



Three steps to a **healthy mouth**

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This article presents the evidence supporting the use of a three-step home care regimen to maintain good oral health. Brought to you by Johnson & Johnson, the makers of LISTERINE.

We know that preventive oral care has existed in a variety of forms for thousands of years.¹ Barnett (2006) tells us that: ‘The variety of mechanical implements, potions and dental procedures used through the centuries attests to the importance attributed to oral cleanliness and the recognition that deposits of food debris and bacteria can in some way have a detrimental effect on oral health. Nevertheless, the mechanisms by which the deposits can result in disease were not really appreciated until the late nineteenth century, when Dr W.D. Miller proposed a key role for acid-producing oral bacteria in the aetiology of dental caries. From this, the concept of preventive dentistry developed.’¹

Fast-forward to the twenty-first century and advances in preventive dentistry have led to further knowledge that twice-daily brushing and interdental cleaning are essential in achieving and maintaining oral hygiene.² They displace and dislodge plaque bacteria that can

cause gingivitis and periodontal disease from the tooth surface.¹

However, we also know that, for a number of reasons, brushing and interdental cleaning are insufficient for the majority of the population to eliminate plaque biofilm.^{2,3} This is supported by the data published in the most recent Adult Dental Health Survey (2009): despite 75% of dentate adults surveyed claiming to brush their teeth at least twice a day and 25% of those reporting they also floss daily, 66% had visible plaque.³

All of this suggests that there remains an unmet need when it comes to implementing an effective home care regimen between check-up and hygiene appointments.

An adjunctive third step

Barnett (2006) suggested that this gap in preventive care provides: ‘[...] a clear rationale for incorporating effective antimicrobial measures, such as use of an antimicrobial mouthrinse, into daily oral hygiene regimens.’¹

Looking at the issue from both individual health and general public health perspectives,

he also considered that using an antimicrobial mouthrinse on a daily basis would have a significant effect on plaque control, making it a cost-effective and significant adjunct to mechanical cleaning.¹

Barnett (2006) further wrote that the rationale for using an antimicrobial mouthrinse is two-fold:

1. Since mechanical methods performed by the majority of people is inadequate, an adjunctive antimicrobial mouthrinse may help to reduce plaque levels¹
2. It offers a way to deliver antimicrobial agents to mucosal sites throughout the mouth that are unaffected by mechanical methods and would otherwise serve as ‘reservoirs’ for plaque bacteria.¹

Supporting evidence

This concept has been further investigated by various researchers in the last ten years. For example, in 2014 Charles and colleagues sought to determine the ability to achieve gingival health in the short-term with daily rinsing with an essential oil containing antimicrobial mouthrinse.⁴

They concluded: ‘Significantly more healthy gingival sites and virtually plaque free tooth surfaces can be achieved as early as four weeks with use of an essential oil antimicrobial mouthrinse. This finding continues through six months twice daily use as part of oral care practices compared to mechanical oral hygiene alone.’⁴

This is supported by Boyle and colleagues (2014), who demonstrated that quantitative assessment of data exploring mouthwash use and the risk of common oral conditions supports the use of mouthwash in preventing dental plaque, exploring the differences between chlorhexidine, cetylpyridinium and essential oils.⁵

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They came to the conclusion that when a mouthwash is used for fewer than three months, those containing chlorhexidine are the most effective of the preparations they considered.⁵ However, when used for six months or longer, essential oil mouthwashes were shown to equal or exceed the effect of chlorhexidine in controlling plaque as an adjunct to standard care.⁵ It was also found that mouthwashes containing cetylpyridinium may also be effective, but less so than chlorhexidine and essential oil formulations.⁵

In 2015, Chapple and colleagues reported on the consensus views of Working Group 2 of the 11th European Workshop in Periodontology.⁶ They related that:

- ‘There is a universal recommendation to brush twice daily for at least two minutes with a fluoridated dentifrice. For periodontitis patients, two minutes is likely to be insufficient.’⁶
- ‘Daily interdental cleaning is strongly recommended to reduce plaque and gingival inflammation.’⁶
- ‘In patients with gingivitis, the adjunctive use of chemical agents for plaque control offers advantages.’⁶

They further concluded that, ‘...where improvements in plaque control are required, adjunctive use of antiplaque chemical agents

may be considered. In this scenario, mouth rinses may offer greater efficacy but require an additional action to the mechanical oral hygiene regime.’⁶

It would seem therefore that there is a case to be made for the use of an effective antimicrobial mouthrinse as an adjunct to mechanical cleaning. Furthering the supporting evidence is Araujo and colleagues’ (2015) meta-analysis.⁷

As the first meta-analysis to make use of long-term clinical data incorporating responder analysis* of both published and unpublished results of the benefits of using an essential oil-containing mouthrinse alongside brushing and interdental cleaning to reduce

dental plaque bacteria, the conclusions they reached are significant.⁷

They were able to show the oral health benefits of using an essential oil-containing mouthrinse as an adjunct to mechanical cleaning.⁷ Responder curves** plotted by the authors show that a mean average of 36.9% subjects using mechanical methods with an essential oil mouthrinses experienced at least 50% plaque-free sites after six months compared to just 5.5% of patients using mechanical methods alone.⁷

Summarising the results, Araujo and colleagues (2015) were able to provide strong evidence that there are statistically significant greater odds of patients achieving a ‘...cleaner [...] mouth, which may lead to prevention of disease progression...’ if patients add an essential oil mouthrinse to their daily mechanical cleaning regimen at home.⁷

Assessing preventive care

In terms of preventive care, it has been put forward that dental plaque, the main cause of oral disease, can be removed through the mechanical means of brushing and interdental cleaning.⁵ However, it has also been suggested that a significant amount of plaque remains on the teeth even following the implementation of such a regimen, while the soft tissues remain largely untouched.⁵

Since mechanical cleaning alone is therefore insufficient, this indicates that there remains an unmet need.⁵ To this end, it has been suggested that a chemotherapeutic mouthrinse – such as one containing essential oils – offers a considerable advantage when used as an adjunct to mechanical cleaning, as it, ‘...can reach virtually all residual plaque...’⁵

Indeed, the hydrodynamic ability of a mouthwash allows it to reach all five exposed tooth surfaces, so, given the scientific evidence supporting its efficacy, for most patients it is a logical long-term adjunct to a daily preventive regimen.

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3. Adult Dental Health Survey 2009. The Health and Social Care Information Centre, 2011.
4. Charles C A, Lisante T A, Revankar R *et al*. Early benefits with daily rinsing on gingival health improvements with an essential oil mouthrinse – post-hoc analysis of 5 clinical trials. *J Dent Hyg* 2014; **88 (Supp)**: 40-50.
5. Boyle P, Koechlin A, Autier P. Mouthwash use and the prevention of plaque, gingivitis and caries. *Oral Dis* 2014; **20 Suppl 1**: 1-68.
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7. Araujo M W B, Charles C A, Weinstein R B *et al*. Meta-analysis of the effect of an essential oil-containing mouthrinse on gingivitis and plaque. *J Am Dent Assoc* 2015; **146**: 610-622.

* The responder analysis approach used here presents the percentage of subjects over the whole range of possible cut-off points in a visual manner, enabling dental healthcare professionals to compare treatment groups at any response level that is valid for their patients.⁷

** Responder curves plot the proportion of participants within each treatment group achieving at least the given percentage of healthy sites, for all possible percentages of healthy sites (0-100%).⁷

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