comparisons:

- versus the risk-based group -0.16 CI 95% (-0.31, -0.01), p=0.04
- versus the 6-month group -0.22 CI 95% (-0.43, -0.01), p=0.04.

Cost-effectiveness

- Based on descriptive data a 24-month recall interval is less costly than 6-month and risk-based intervals from an NHS and patient perspective.
- The total cost to the ineligible group of participants of risk-based and 6-month intervals is very similar (£209 versus £216). This difference increases in those eligible for 24-month recall (£150 versus £169).
- Across all groups, participants gained around 3.5 QALYs over the 4 years of the trial.

Despite the reduced costs associated with less frequent recall intervals, sensitivity analyses suggest that 6-month recall intervals have a greater probability than risk-based or 24-month recall intervals of cost-effectiveness. This is because willingness to pay results derived from a discrete choice experiment (DCE) with a representative sample of the general population indicate that people perceive more frequent OHRs as a benefit and are willing to pay for them. This analysis holds true for participants in the 6-month recall group for the whole sample. The DCE sample includes both NHS and private patients.

Cochrane review of dental recall intervals

A Cochrane review investigating the optimal recall interval of dental check-ups for oral

health in a primary care setting was updated with the results of the INTERVAL trial in January 2020. The review includes 1 other study containing adolescents and children, aged 3 years to 18 years (Wang et al. 1992). Both studies were assessed as being at risk of performance and detection bias as blinding was not possible. The Wang et al. study was assessed as being at uncertain risk of selection bias.

Results

The review concludes that there are no clinically significant differences in periodontal, OHRQoL and prevalence of moderate to severe caries between 6-month, 24-month or risk-based intervals. However, when considering severe caries alone there is insufficient evidence to conclude which interval is superior.

The review also assessed the economic outcomes of the included studies and concluded that there is no significant difference in the cost to patients between risk-based and 6-month intervals, and 24-month recall intervals are cheaper for patients than 6-month and risk-based intervals. It further concluded there is insufficient data to determine which interval is less costly for the NHS.

The reviewers were unable to conclude whether a 12-month or 24-month interval was better at reducing the number of decayed, missing and filled surfaces in adults aged 18 years to 20 years because of insufficient evidence. This conclusion is based on the Wang et al. (1992) study which was also considered during the development of the NICE guideline.

NICE guideline on dental checks

Guideline development

A systematic review was undertaken to assess the effectiveness of different recall intervals on oral health disease. Based on this, the guideline committee concluded there was little evidence to either support or refute the practice of encouraging 6-monthly dental checks or for an optimal dental check frequency.

In the absence of good quality evidence for optimal recall intervals, the guideline committee developed recommendations to enable a risk-based approach to setting recall intervals.

- Recommendation 1.1.5 advises the shortest interval between OHRs for all patients should be 3 months and the longest 24 months (over 18 years) and 12 months (younger than 18 years).
- Recommendation 1.1.8 advises that the interval should be reviewed at each OHR.

Health economic considerations

The guideline committee considered an economic model (Davenport et al. 2003) of dental recall intervals. They concluded that while it suggested decreased recall intervals increase costs, the lack of a standard threshold beyond which paying for teeth free of decayed, missing or filled surfaces becomes uneconomic, meant that it was not possible to say which interval had optimal cost-effectiveness.

Previous surveillance

Previous surveillance reviews found no evidence that longer recall intervals were detrimental to patient health and concluded the NICE guideline should not be updated.

Some stakeholders commented that a 24-month recall interval is inadequate for oral cancer detection particularly considering new evidence linking human papillomavirus to oral cancer. However, most were satisfied that the guideline recommendations dealt with cancer detection adequately and were likely to remain valid until new evidence for 24-month intervals became available.

During surveillance searches for ongoing trials identified the INTERVAL trial and a decision was made to assess the impact of this study on guideline recommendations when it was published.

Impact

The INTERVAL trial found that there was no difference in the proportion of sites with gingival bleeding/inflammation, the number of caries or the extent of calculus between risk-based and 6-month recall intervals for all participants. It also found that there was no difference in these outcomes for risk-based or 6-month recall intervals versus 24-months for those assessed as being at lower risk of oral health disease. The Cochrane review considered during this surveillance reports similar conclusions, and in addition reports there is not enough evidence to say which interval is better when considering extensive

caries only.

The INTERVAL study and Cochrane review report no difference in OHRQoL between groups. INTERVAL reports that those eligible for 24-month recall did have slightly lower OHIP-14 scores. Participants eligible for this group also reported less bleeding following tooth brushing. These outcomes are consistent with participants at low risk for oral disease (lower OHIP-14 scores indicate high OHRQoL) and are indicative of participating dental practitioners' ability to accurately assess risk. It should be noted that satisfaction with services was slightly reduced in the 24-month group compared with the 6-month group.

The INTERVAL trial economic analysis indicates that there are reduced costs associated with 24-month recall intervals for patients. The Cochrane review supported this result but also concludes that there is not enough evidence to draw the same conclusion for NHS costs.

Results from a DCE with a sample of the UK population suggest patients highly value frequent recall intervals and including this data in the cost–benefit analysis increases the probability that 6-month recall intervals are the most cost-effective option. The authors suggest that highly valuing frequent OHRs may result from status quo bias, supplier induced demand or re-assurance provided by regular check-ups.

The guideline accommodates patient preference for interval duration in recommendation 1.1.3 which advises that an OHR should allow for discussion between the patient and dentist about the suitability of previously recommended intervals and the patient's ability or desire to visit the dentist at the recommended interval.

An area not measured by the INTERVAL study is the impact of less frequent OHRs on oral cancer identification which has been raised by some stakeholders in previous surveillance reviews as an area of concern. The guideline's risk-based approach addresses this and incorporates common indicators for cancer risk, including smoking and excessive alcohol consumption, in the accompanying risk assessment tool. Currently there is no evidence linking longer recall intervals with increased cancer risk.

The results of the INTERVAL trial indicate that a variable risk-based interval, results in comparable dental outcomes as a fixed 6-month interval and has the potential for cost savings for patients.

The results are judged to support the recommendations made by the NICE guideline on dental checks.

Overall decision

After considering the impact on current recommendations of the new evidence we have decided to not update the NICE guideline at this time.

How we made the decision

Exceptionally, significant new evidence may mean an update of a guideline is agreed before the next scheduled check of the need for an update. The evidence might be a single piece of evidence, an accumulation of evidence or other published NICE guidance.

For details of the process and update decisions that are available, see ensuring that published guidelines are current and accurate in developing NICE guidelines: the manual.

Evidence

This surveillance report provides an overview of a randomised controlled trial and Cochrane review published since the last surveillance of the NICE guideline. The results were considered in detail to determine if there was an impact on the recommendations within the NICE guideline.

Views of stakeholders

Because this was an exceptional surveillance review, we did not consult on the decision.

Equalities

No equalities issues were identified during the surveillance process.

ISBN: 978-1-4731-4016-5