The Role of the Pharmacist in Mouth Rinse Counseling and Product Selection

Posttest Rationale

1. According to findings from the 2009-2010 National Health and Nutrition Examination Survey (NHANES), the prevalence of periodontal disease for adults aged 30 years and older is approximately
   A. 25%
   B. 30%
   C. 50%***
   D. 75%

   **Correct Answer: C**
   Approximately 1 out of every 2 American adults aged 30 years and older has periodontal disease, according to findings from the Centers for Disease Control and Prevention (CDC) 2009-2010 National Health and Nutrition Examination Survey.

2. Common bacteria found in dental biofilm include which of the following:
   A. *Streptococcus mutans*
   B. *Streptococcus sanguis*
   C. *Porphyromonas gingivalis*
   D. All of the above***

   **Correct Answer: D**
   Common bacteria found in dental plaque biofilms include the following: *Actinomyces* species, *Streptococcus mutans*, *Streptococcus sanguis*, *Spirochetes*, *Porphyromonas gingivalis*, *Bacteroides forsythus*, *Campylobacter recta*, *Peptostreptococcus micros*, *Eikenella corrodens*, *Actinobacillus actinomycetemcomitans*, *Eubacterium* species, *Fusobacterium* species, *Capnocytophaga* species, and *Prevotella* species.

3. With regard to oral disease and its impact on systemic health, which of the following statements is NOT correct:
   A. Studies suggest that patients with severe periodontal disease are at increased risk of stroke
   B. Studies suggest that the relationship between diabetes and periodontal disease is bidirectional
   C. Studies have identified proof of a causative link between periodontal disease and cardiovascular disease***
   D. None of the above

   **Correct Answer: C**
With regard to the connection between cardiovascular disease and periodontitis—health care professionals believe one possible mechanism of action may be the inflammation associated with periodontal disease, which may promote systemic inflammation and lead to or exacerbate cardiovascular conditions, although research has yet to find proof of a causative link.

4. A therapeutic ingredient in an over-the-counter (OTC) mouth rinse product that the U.S. Food and Drug Administration (FDA) has deemed safe and effective for human use is recognized as which of the following:
   A. Category 1***
   B. Category 2
   C. Category 3
   D. Category 4

   Correct Answer: A
   After a detailed evaluation of safety and efficacy data, the FDA assigns the therapeutic ingredient(s) in mouth rinses to 1 of the following categories: Category 1—the ingredient is considered both safe and effective and is not misbranded; Category 2—the ingredient is not generally recognized as safe and effective or is misbranded; or Category 3—there are insufficient data to evaluate safety and/or effectiveness.

5. All of the following statements are correct regarding the American Dental Association’s (ADA) Seal of Acceptance program EXCEPT:
   A. Product efficacy must be demonstrated through at least 2 independent, placebo-controlled trials that are at minimum 6 months in duration
   B. The ADA Seal program is mandatory***
   C. The ADA Seal program includes both safety and efficacy evaluations of ALL mouth rinse products that bear its label
   D. None of the above

   Correct Answer: B
   Table 1: The ADA Seal of Acceptance program is voluntary and not all drug manufacturers seek approval.

6. Cosmetic mouth rinse products
   A. Do not prevent gingivitis
   B. Do not prevent dental caries
   C. Do not reduce plaque
   D. All of the above***

   Correct Answer: D
Cosmetic products do not reduce plaque, gingivitis, or prevent dental caries, but may claim to act as mouth fresheners or teeth whiteners (e.g., Listerine Zero, Scope); however, these claims are typically not supported by clinical evidence. Therapeutic mouth rinses elicit pharmacologic actions that combat oral disease, which are supported by data from controlled clinical trials.

7. Which one of the following mouth rinse ingredients is considered the gold standard for the reduction/prevention of plaque-induced gingivitis:
   A. Chlorhexidine gluconate***
   B. Essential oils (EOs)
   C. Cetylpyridinium chloride CPC
   D. Delmopinol

   **Correct Answer: A**
   Chlorhexidine gluconate (CHX) is considered the gold standard mouth rinse ingredient for the management of plaque-induced gingivitis, considering its superior efficacy when compared with EOs, delmopinol, and CPC.

8. The therapeutic activity of CPC is dependent upon which of the following:
   A. The positioning of a cetyl radical within its medicinal structure
   B. The concentration of drug
   C. The percentage of drug that is biologically active
   D. All of the above***

   **Correct Answer: D**
   The antimicrobial activity of CPC is dependent upon the positioning of a cetyl radical within its medicinal structure and any formulation that diminishes the activity or competes with this radical may inactivate the product; the FDA has recognized CPC as safe and effective when formulated at concentrations of 0.045% to 0.1% with at least 72% to 77% of CPC biologically available to combat gingivitis and plaque.

9. All of the following statements regarding delmopinol are correct EXCEPT:
   A. Delmopinol is a class 2 medical device
   B. Delmopinol has little or no effects on bacterial growth
   C. Delmopinol exhibits less tooth staining than chlorhexidine
   D. Delmopinol has a high alcohol content***

   **Correct Answer: D**
   Delmopinol has a very low alcohol content (1.5%) and is indicated for most patients—especially those patients with heavy plaque accumulation and chronic gingivitis.

10. In which of the following patient populations is an alcohol-free mouth rinse likely to improve patient acceptance:
A. Patients with oral ulcerations
B. Patients with xerostomia
C. Patients who are recovering alcoholics
D. All of the above***

Correct Answer: D
Since alcohol is included in mouth rinses to act as a vehicle and has no real therapeutic benefit, alcohol-containing mouth rinses should likely be avoided by patients who have a compromised immune system, those with diabetes, those recovering from alcoholism, or those with symptoms of xerostomia because alcohol may worsen these clinical conditions.