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Pain management for patients with chemical dependence

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Abstract

Opioids have been traditionally used to routinely treat a variety of acute and chronic conditions, but with recent research in and attention to the risk of chemical dependence, prescriptive recommendations and practices have changed. Opioid use and its risks become especially important in pain management with patients who have a history of addiction or other forms of chemical dependence. Science in the field of pain medicine and evidence-based practice helps practitioners outline a course of pain management that can reduce the risk of addiction or relapse while effectively managing pain and disability in a patient. A discerning provider armed with the right tools can help stabilize pain in a safe and responsible manner. This course will help dental professionals best navigate the nuances of managing pain in patients with chemical dependence and opioid use disorders by discussing how to identify risk factors and best choose effective therapies while minimizing risk.

Educational objectives

At the end of this self-paced educational activity, participants will be able to:

1. Articulate the clinical differences between addiction, tolerance, and dependence.
2. Discuss the role of dentistry in pain management and opioid awareness for this patient population.
3. Identify risk factors in patients and treatment to note when prescribing pain medication.
4. Discuss use and misuse guidelines for pain therapies used for both acute and chronic pain and discuss alternative methods of pain control that may be beneficial to this population.
5. Review common pain medications used, recognize contraindications to prescribing in patients with chemical dependence, and identify viable pain therapy strategies to use with at-risk populations.

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The opioid crisis, substance abuse disorder, and dentistry's role

In October of 2017, the US Department of Health and Human Services declared that the opioid crisis was a public health emergency in the United States.[1] Since that declaration, there has been significant research that shows the true depth of addiction in the US population that has come as a direct consequence of overprescription of opioid pain medication. Opioids were introduced to the US pharmaceutical market in 1999, and prescriptions quadrupled through 2010.[2] In 2017, studies showed that more than 11.4 million US citizens misused prescription opioids, which resulted in a $78.5 billion economic burden to US economy and 48 overdose-related deaths per day.[3,4] Opioid misuse is the highest in the United States;[5] the US consumes 80% of all opioid prescriptions in the world even though the US represents only 5% of the world's population. This has gone as far as to create the first overall decrease in life expectancy in US history.[1]

Research has shown that the dental industry has played a significant role in the opioid crisis. Dentists prescribe 8.6% of all opioid prescription medication, which is even more than pain medicine physicians (but overall less than primary care physicians and internal medicine doctors).[1] Dentists are the leading source of opioid prescribers for children and adolescents ages 10–19, a group particularly susceptible to addiction pathways developing secondary to opioid prescriptions.[6] Dentists also have historically prescribed opioids in larger quantities, at higher strengths, and for longer periods than necessary, resulting in more than 50% of all opioids prescribed by dentists following tooth extractions remaining unused, and therefore potentially contributing to opioid misuse.[7] Significant public health measures, including state prescription drug monitoring programs (PDMPs), have helped decrease opioid prescriptions by 27.5% from 2012 to 2017, but dental opioid prescriptions have only decreased by 2.2% over that same time frame.[1]

These developments show that dentistry's role is pivotal in not only the development of the opioid crisis but will also be pivotal as a solution. And although the opioid prescription guidelines and prescribing practices are evolving, there is no doubt that opioid prescriptions have been a fundamental part in pain management practice over the course of the last 20 years. Exploring emergency medicine shows that patients who present to the emergency room with odontogenic concerns are more than twice as likely to receive an opioid prescription as other patients. More than 50% of the 2.18 million emergency visits in 2012 that were related to nontraumatic dental pain received opioid prescriptions.[8] As a profession, this means patients present almost on a daily basis who have had opioid prescriptions and who may have been impacted by these pain management practices. Statistics show that 5–17% of the US population currently deal with a substance abuse disorder.[9] Therefore, it is crucial for dentists to understand how opioid prescriptions can influence pain and patient management, and to have a strong grasp of how to use current best practice guidelines to safely prescribe pain medications for all populations, including those with chemical dependence. In order to do that effectively, one needs to understand the array of dependences that opioid prescriptions can cause.

Dependence terminology

Colloquially, and even among certain medical professionals, the terms **dependence**, **tolerance**, and **addiction** have been traditionally used interchangeably, but this is inaccurate and limiting when serving patients.

Physical or chemical **dependence** is a normal and predictable response to any opioid prescription, even when used appropriately and according to physician or dentist direction. It is defined by the development of any withdrawal symptoms after an abrupt dose reduction.[9] It is a normal physiologic event or neuroadaptation to any opioid exposure and can be taken into account during prescribing and maintenance by a medical provider.

Tolerance is also a normal and predictable physiologic event, which is defined by the progressively decreasing pharmacologic effects of a drug's pain-relieving properties over time and exposure. Any chronic use of an opioid pain killer has the potential to result in some tolerance, and this should also be taken into account when managing the pain of a patient.[9]

Dependence and tolerance both develop with time, usually several days to two weeks of continued use.[10] Due to the predictability of these biological phenomena, proper and responsible prescribing and patient management can be used to avoid or minimize both dependence and tolerance.

Substance abuse and **addiction** cross over into maladaptive behavior and are not considered normal reactions to on-label and correct use of opioid pain prescriptions. Substance abuse is defined as any illicit drug use, unsanctioned or inappropriate use of a prescribed drug, or the acquisition and use of any illegal drugs or alcohol.[9] Therefore, when a patient takes a prescription more frequently than prescribed, uses a script that is written for a friend or family member, or gets multiple prescriptions from multiple doctors without mutual disclosure, these all become examples of substance abuse. But not all substance abuse results in addiction; substance abuse simply makes addiction more likely and is a higher-risk behavior.

Addiction is further classified into two categories: **active addiction** and **recovery**. Active addiction is medically defined by the presence of maladaptive behavior including but not limited to loss of control, compulsive use, preoccupation with the drug or substance, and continued use despite physical harm. The presence of certain maladaptive and drug-seeking behaviors such as drug hoarding during periods of reduced symptoms; requesting certain drugs by name; stealing or borrowing medication from others; prescription forgery; "doctor shopping" or visiting multiple providers to attain multiple scripts; unsanctioned dose escalation; or other high-risk behaviors indicate the diagnosis of addiction (which can be made by appropriate behavioral health practitioners only). Isolated incidents are less indicative of addiction than behavior patterns that continue over time and, in conjunction, result in a diagnosis.[9]

This diagnosis is very hard to make due to a phenomenon called **pseudoaddiction**. Pseudoaddiction, which is not active addiction, is most common with patients who may have had previous experiences of undermedication of pain or been denied

adequate pain medication by medical providers who fear prescribing opioids. As a result, these patients may demonstrate similar maladaptive behaviors, such as asking for medications by name, requesting medications that do not seem consistent with their pain levels, or drug hoarding, but do not have active addiction.[10] Therefore, it is extremely important to maintain communication with patients and get a thorough medical and social history to understand the motives and desires surrounding care.

Patients in active **recovery** may also voice concerns and show motivation to acquire narcotics but for reasons completely different than that from patients suffering from active addiction. A common pattern for recovery patients is to resist discontinuing narcotic medication when it is no longer indicated for pain control so they can avoid withdrawal symptoms.[9] The simple fear of withdrawal symptoms can be a motivating-enough factor, which then has the potential to jeopardize their recoveries. Patients in recovery may want opioids to avoid narcotic withdrawal symptoms instead of simple pain relief. Narcotic withdrawal syndrome can also interfere with pain control on normal doses. Analgesia for recovering patients can only be achieved when dental clinicians create adequate pain control *and* avoid withdrawal states and related anxiety. With the partnership of a pain management or addiction medicine physician, pain control can be combined with methadone maintenance to achieve best results. Referral to an addiction or pain management specialist can help patients acquire methadone prescriptions, usually 15–20 mg per day, which, in conjunction with pain medications, can help control pain and avoid narcotic withdrawal symptoms.[11]

Acute and chronic pain

One of the most pervasive and damaging errors a medical provider can make when it comes to pain medication and patients with dependence issues is undermedication. Providers—out of fear or an abundance of caution—often assume that a patient with a history of dependence should never get an opioid prescription ever again, regardless of pain or current circumstances. The two leading authorities regarding pain management, especially for this patient population, are the World Health Organization (who recommend a stepladder approach) and the Joint Commission on Accreditation of Healthcare Organizations (who have a recommendation of standards for pain management). They both agree that the key to successful pain management for recovering and addicted patients is to properly address the pain at hand.[9]

To address the pain that a patient feels, dental clinicians must understand it and know how to effectively medicate it. Pain in the world of medical pain management is divided into three categories: 1) acute pain, 2) chronic pain, and 3) end-of-life pain. Acute pain, by definition, lasts less than three to six months. It usually has a direct etiology, and once the source of the pain is gone, the pain too usually dissipates.[12] The vast majority of pain that the profession of dentistry encounters is the first category: acute pain.

The goal of acute pain management is the same for all patients, regardless of their history of chemical dependence issues: effective pain relief with eliminating pain as a reasonable endpoint or goal. In addition, diagnosis and identification of the etiology of the pain and eliminating the cause are pivotal to address the pain in a timely manner. For all patients, including those with chemical dependence histories, practitioners should strive to manage pain using nonopioid and nonpsychotropic options. But when pain is significant and pervasive enough, and pain management cannot successfully be achieved with these options alone, the use of opioids is warranted in both the general population and in patients with dependence histories.[9] With the correct patient management and follow-up, prescribing narcotics for acute pain to patients with chemical dependence will not necessarily result in relapse.[9]

The goal for chronic pain is to attain reasonable relief while concurrently maintaining a maximum attainable level of function.[10] Because chronic pain is not extremely common within the scope of general dentistry, and addiction and chronic pain can reinforce each other,[11] and the risk of relapse with long-term pain is higher, any chronic pain that persists should be referred to a specialist for further evaluation and management. Best practices for management of chronic pain include: all pain medication being prescribed and managed by one provider; stability at home and at work should be optimized, including maintenance of a routine by the patient; pain medication should be weaned to avoid withdrawal symptoms; and minimum dosing and timing should be used with effective follow-up.[9] These best practices stand for all patients, including those with chemical dependence in their medical history.

End-of-life care is not traditionally within the scope of practice for general dentistry and should always be referred. In pain management for terminal patients, addiction is not considered an issue, and the primary goal is comfort and optimal pain management. The only concern is the mechanism of pain management as the necessary dose to achieve pain control may be higher in patients with a history of addiction.[9]

Pain management strategies and addiction

The first and foremost principle when managing pain in patients with a history of chemical dependence is providing effective pain management.[9] This is of utmost importance because one of the most significant factors for relapse in recovering patients is inadequate pain relief.[11] Patients who have a history of dependence have a tendency to self-medicate, using other substances or altering prescription instructions when pain is undermedicated. In efforts to prevent undermedicating the pain, there are some key best practices to follow, especially with this patient population:[9]

- Choose medications on the basis of their ability to adequately address the pain. Research has shown that primary care physicians and other practitioners tend to rate their patients' pain significantly lower than the patients themselves.[13] This variation itself has the potential to create a tendency to inadequately address patients' pain levels. Acute pain should be treated as a medical emergency, because without treating it with adequate aggression, the pain can escalate and be challenging to control.[9]
- Use around-the-clock dosing to stay ahead of the pain. When pain medications are used only on an as-needed

basis, it is easier for the patient to fall behind and have the challenge of regaining pain control. Medicine control should be structured and preferably given at fixed intervals, and controlled by someone other than the patient to minimize risk of abuse.[9]

- Use long-acting opioids with the addition of short-acting opioids as needed for breakthrough pain. The high that psychotropic drugs create is directly proportional to the rate of the concentration of the drug levels rising in the blood. Therefore, long-acting opioids as the principal opioid for pain control will help optimize pain control and minimize mind alteration.[14]
- Screening schedules should be used and created prior to any pain medication regimen. When treating recovering addicts for acute pain, a pretreatment agreement for one-, three-, and six-month drug screenings after pain medication is discontinued helps to create accountability. Any failure to complete a drug screening would then be considered a positive screen. Positive screens would allow the medical provider to proactively monitor for relapse and offer medical intervention for the relapse.[9] This can be done in conjunction with a patient's primary care physician. In some cases, the pain control regimen can also be coupled with active involvement with a recovery support program.[15] Medical record audits and psychological screenings may hold value for this patient population, as certain conditions such as depression can adversely affect pain control.[16]
- All medication regimens should be clearly documented, including the need or indication for narcotic analgesic medication, medication dosage, dosing intervals, quantity provided, and mutually agreed-upon refill interval. Also, all follow-up with the patient during the medication regimen and after discontinuation should also be completed and documented.[9]
- When discontinuing medication, all regimens should be slowly tapered over several days and under close medical supervision to avoid withdrawal symptoms. Some patients may need to be admitted to a short-term detoxification program to allow successful termination of medication without risk of relapse.[9]

The role of inflammation and efficacy

Pain management arises in two main categories in general dentistry: 1) providing relief from odontogenic pain (resulting from pulpitis, pericoronitis, or other pathology) and 2) providing pain control after an invasive procedure, such as a tooth extraction or root canal. Most odontogenic pain, regardless of pathogenic etiology, has an origin of inflammation. Microbial pathogens can impact a variety of host tissues to elicit an inflammatory response, which is why pain medications with anti-inflammatory properties are usually the most effective at alleviating odontogenic pain. Following a 2018 data review prompted by the American Dental Association, researchers concluded that nonsteroidal anti-inflammatory drugs (NSAIDs), either alone or in conjunction with acetaminophen, were equal or superior for pain control following invasive dental procedures.[18] Their recommendation was that "NSAIDs should be considered the drugs of choice to alleviate or minimize pain of endodontic origin." This was especially true given that, in comparison, opioids also cause acute adverse reactions at a higher rate as compared to NSAIDs and acetaminophen.[1,17]

Medication to avoid in patients with a history of chemical dependence include:[9]

- **Meperidine:** It has a short length of effectiveness and a strong tendency to induce euphoria. The high it produces can trigger the need for a stronger high in recovering patients.
- **Propoxyphene:** Propoxyphene and its combination medications provide minimal analgesia combined with a high potential for abuse.
- **Agonist-antagonist category drugs:** Drugs such as pentazocine, nalbuphine, and butorphanol can precipitate an opioid withdrawal syndrome.

The World Health Organization's stepladder approach provides a good outline of prescription guidelines. The protocol addresses pain as mild, moderate, and severe. Step 1, or mild pain, should be treated with acetaminophen, NSAIDs, and COX-2 (cyclooxygenase-2) inhibitors. If the pain is not controlled with step 1, then the protocol progresses to step 2, or moderate pain, which recommends the aforementioned plus a weak opioid, such as codeine or hydrocodone. Step 3, or severe pain, can be treated with the addition of a strong opioid, such as morphine, oxycodone, hydromorphone, or methadone.[19]

Conclusion

Treating patients with a history of chemical dependence comprehensively, having a long-term plan of action with strategic steps for follow-up, and addressing patients' pain effectively are all crucial steps to effective and responsible treatment. Successful pain management, although complicated by narcotic abuse history, can still be managed with the right plan. As practitioners, if we recognize the signs and symptoms of addiction, dependence, and withdrawal, we can be equipped to provide care of the highest standard.

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Notes

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QUESTIONS

1. In what year did the US Department of Health and Human Services declare that the opioid crisis was a public health emergency in the United States?
   - A. 1999
   - B. 2007
   - C. 2012
   - D. 2017

2. The US consumes what percentage of the world's opioid prescriptions?
   - A. 5%
   - B. 27%
   - C. 50%
   - D. 80%

3. Which of the following statements is true regarding opioid trends from 2012–2017?
   - A. Opioid prescriptions have decreased in the US from 2012–2017, and dental opioid prescriptions have also decreased at the same rate.
   - B. Opioid prescriptions have decreased in the US from 2012–2017, and dental opioid prescriptions have decreased at a lower rate.
   - C. Opioid prescriptions have decreased in the US from 2012–2017, but dental opioid prescriptions have increased.
   - D. Opioid prescriptions have increased in the US from 2012–2017, and dental opioid prescriptions have also increased at the same rate.

4. Out of the following groups, which profession prescribes the lowest number of opioid prescriptions?
   - A. Dentists
   - B. Primary care physicians
   - C. Pain medicine physicians
   - D. Internal medicine physicians

5. Which of the following medications can be prescribed in certain circumstances in patients with a history of chemical dependence?
   - A. Acetaminophen combined with a weak opioid
   - B. Meperidine
   - C. Propoxyphene
   - D. Nalbuphine

6. Acute pain is defined as pain that lasts less than:
   - A. 1 to 2 days
   - B. 2 weeks
   - C. 3 to 6 months
   - D. 12 months

7. How is the high that psychotropic drugs create related to the rate of the concentration of the drug levels rising in the blood?
   - A. The high is directly proportional to the blood concentration levels.
   - B. The high is inversely proportional to the blood concentration levels.
   - C. The high is always greater than the blood concentration levels.
   - D. The high is always less than the blood concentration levels.

8. Which of the following factors can impact the dosage for pain medications when treating patients with a history of chemical dependence?
   - A. Tolerance of opioids
   - B. Length of chemical dependence
   - C. Length of remission
   - D. Cost of medication

9. Why are agonist-antagonist category drugs contraindicated in patients with a history of dependence?
   - A. High abuse potential
   - B. Effectively treats inflammation
   - C. Precipitates narcotic withdrawal syndrome
   - D. Minimal analgesic effect

10. Which of the following will have the greatest impact on avoiding withdrawal symptoms after a pain regimen?
    - A. Screening schedules at 1, 3, and 6 months
    - B. Slowly tapering discontinuation of medication
    - C. Around-the-clock dosing
    - D. All of the above

11. In 2018, the American Dental Association commissioned a study that showed anti-inflammatory medication was:
    - A. Most effective for controlling odontogenic pain
    - B. Most effective for controlling postoperative pain
    - C. Both A and B
    - D. Neither A nor B

12. Analgesia for recovering patients can only be achieved when:
    - A. Practitioners address adequate pain control
    - B. Practitioners help patients avoid withdrawal states and related anxiety
    - C. Both A and B
    - D. Neither A nor B

13. What is the most significant variable for relapse when considering pain in patients with chemical dependence?
    - A. Inadequate pain relief with the pain regimen
    - B. Number of medications the patient is taking
    - C. The use of long-acting opioids
    - D. All of the above

14. Which of the following most indicates that the patient may have an active addiction?
    - A. They ask for a medication by name
    - B. They hoard prescriptions
    - C. They are on methadone maintenance therapy
    - D. They have a pattern of maladaptive behavior

15. What is the average dosing for a methadone prescription?
    - A. 5–10 mg/day
    - B. 15–20 mg/day
    - C. 20–40 mg/day
    - D. 40–55 mg/day

16. Between 1999 and 2010, opioid prescriptions have:
    - A. Doubled
    - B. Tripled
    - C. Quadrupled
    - D. Halved

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QUESTIONS

17. The development of any withdrawal symptoms after an abrupt dose reduction is known as:
    A. Tolerance
    B. Dependence
    C. Addiction
    D. Recovery

18. Which of the following is a false statement?
    A. Dentists have historically prescribed opioids in larger quantities, at higher strengths, and for longer periods than necessary.
    B. Research has shown that primary care physicians and other practitioners tend to rate their patients' pain significantly higher than the patients themselves do.
    C. Acute pain should be treated as a medical emergency.
    D. None of the above

19. Active addiction most closely resembles which of the following, making it challenging to diagnose?
    A. Chemical dependence
    B. Tolerance
    C. Pseudoaddiction
    D. Passive addiction

20. Of the 2.18 million emergency visits in 2012 that were related to nontraumatic dental pain, more than what percentage led to opioid prescriptions?
    A. 10%
    B. 20%
    C. 40%
    D. 50%

21. What percentage of the US population currently deals with a substance abuse disorder?
    A. 1–2%
    B. 5–17%
    C. 12–19%
    D. 20–30%

22. The first and foremost principle when managing pain in patients with a history of chemical dependence is:
    A. Providing effective pain management
    B. Not prescribing any narcotics
    C. Signing a screening agreement
    D. Checking baseline levels of narcotics

23. Which of the following is not a recommended pain management strategy for managing pain in patients with chemical dependence?
    A. Choose medications on the basis of their ability to adequately address the pain.
    B. Medicine control should be structured and preferably given at fixed intervals, controlled by someone other than the patient to minimize risk of abuse.
    C. Use short-acting opioids with the addition of long-acting opioids as needed for breakthrough pain.
    D. All of the above are recommended pain management strategies.

24. According to the World Health Organization's stepladder approach, step 1 pain should be treated with:
    A. Acetaminophen, NSAIDs, and/or COX 2 inhibitors
    B. A weak opioid such as codeine or hydrocodone
    C. A strong opioid such as morphine, oxycodone, hydromorphone, or methadone
    D. All of the above

25. Most odontogenic pain, regardless of pathogenic etiology, has an origin of:
    A. Metastasis
    B. Chromosomal abnormality
    C. Inflammation
    D. None of the above

26. Which of the following should be documented during any pain regimen in a patient's chart?
    A. Indication for narcotic analgesic medication
    B. Medication dosage and dosing intervals
    C. Refill interval
    D. All of the above

27. Best practices for management of chronic pain include:
    A. All pain medication should be prescribed and managed by one provider
    B. Stability at home and at work should be optimized
    C. Pain medication should be weaned to avoid withdrawal symptoms
    D. All of the above

28. What is the goal of acute pain management?
    A. Effective pain relief with eliminating pain as a reasonable endpoint or goal
    B. Attain reasonable pain relief while concurrently maintaining a maximum attainable level of function
    C. Comfort and optimal pain management
    D. None of the above

29. Especially when found in a pattern, which of the following shows signs of active addiction?
    A. Prescription forgery
    B. "Doctor shopping" or visiting multiple providers to attain multiple scripts
    C. Unsanctioned dose escalation
    D. All of the above

30. As compared to NSAIDs and acetaminophen, opioids:
    A. Treat odontogenic pain more effectively
    B. Cause acute adverse reactions at a higher rate
    C. Are less psychotropic
    D. All of the above

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EXPIRATION DATE:	MAY 2023

ANSWER SHEET

Pain management for patients with chemical dependence

NAME: TITLE: SPECIALTY:

ADDRESS: EMAIL: AGD MEMBER ID (IF APPLIES):

CITY: STATE: ZIP: COUNTRY:

TELEPHONE: PRIMARY ( ) OFFICE ( )

REQUIREMENTS FOR OBTAINING CE CREDITS BY MAIL/FAX: 1) Read entire course. 2) Complete info above. 3) Complete test by marking one answer per question. 4) Complete course evaluation. 5) Complete credit card info or write check payable to Endeavor Business Media. 6) Mail/fax this page to DACE. A score of 70% is required for CE credit. **FOR QUESTIONS, CALL (800) 633-1681. COURSE MAY ALSO BE COMPLETED AT DENTALACADEMYOFCE.COM.**

Educational Objectives

1. Articulate the clinical differences between addiction, tolerance, and dependence.
2. Discuss the role of dentistry in pain management and opioid awareness for this patient population.
3. Identify risk factors in patients and treatment to note when prescribing pain medication.
4. Discuss use and misuse guidelines for pain therapies used for both acute and chronic pain and discuss alternative methods of pain control that may be beneficial to this population.
5. Review common pain medications used, recognize contraindications to prescribing in patients with chemical dependence, and identify viable pain therapy strategies to use with at-risk populations.

Course Evaluation

1. Were the individual course objectives met?

   Objective #1: Yes No Objective #3: Yes No Objective #5: Yes No

   Objective #2: Yes No Objective #4: Yes No

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

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. Please rate the usefulness and clinical applicability of this course. 5 4 3 2 1 0
9. Please rate the usefulness of the supplemental webliography. 5 4 3 2 1 0
10. Do you feel that the references were adequate? Yes No
11. Would you participate in a similar program on a different topic? Yes No
12. If any of the continuing education questions were unclear or ambiguous, please list them.

    _____

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

    _____

14. How long did it take you to complete this course?

    _____

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

    _____

    _____

    _____

Mail/fax completed answer sheet to:

Endeavor Business Media
Attn: Dental Division
7666 E. 61st St. Suite 230, Tulsa, OK 74133
Fax: (918) 831-9804

☐ Payment of $59 is enclosed.
Make check payable to Endeavor Business Media.

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3.	Ⓐ	Ⓑ	Ⓒ	Ⓓ		18.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
4.	Ⓐ	Ⓑ	Ⓒ	Ⓓ		19.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
5.	Ⓐ	Ⓑ	Ⓒ	Ⓓ		20.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
6.	Ⓐ	Ⓑ	Ⓒ	Ⓓ		21.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
7.	Ⓐ	Ⓑ	Ⓒ	Ⓓ		22.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
8.	Ⓐ	Ⓑ	Ⓒ	Ⓓ		23.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
9.	Ⓐ	Ⓑ	Ⓒ	Ⓓ		24.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
10.	Ⓐ	Ⓑ	Ⓒ	Ⓓ		25.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
11.	Ⓐ	Ⓑ	Ⓒ	Ⓓ		26.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
12.	Ⓐ	Ⓑ	Ⓒ	Ⓓ		27.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
13.	Ⓐ	Ⓑ	Ⓒ	Ⓓ		28.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
14.	Ⓐ	Ⓑ	Ⓒ	Ⓓ		29.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
15.	Ⓐ	Ⓑ	Ⓒ	Ⓓ		30.	Ⓐ	Ⓑ	Ⓒ	Ⓓ

AGD Code: 340, 134

PLEASE PHOTOCOPY ANSWER SHEET FOR ADDITIONAL PARTICIPANTS.

INSTRUCTIONS
All questions have only one answer. Grading of this examination is done manually. Participants will receive confirmation of passing by receipt of a verification form. Verification of Participation forms will be mailed within two weeks after taking an examination.

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We encourage participant feedback. Complete the survey above and e-mail feedback to Aileen Gunter (agunter@endeavorb2b.com) and Laura Winfield (lwinfield@endeavorb2b.com).

COURSE CREDITS AND COST
All participants scoring at least 70% on the examination will receive a verification form for three CE credits. The formal CE program of this sponsor is accepted by the AGD for fellowship and mastership credit. Please contact Endeavor for current term of acceptance. Participants are urged to contact their state dental boards for continuing education requirements. The cost for courses ranges from $20 to $110.

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