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Educational Objectives
Upon completion of this course, the clinician will be able to do the following:
1. Understand the incidence of caries and gingivitis and preventive measures to use against these diseases.
2. Understand the various devices and techniques available for oral hygiene maintenance and their effectiveness.
3. Understand patient compliance issues related to brushing and flossing and the potential impact that lack of compliance has on oral health.
4. Understand the various chemotherapeutic rinses that are effective against plaque and gingivitis, the considerations required in selecting a mouthrinse, and the benefits of mouthrinse in addition to brushing and flossing.

Abstract
Gains in oral health have been considerable in the last 50 years. However, by adolescence 68% of people have tooth decay and gingivitis is also prevalent, with 50% of US adults experiencing this around a minimum of three to four teeth. Brushing and flossing are typically considered to be the basic procedures required for good oral hygiene; yet oral hygiene is generally inadequately performed. Patient compliance issues related to brushing and flossing are well documented and well recognized. Rinsing offers an opportunity to reduce plaque and gingivitis, incremental to the reductions obtained by brushing and flossing alone. Use of a chemotherapeutic mouthrinse together with brushing and flossing as a three-step program may help to reduce plaque accumulation and prevent the formation of mature plaque and the onset of disease.

Introduction and Overview
Gains in oral health, together with the wider variety and improved designs of oral hygiene aids, have been considerable in the last 50 years. However, oral health statistics indicate that there is still room for improvement. Gingivitis is prevalent, with 50% of US adults experiencing gingivitis around a minimum of three to four teeth. Gingivitis is a preventable and reversible disease, provided that adequate oral hygiene measures are in place and dental plaque is diligently removed. Gingivitis presents with gingival inflammation and redness and bleeding upon probing. Left untreated, gingivitis may progress to periodontal disease with soft and hard tissue destruction. Advanced periodontal disease occurs in only a small proportion of patients, affecting between 5% and 15% of adults. The presence and progress of periodontal disease depend on the host response and other factors. In the absence of periodontal bacteria and gingivitis it would not occur. Recent decreases in caries have been slight, based upon data from the 1999–2002 NHANES study in comparison to the previous NHANES study in the early 1990s. By adolescence, 68% of people have tooth decay, 90% of adults over the age of 40 have coronal caries, and 32% of adults over age 50 have root caries. Brushing and flossing are typically considered to be basic procedures for good oral hygiene. The first modern toothbrush with nylon bristles was available by 1938, and in modern times of a floss-type oral hygiene aid was first addressed by Parmly in 1819 when he recommended that patients with gingivitis use “waxed silk” to clean their teeth interdentally. By the mid-1900s clinicians were recommending both toothbrushing and flossing for effective oral hygiene. More recently, electrically driven devices (first the electric toothbrush in 1960, followed later by electric interdental devices and oral irrigators) have become available as alternatives to manual devices. Chemotherapeutic pastes and rinses have been added to the arsenal of home care oral hygiene aids since 1914 (Figure 1).

Figure 1. Evolution in Oral Care

<table>
<thead>
<tr>
<th>1914</th>
<th>1938</th>
<th>mid-1900s</th>
<th>1960</th>
<th>1970</th>
</tr>
</thead>
<tbody>
<tr>
<td>Floss-type waxed silk</td>
<td>Fluoride toothpaste and essential oil mouthrinse introduced</td>
<td>Modern nylon bristle toothbrush</td>
<td>Clinicians recommend brushing AND flossing</td>
<td>First electric toothbrush</td>
</tr>
</tbody>
</table>

Standard oral hygiene techniques
Brushing and flossing are commonly known by the general population to be important, and they have significantly contributed to improved oral health. Clinical trials in the 1960s demonstrated the importance of toothbrushing in preventing and reducing gingivitis in children and students. The classical study by Loe et al. demonstrated that cessation of brushing induces gingivitis. Regular removal of dental plaque before it matures will prevent the development of anaerobic-rich subgingival plaque. Until the third day of development, plaque is mostly streptococcal and rod species. The streptococci are acid-producing, resulting in the initiation and progression of caries, and dominate plaque from between two and six hours after the plaque starts to form until anaerobic bacteria appear in increasing numbers from day three onward. This corresponds with the findings of Lang et al. that experimental gingivitis can be induced by avoiding brushing for more than 48 hours. Immature plaque removal helps prevent the development of gingivitis associated with anaerobic microbiota and prevents the development of a thick, well-differentiated supragingival and subgingival plaque (Figure 2).

Brushing alone has not been found to be effective in reducing caries unless done in combination with anticaries agents — predominantly as 1,000–11,000 ppm fluoride in regular dentifrices. Brushing without flossing — and without use of an alternative interdental oral hygiene aid such as interdental brushes — is ineffective at removing plaque interdentally. Flossing in addition to brushing was found to reduce the incidence of interproximal caries by 50% in one study of
first-grade children when compared to contralateral teeth that were not flossed.\(^{13}\)

Most periodontal disease starts interdentally, specifically in the col area,\(^{14}\) where brushing alone is ineffective. One study found a 67% reduction in bleeding sites with both brushing and flossing over a three-week period, versus a 35% reduction with brushing alone,\(^{15}\) indicative of the ineffectiveness of brushing alone and the effectiveness of flossing. Studies comparing the efficacy of different types of floss found no differences in results achieved with waxed, unwaxed, or flavored floss variants.\(^{16,17}\)

Studies suggest that interdental brushes offer an alternative that may be more acceptable to patients and/or easier to use than floss and provide superior reductions in plaque and gingivitis compared to flossing. Kiger et al. found in a 30-day study that interproximal plaque scores were significantly lower in patients brushing and using interdental brushes compared to patients brushing and flossing.\(^{18}\) In one study, 95% of interdental plaque was removed using interdental brushes.\(^{19}\)

More recently, electric interdental devices such as the Hummingbird (Oral B) and Interclean have been introduced. Clinical trials assessing these found them to be as effective as regular floss in reducing plaque and gingivitis, but not more effective.\(^{20,21,22}\)

Other adjunctive or alternative oral hygiene devices include oral irrigation devices. These may be used with water or with the addition of a chemotherapeutic agent. Studies have produced varying results with use of these devices; however, they may be a useful adjunct for some patients. One study comparing use for two minutes of either an electric toothbrush or an oral irrigator found the oral irrigator to remove significantly more plaque than the electric toothbrush. The addition of a chemotherapeutic agent to oral irrigators may provide incremental benefits over the use of the chemotherapeutic agents as a rinse. One study found that using chlorhexidine gluconate in a home-use pulsed oral irrigator resulted in statistically significant reduction in plaque vitality compared to rinsing with chlorhexidine gluconate.\(^{23}\)

**Oral Hygiene Habits**

Rigorous brushing and flossing with an appropriate technique and for an appropriate length of time are effective in removing dental plaque. Even with intense patient education and well-designed brushes and floss (as well as other oral hygiene devices), oral hygiene generally is inadequately performed. The reasons for this range from lack of patient compliance to dexterity and health issues.

Patient compliance issues related to brushing and flossing are well documented and well recognized. Based on a study of dental students, it has been found that brushing effectively for plaque removal can take up to five minutes.\(^{24}\) Brushing may be performed with either a manual or electric toothbrush. Electric toothbrushes may be easier to use, particularly where dexterity is an issue. Electric and manual toothbrushes are both effective. Most patients in the developed world have been found to brush for only one minute.\(^{25}\)

While it can be said that for lazy brushers, use of an electric toothbrush for one minute might result in speedier removal of plaque compared to a manual toothbrush, the duration of brushing may be reduced and/or areas skipped. Neither a manual nor an electric toothbrush can adequately reach interdental areas to mechanically remove interdental plaque. For this, use of floss or another interdental cleaner is essential. The majority of people either do not use floss daily or in some cases do not use floss at all. Surveys have found that at least 50% of patients state they do not floss at all and that at least 90% do not floss daily (Figure 3). When dental professionals are surveyed or report patient data, the results show that a small minority of patients floss on a daily basis.\(^{27,28,29}\)

A study assessing flossing skills and compliance a year after training in the use of floss found that although participants retained their flossing skills, their clinical indices were back to the baseline values at the start of the study — indicating non-compliance.\(^{30}\) With repeated education and reinforcement on the importance of brushing and flossing, patients still revert over a relatively short period of time to their previous poor oral hygiene habits for both brushing and flossing.\(^{31,32}\)
The other main issue which is implicated in poor oral hygiene is a lack of dexterity. Compared to interdental cleaning, toothbrushing is relatively uncomplicated and, except for patients with severe disabilities, can be accomplished with either a manual or an electric toothbrush. Interdental cleaning requires more coordination and dexterity than brushing, even with the use of electric devices. Physically challenged individuals may be unable to adequately perform oral hygiene measures, and as the population ages, it can be anticipated that the number of people with dexterity issues or systemic health issues precluding good brushing and flossing will increase.

Chemotherapeutic Agents
Chemotherapeutic agents for home use for the prevention and treatment of oral disease are widely available today as pastes, gels, and rinses. They include over-the-counter and prescription products for caries prevention, plaque reduction, and the reduction and prevention of gingivitis. Fluoride use in toothpastes has been the largest single contributing factor in the decline of dental caries, and it is the most widely used oral care chemotherapeutic. For patients at higher caries risk — such as orthodontic patients, patients with a high caries rate or recent caries experience, and patients with xerostomia — fluoride is available at concentrations of up to 5,000 ppm in prescription pastes and gels. Chemotherapeutic rinses and pastes that target plaque and gingivitis are available in the US with various active ingredients, including chlorhexidine gluconate, essential oils, zinc chloride, cetylpyridinium chloride (CPC), stannous fluoride, and combinations of these. Chemotherapeutic pastes typically replace a regular dentifrice, to provide enhanced benefits. The most widely used in the US is a triclosan/copolymer dentifrice (Colgate Total), which has been shown in clinical trials to significantly reduce plaque and gingivitis as well as to inhibit the progress of periodontal disease. This particular formulation has also been shown to provide anticaries benefits over and above the benefits of the fluoride contained in either this formulation or a regular fluoride dentifrice.

Chemotherapeutic Rinses
The most widely used chemotherapeutic mouthrinses in the US are essential oils and chlorhexidine gluconate mouthrinses, both of which have been found to be effective for plaque and gingivitis reduction.

Chlorhexidine gluconate rinses were first introduced in Europe, in the 1970s (Corsodyl, ICI). In the US, chlorhexidine gluconate (CHX) is available by prescription only, at a concentration of 0.12% (Peridex®, Zila Pharmaceuticals; Periogard®, Colgate Oral Pharmaceuticals; GUM®, Sunstar Butler). Chlorhexidine is cationic and binds to bacteria and oral surfaces that are mostly anionic. It is bactericidal, inducing rupture of bacterial cell walls and cell death. Chlorhexidine gluconate is regarded as the gold standard antimicrobial rinse for short-term use. Studies have shown chlorhexidine gluconate to help reduce plaque and gingivitis, aid healing and prevent infection, and reduce the bacterial load. It has also been used preprocedurally and in endodontic therapy. Use of CHX in the absence of any other oral hygiene measures has demonstrated its ability to prevent the development of plaque and gingivitis over a 21-day period — making it useful for situations such as immediately postsurgically when regular brushing and flossing procedures may be difficult due to tenderness. Loe et al. demonstrated that twice-daily rinsing with CHX can also be effective in inhibiting smooth surface caries, and it has been shown to reduce the levels of cariogenic bacteria.

Adjunctive use of CHX results in incremental plaque and gingivitis reduction over and above reductions due to regular oral hygiene procedures (brushing and flossing). Clinical trials have repeatedly demonstrated plaque and gingivitis reductions with CHX use in addition to brushing and flossing. Taller found a 33% reduction in bleeding compared to brushing and flossing only with twice daily rinsing for five weeks, and plaque reductions in the range of 41% to 65% have been found with chlorhexidine gluconate usage. Essential oil mouthrinses were first introduced in 1914. These rinses are a mixture of phenolic compounds with a bactericidal effect. Measurement of the bactericidal effect during in situ study found that following rinsing with essential oil mouthrinse, 78.7% of bacteria were dead in test samples versus 27.9% after rinsing with a negative control. These rinses are a mixture of phenolic compounds with a bactericidal effect. Measurement of the bactericidal effect during an in situ study found that following rinsing with essential oil mouthrinse, 78.7% of bacteria were dead in test samples versus 27.9% after rinsing with a negative control. Essential oil mouthrinse has been shown in vitro to interfere with cell-surface-related activities — demonstrated by inhibition of the platelet aggregation activity of oral bacteria. A recent in vivo study found that an essential oil mouthrinse (Listerine Antiseptic™) interfered with the inflammatory process. During a two-week period, rinsing was carried out twice daily without brushing and flossing, either with Listerine or chlorhexidine gluconate. While slightly more plaque formed during the two weeks with Listerine use than with chlorhexidine use, there was no significant difference in gingival bleeding (Figure 4).

Figure 4. Chemotherapeutic rinses

<table>
<thead>
<tr>
<th>Rinse</th>
<th>Mode of action</th>
<th>Anti-plaque/gingivitis efficacy</th>
<th>Staining</th>
<th>Effect on calculus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorhexidine gluconate</td>
<td>Bactericidal</td>
<td>Yes</td>
<td>Yes</td>
<td>Increases</td>
</tr>
<tr>
<td>Essential oils</td>
<td>Bactericidal</td>
<td>Yes</td>
<td>No</td>
<td>None</td>
</tr>
<tr>
<td>Cetylpyridinium chloride</td>
<td>Bactericidal</td>
<td>Yes</td>
<td>No</td>
<td>None</td>
</tr>
<tr>
<td>Zinc chloride</td>
<td>Bactericidal</td>
<td>Yes</td>
<td>No</td>
<td>Decreases</td>
</tr>
</tbody>
</table>
Adjunctive use of essential oil mouthrinse in addition to brushing and flossing in one controlled trial produced a 54% reduction in plaque and 34% reduction in bleeding with twice daily use for 30 seconds.62 Two other trials assessed essential oil mouthrinse adjunctively after brushing and flossing. One trial resulted in a 34% reduction in plaque and gingivitis after six months of use compared to brushing and flossing and use of a placebo rinse.63 A study over a six month period comparing use of the essential oil mouthrinse versus a control rinse used adjunctively found a 21% and 51.9% reduction in modified gingival and plaque indices respectively.44

Essential oil mouthrinse has also been found to decrease the anaerobic and aerobic bacteria associated with bacteremia when used as a subgingival irrigant prior to scaling. Preprocedural rinsing can decrease the number of bacteria aerosolized during dental procedures, and both are used preprocedurally in clinics.45 Studies have shown that both essential oil and chlorhexidine mouthrinses have anti-Candida properties and are therefore helpful for immunocompromised patients subject to opportunistic candidiasis.46 Essential oil mouthrinse has been found to be effective in reducing the levels of cariogenic bacteria intraorally. Subjects rinsing with Listerine for 30 seconds twice daily for 12 days were found to have 75% reductions of Streptococcus mutans in plaque and 39.2% reductions in saliva.47

Long-term use of essential oil and chlorhexidine gluconate mouthrinses have found no evidence of microbial resistance.48,49 While CHX has a strong affinity for oral hard and soft tissues and is the most effective chemotherapeutic for plaque control,50 it can be associated with increased calculus formation, as well as brownish staining and temporary taste disturbances that are reversed when use is discontinued. Due to these potential side effects, CHX is generally indicated for short-term or intermittent short-term use except in special situations such as following head and neck irradiation.

Other chemotherapeutic mouthrinses available include cetylpyridinium chloride and zinc chloride. A recent study comparing the use of 0.07% CPC mouthrinse and essential oil mouthrinse twice daily for 21 days concluded that they had equivalent antiplaque and antigingivitis efficacy.51 In another study, use of 0.07% CPC mouthrinse following brushing, compared to brushing alone, reduced plaque coverage on teeth by 42%.52 In a third study, rinsing with 0.07% CPC mouthrinse twice daily after brushing demonstrated plaque reductions of 15.8% and a 33% reduction in gingival bleeding versus negative control.53 In a study using 0.05% CPC mouthrinse, a 28% reduction in plaque and a 63% reduction in plaque severity indices as well as a 24% reduction in the gingival index were found.54 In comparing 0.2% chlorhexidine rinse with 0.12% chlorhexidine rinse containing 0.05% CPC (the rinse times and dosage of CHX were adjusted for the different concentrations), no differences were found in their ability to reduce plaque.55 Zinc chloride mouthrinse is typically used for the prevention of calculus accumulation and to combat oral malodor. Use of 0.09% zinc chloride over a 16-week period has been found to reduce calculus by 21%.56 Plaque reductions and reductions in plaque acidogenicity have also been found in zinc chloride mouthrinse trials.57

**Brushing, Flossing, and Rinsing**

Regularly removing a maximum amount of plaque is key for oral health maintenance. Brushing and flossing are irregularly and often haphazardly performed, allowing plaque to mature and enabling the onset of gingivitis. Mature plaque also decreases the impact of chemotherapeutic rinses. Once a thick layer of plaque is present, mouthrinses cannot penetrate into the depths of the plaque.58 The problem is compounded by the fact that bacteria are more vital within the deepest areas of the plaque.59

Rinsing is easier than either brushing or flossing and takes less time, therefore requiring a shorter attention span. Patients also tend to be more concerned with “fresh breath” than with plaque and gingivitis levels, and patient compliance with rinsing may be superior to patient compliance with adequate brushing and flossing (or other interdental cleaning).

Optimally, mouthrinsing should be performed twice daily. The substantivity of current mouthrinses is of less than 12 hours duration60,61 and after four days of not rinsing, it has been shown that bacterial composition of plaque returns to its baseline level before rinsing was initiated.62 While once-daily rinsing will effectively reduce bacterial levels for several hours, twice-daily mouthrinsing is required for a clinically effective regimen.

Regular rinsing in addition to brushing and flossing may increase the chances of improved plaque removal — although it is an additional step. If patients do not floss well or do not brush well, at least they will have the benefit of rinsing.

Based on a survey of dental hygienists, 70% of patients do not think that rinsing replaces flossing, indicating that patients see rinsing as an additional step rather than an alternative.63 While intended and seen as an additional step when noncompliance or partial compliance is already an issue in a two-step procedure, and due to the ease and speed of rinsing relative to brushing and flossing along with “fresh breath” concerns, otherwise noncompliant patients may nonetheless add rinsing to their regimen if recommended. Brushing alone, in the absence of chemotherapeutic agents, reduces and removes plaque purely by the mechanical action of brushing. Plaque remaining on the teeth after brushing alone contains viable microbes that have not been subjected to bactericidal agents, allowing the plaque to continue to grow and mature. Introducing a bactericidal rinse into the regimen (including where chemotherapeutic pastes are used) may provide additional benefits for patients, especially interdentally in harder-to-reach areas. Patients who brush well and floss daily may still benefit from adjunctive rinsing to help prevent the development and initial maturation phase of fresh plaque, thereby reducing the presence...
of acid-producing cariogenic bacteria associated with early plaque formation. In choosing a chemotherapeutic mouthrinse, considerations include the health status of the patient, whether the rinse is intended for short-term or long-term use, efficacy, propensity for staining, lack of microbial resistance, taste, and clinician and patient preferences.

Summary

The lack of compliance or poor results obtained by patients who brush and floss are well documented and evident to dental professionals on a daily basis. Chemotherapeutic rinses offer an opportunity to reduce plaque and gingivitis, incremental to the reductions obtained by brushing and flossing alone. Rinsing is quicker and easier than flossing or use of another interdental aid, and while not a replacement for these activities, adding rinsing to the regimen might at least help noncompliant patients reduce their plaque levels by means other than less than optimal interdental cleaning and toothbrushing. Given the importance of plaque reduction in oral health and the oral-systemic health connection, measures to reduce plaque and gingivitis are of increased importance. Patients’ use of a chemotherapeutic mouthrinse together with brushing and flossing as a three-step program may help to reduce plaque accumulation, prevent the formation of mature plaque, and delay the onset of diseases.

References

4. Parmly L. Practical guide to the management of the teeth. Philadelphia; Collins and Croft, 1819.


1. Gingivitis is present in a minimum of three to four teeth in what percentage of the US population?
   a. 20%
   b. 30%
   c. 50%
   d. 75%

2. Advanced periodontal disease affects what percentage of the US population?
   a. 2%–5%
   b. 5%–15%
   c. 25%
   d. 40%

3. Clinicians were recommending both brushing and flossing by
   a. The mid-1800s
   b. The early 1900s
   c. The mid-1900s
   d. 1980

4. The first floss-type oral hygiene aid introduced in
   a. 1920
   b. 1930
   c. 1960
   d. 1975

5. The first electric toothbrush was
   a. 1920
   b. 1950
   c. 1960
   d. 1975

6. Regular removal of dental plaque prevents
   a. The formation of an anaerobic-rich subgingival plaque
   b. Bell’s palsy
   c. Trigeminal neuralgia
   d. All of the above

7. Until the third day of development, dental plaque contains mainly
   a. Streptococci and rods
   b. spirochetes
   c. Anaerobic bacteria
   d. Fungi

8. Experimental gingivitis can be induced by not brushing for
   a. 12 hours
   b. 24 hours
   c. 48 hours
   d. 72 hours

9. According to the article, effective brushing has been found to take up to
   a. 3 minutes
   b. 5 minutes
   c. 7 minutes
   d. None of the above

10. Brushing alone has been found to be
    a. Effective in reducing caries
    b. Ineffective in reducing caries
    c. Effective in removing interdental plaque
    d. None of the above

11. One study found that brushing and flossing resulted in a ___ reduction in bleeding sites over a three-week period.
    a. 33%
    b. 45%
    c. 67%
    d. 76%

12. Studies comparing the oral hygiene results achieved using different types of floss found that
    a. Waxed floss gave the best results
    b. Unwaxed floss gave the best results
    c. No differences were found with waxed, unwaxed, or flavored flosses
    d. Flavored floss gave the best results

13. Most periodontal disease starts
    a. Interdentally
    b. Buccally
    c. Lingually
    d. All of the above

14. Issues in the attainment of good oral hygiene are
    a. Patient compliance issues
    b. Dexterity issues
    c. Lack of ownership of a toothbrush
    d. a and b

15. Up to what percentage of patients do not floss daily?
    a. 20%
    b. 30%
    c. 55%
    d. 90%

16. Based on the literature, with concentrated education and reinforcement
    a. Patients maintain good oral hygiene
    b. No improvement is seen, even short-term
    c. Patients brush less
    d. Patients often revert to their previous oral hygiene habits over a short period of time

17. Patients in the developed world have been found to brush on average for
    a. 30 seconds
    b. One minute
    c. Three minutes
    d. Five minutes

18. The most widely used chemotherapeutic agent in oral care is
    a. Fluoride
    b. Iodide
    c. Chlorhexidine
    d. All of the above

19. Chemotherapeutic rinses targeting plaque and gingivitis may contain
    a. Essential oils
    b. Cetylpyridinium chloride (CPC)
    c. Chlorhexidine
    d. Any of the above

20. Chlorhexidine mouthrinses were first introduced
    a. In Europe in the 1950s
    b. In Europe in the 1970s
    c. In the US in 1899
    d. In both the US and Europe in 1986

21. Chlorhexidine mouthrinses are
    a. Bactericidal, causing and cause bacterial cell walls to rupture
    b. Bacteriostatic
    c. Effective in reducing plaque and gingivitis
    d. a and c

22. Essential oil mouthrinse was first introduced in
    a. 1836
    b. 1896
    c. 1914
    d. 1930

23. Essential oil mouthrinses have been shown to be
    a. Bactericidal
    b. Bacteriostatic
    c. a and d
    d. Effective in reducing plaque and gingivitis

24. When used as a subgingival irrigant, essential oil mouthrinse has been shown to
    a. Decrease anaerobic bacteria
    b. Decrease aerobic bacteria
    c. a and b
    d. None of the above

25. AntiCandida properties have been found in
    a. Chlorhexidine mouthrinse
    b. Essential oil mouthrinse
    c. a and b
    d. None of the above

26. Use of chlorhexidine mouthrinse can be associated with
    a. Staining
    b. Temporary taste disturbances
    c. Increased calculus formation
    d. All of the above

27. CPC mouthrinse has been found to
    a. Be effective in reducing plaque and gingivitis
    b. Increase calculus formation
    c. a and b
    d. None of the above

28. Zinc chloride mouthrinse has been found to
    a. Be effective in reducing calculus formation
    b. Be effective in combating bad breath
    c. Increase calculus formation
    d. a and b

29. The substantivity of currently available mouthrinses is of
    a. Three hours’ duration
    b. Less than five hours’ duration
    c. Less than 12 hours’ duration
    d. 24 hours’ duration

30. Rinsing in addition to brushing and flossing may help to
    a. Reduce plaque
    b. Reduce gingivitis
    c. Prevent the formation of mature plaque
    d. All of the above
COURSE EVALUATION and PARTICIPANT FEEDBACK

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Educational Objectives

1. Understand the incidence of caries and gingivitis and preventive measures to use against these diseases.
2. Understand the various devices and techniques available for oral hygiene maintenance and their effectiveness.
3. Understand patient compliance issues related to brushing and flossing and the potential impact that lack of compliance has on oral health.
4. Understand the various chemotherapeutic rinses that are effective against plaque and gingivitis, the considerations required in selecting a mouthrinse, and the benefits of mouthrinising in addition to brushing and flossing.

Course Evaluation

Please evaluate this course by responding to the following statements, using a scale of Excellent = 5 to Poor = 0.

1. Were the individual course objectives met?

Objective #1: Yes No
Objective #2: Yes No
Objective #3: Yes No
Objective #4: Yes No

2. To what extent were the course objectives accomplished overall?

5 4 3 2 1 0

3. Please rate your personal mastery of the course objectives.

5 4 3 2 1 0

4. How would you rate the objectives and educational methods?

5 4 3 2 1 0

5. How do you rate the author’s grasp of the topic?

5 4 3 2 1 0

6. Please rate the instructor’s effectiveness.

5 4 3 2 1 0

7. Was the overall administration of the course effective?

5 4 3 2 1 0

8. Do you feel that the references were adequate?

Yes No

9. Would you participate in a similar program on a different topic?

Yes No

10. If any of the continuing education questions were unclear or ambiguous, please list them.

___________________________________________________________________

___________________________________________________________________

___________________________________________________________________

___________________________________________________________________

11. Was there any subject matter you found confusing? Please describe.

___________________________________________________________________

___________________________________________________________________

___________________________________________________________________

___________________________________________________________________

12. What additional continuing dental education topics would you like to see?

___________________________________________________________________

___________________________________________________________________

___________________________________________________________________

___________________________________________________________________

PLEASE PHOTOCOPY ANSWER SHEET FOR ADDITIONAL PARTICIPANTS.

ANNUAL DENTAL EXAMINATION

The expression of any opinions or recommendations in this course is the responsibility of the author(s). The information presented in this course is not intended to be used as a substitute for the clinical judgment of the dentist or dental hygienist in selecting a treatment plan for a patient. The reader is responsible for keeping abreast of ongoing developments in dentistry and is cautioned to verify all recommended procedures before using them.

All participants scoring at least 70% (answering 21 or more questions correctly) on the examination will receive a certificate from the American Dental Association. The formal continuing education program of the sponsor is accepted by the AGD for Fellowship/Mastership credit. Please contact PennWell for the current term of acceptance. Participants are urged to check with their state and local regulatory boards for specific requirements as CE credits are not accepted in all states.

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