Restorative Dental Patient Education

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CE Credits: 1 hour
Intended Audience: Dental Hygienists, Dental Assistants, Dental Hygiene Students, Dental Assistant Students
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Online Course: www.dentalcare.com/en-us/professional-education/ce-courses/ce497

Disclaimer: Participants must always be aware of the hazards of using limited knowledge in integrating new techniques or procedures into their practice. Only sound evidence-based dentistry should be used in patient therapy.

Introduction
This course will provide information to dental assistants and dental hygienists regarding dental materials, classification and treatment modalities. Additionally, health education principles will be presented with an emphasis on skills for providing motivation during patient education. This information should enhance the education provided to patients regarding dental materials and the care and maintenance of restorations.

Conflict of Interest Disclosure Statement
• The author reports no conflicts of interest associated with this course.

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Provider ID# 211886
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Overview

One of the most vital roles of dental assistants and dental hygienists is the education they provide to patients to improve and ensure dental health. Therefore, it is crucial that all dental providers understand dental materials, procedures and treatment options they discuss with patients. They often explain treatment procedures, dental materials used in these procedures and the need for the treatment planned by the dentist. Providing patients with health instruction and education that motivates them to maintain dental health and increase the longevity of dental restorations is imperative.

Learning Objectives

Upon completion of this course, the dental professional should be able to:

- Describe dental materials, classification and treatment modalities.
- Explain health education principles.
- Apply health education theory to dental patients.
- Describe the skills necessary to explain materials and their care to patients.

Introduction

Dental materials science focuses on the study of materials used to restore or replace missing tooth structure, bone and soft tissues in relation to the maintenance of health and prevention of further disease. Dental professionals strive to provide quality dental health care to patients, including education on how to maintain a healthy dentition.

Dental assistants and dental hygienists frequently have contact with the patients first and are in a position to provide education to clinical patients. They often explain treatment procedures, dental materials used in these procedures and the need for the treatment planned by the dentist. Additionally, they are the primary providers of education on how to care for these newly-placed restorations.

Patient education is a necessary component for promoting long-term dental health. Without adequate home care, many restorations are likely to fail as long-term solutions to dental issues. Inadequate homecare around dental restorations can lead to recurrent decay, dental infections and eventual tooth loss if the decay is left untreated. Therefore, providing optimum dental treatment is only part of the solution. The delivery of effective education on the materials, procedures and homecare is equally important as the initial treatment. Education alone does not ensure adequate home care in all cases. Often times, patients require motivation and encouragement to change behaviors that will help improve overall health. Health education theories and motivational techniques will be discussed later in the course.

Dental Materials Review

Dental materials should have certain characteristics to be effective in dental health maintenance. Characteristics which are particularly important are safety and compatibility with oral tissues (non-irritating), as well as longevity (Table 1). Dental materials and devices are regulated for safety and efficacy by the Food and Drug Administration (FDA). Efficacy can be defined as the ability of a dental material to function as was intended within the oral cavity. Additionally, the Occupational Safety and Health Administration (OSHA) provides guidelines for safety to those in the workplace. Specifically, OSHA enforces the completion of Safety Data Sheets (SDS) when addressing dental materials. These are documents with a description of pertinent data, such as the chemicals in a product, safe handling and emergency procedures.

Dental restorations can be classified by the type of fabrication used to create them. For instance, some restorations, such as a composite incisal fillings, are fabricated in the oral cavity. Other restorations, such as a dental crown, are fabricated outside the mouth and then placed in the oral cavity at a later time (Table 2).
### Table 1. Dental Materials Ideal Characteristics.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biocompatibility</td>
<td>Material is compatible with dentition, oral mucosa and the entire body systems.</td>
</tr>
<tr>
<td>Adhere to tissues when necessary</td>
<td>Enables patient to eat and speak properly.</td>
</tr>
<tr>
<td>Easy to manipulate</td>
<td>Dental provider can easily manipulate material for fabrication or placement in the oral cavity.</td>
</tr>
<tr>
<td>Cleanable</td>
<td>Patient is able to keep material clean and free of plaque.</td>
</tr>
<tr>
<td>Repairable</td>
<td>Material can be repaired without tooth structure loss if fractured.</td>
</tr>
<tr>
<td>Fiscally responsible</td>
<td>Affordable to patient and dental provider.</td>
</tr>
<tr>
<td>Resistant to corrosion</td>
<td>Does not corrode when retained in the oral cavity.</td>
</tr>
<tr>
<td>Dimensionally stable</td>
<td>Keeps the same dimensions as when initially placed.</td>
</tr>
<tr>
<td>Minimal thermal and electrical conductivity</td>
<td>Does not conduct heat or electrical impulses which result in tooth pain.</td>
</tr>
<tr>
<td>Esthetically pleasing</td>
<td>Realistic and attractive appearance.</td>
</tr>
<tr>
<td>Tasteless</td>
<td>Does not have strong taste initially or with time, after placement.</td>
</tr>
<tr>
<td>Longevity</td>
<td>Last long term.</td>
</tr>
</tbody>
</table>

### Table 2. Dental Materials Ideal Characteristics.

<table>
<thead>
<tr>
<th>Location of Fabrication</th>
<th>Definition</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct</td>
<td>Direct restoration is fabricated directly in the oral cavity</td>
<td>Amalgam filling, composite filling, dental sealant</td>
</tr>
<tr>
<td>Indirect</td>
<td>Indirect restorations are fabricated using cast or study model replication or computers outside of the oral cavity.</td>
<td>Dental crown, dentures, bridges, inlays, onlays, veneers</td>
</tr>
</tbody>
</table>
Treatment Modalities Classification

Materials can also be classified according to treatment use (Table 3). For example, inlays replace intracoronal tooth structure, whereas onlays replace intracoronal tooth structure including at least one cusp.³ Veneers replace the facial surfaces of anterior teeth, and crowns replace extracoronal tooth structure and is cemented to tooth structure or an implant. An implant(s) replaces the missing tooth or teeth. Fixed partial dentures (bridge) replace a missing tooth or teeth and are cemented to adjacent teeth, known as abutments. Removable partial dentures replace missing teeth and are often retained with the aid of clasps. Complete dentures replace a fully edentulous arch. Overdentures replace an arch and are stabilized most frequently with implants or remaining canine teeth or retained roots. Securing the overdenture to implants or remaining teeth help with the fit and works well for patients with alveolar bone loss and may help prevent further alveolar bone loss for the patient.³⁴

Table 3. Treatment Modalities Classification.³

<table>
<thead>
<tr>
<th>Direct Restoratives</th>
<th>Images</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inlays</td>
<td><img src="image1.png" alt="Image" /></td>
<td>Restoration fabricated outside of the mouth and replaces occlusal and sometimes interproximal tooth structure(s).</td>
</tr>
<tr>
<td>Onlays</td>
<td><img src="image2.png" alt="Image" /></td>
<td>Restoration fabricated outside of the mouth and replaces tooth structure, including cusp(s).</td>
</tr>
<tr>
<td>Crowns</td>
<td><img src="image3.png" alt="Image" /></td>
<td>Restoration fabricated outside of the mouth and replaces an entire tooth.</td>
</tr>
</tbody>
</table>
Table 3. Treatment Modalities Classification.\(^1\) (continued)

<table>
<thead>
<tr>
<th>Veneers</th>
<th>Restoration fabricated outside of the mouth and replaces facial surfaces of anterior teeth. Generally provided for cosmetic/esthetic purposes.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bridges</td>
<td>Restoration fabricated outside of the mouth and replaces two or more teeth. Generally, includes two “abutment” teeth, except in the case of the Maryland bridge which includes one “abutment” tooth and a “pontic” tooth or teeth that replace a missing tooth or teeth. Restoration is placed with cement and is fixed (permanent).</td>
</tr>
<tr>
<td>Partial Dentures</td>
<td>Restoration fabricated outside of the mouth and replaces two or more teeth and should be removed daily. May or may not contain metal alloys “clasps” as mechanisms for stability.</td>
</tr>
<tr>
<td>Complete Dentures</td>
<td>Restoration fabricated outside of the mouth and replaces an entire dentition. In order to prevent subsequent alveolar bone loss and improve fit, implants may be placed or canine teeth not removed to be used as an “overdenture.”</td>
</tr>
<tr>
<td>Implants</td>
<td>Restoration fabricated outside of the mouth and replaces an entire tooth or teeth. Titanium implant, or screw, is placed in the alveolar bone and subsequent crowns or bridges placed.</td>
</tr>
</tbody>
</table>
Dental materials may also be classified by their longevity profile (Table 4). Longevity indicates the time the material is intended to function within the oral cavity.

Another common way to classify dental materials is by the materials themselves. Table 5 explains various materials that are used in dental restorations. Specific home care and professional care instructions are listed for each material.

**Materials Used in Endodontic Procedures**
Another common type of dental procedure, which utilizes different dental materials, is a root canal. This treatment involves removal of infected pulp tissue and replacement with gutta percha, a rubber-like material, in combination with an endodontic sealer. Endodontically treated teeth can be restored with a filling, a crown or a post/core crown. Restoration is dependent on individual patient need and the location of the tooth. The post is usually comprised of stainless steel, titanium, fiber reinforced resin or dental casting alloy that is cemented into a canal. Core buildups are made of amalgam or composite and replace large amounts of tooth structure.

**Health Education Principles and Theories**
As stated previously, patient education is paramount to acceptance of treatment, restoration placement and subsequent compliance with daily oral hygiene. For this reason, it is important for dental assistants and dental hygienists to be versed in concepts such as health education, health literacy and how individuals make the decision to practice daily homecare.

**Health education** can be defined as instruction regarding health behaviors that bring an individual to a state of health awareness, such as teaching a patient the proper flossing technique around a newly-placed bridge. **Health promotion** is a process that informs and motivates people to adopt healthy behavior to enhance their health and prevent disease. An example of health promotion would be a dental office providing samples of floss threaders so they're visible to patients while they are in the waiting room.

Health promotion is similar to health education but is geared more toward motivating people to practice healthy behaviors. In contrast, the intention of health education is to have the patient gain accurate knowledge about healthy behaviors and lifestyles. Both health promotion and education are methods used to modify detrimental behaviors and promote healthy ones.

Health education and health promotion complement each other and are ways to increase health literacy, which is the capacity available to an individual to obtain, process, and understand basic health principles. Health literacy is dependent on individual and systemic factors that affect a patient's ability to access dental care, inform providers of health history and engage in daily oral hygiene regimens. It is of the utmost importance that

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**Table 4. Longevity Classification.**

<table>
<thead>
<tr>
<th>Longevity Standards</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent</td>
<td>Lasting for years, possibly a lifetime, such as an amalgam occlusal restoration.</td>
</tr>
<tr>
<td>Temporary</td>
<td>Should be a temporary fix, such as a temporary crown, until the permanent crown is created. Intended to last approximately a week or up to one month, sometimes referred to as provisional.</td>
</tr>
<tr>
<td>Interim</td>
<td>Restoration to be used before a permanent restoration can be placed. May last up to several years. An example would be a space maintainer or incisal restoration (in an anterior incisor) until the permanent incisor has fully erupted.</td>
</tr>
</tbody>
</table>
Table 5. Common Dental Materials.

<table>
<thead>
<tr>
<th>Material</th>
<th>Uses</th>
<th>Home Care Instructions</th>
<th>Professional Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>Composite</td>
<td>Direct Restorations, veneers, inlays and onlays</td>
<td>Routine home care and specific instructions to prevent recurrent decay, possibly interproximal cleaning and fluoride</td>
<td>Composite (diamond) polishing paste to prevent abrasion, sodium fluoride to decrease the breakdown of filler particles caused by acidulated phosphate fluoride</td>
</tr>
<tr>
<td>Amalgam</td>
<td>Direct Restorations</td>
<td>Routine home care and specific instructions to prevent recurrent decay, interproximal cleaning and fluoride</td>
<td>Regular prophylaxis, amalgam polishing as needed, any fluoride acceptable</td>
</tr>
<tr>
<td>Porcelain</td>
<td>Crowns, bridges, veneers, inlays and onlays</td>
<td>Routine home care with specific instructions on interproximal cleaning</td>
<td>Diamond polishing paste with sodium fluoride to decrease the etching of margins</td>
</tr>
<tr>
<td>Acrylic</td>
<td>Dentures, partial dentures</td>
<td>Denture cleansers and denture brush, acceptable to use other denture cleaning products, recommend sleeping without dentures &amp; keeping them moist when outside the mouth</td>
<td>Clean in ultrasonic with denture cleaner, use instruments as need for calculus removal</td>
</tr>
<tr>
<td>Gutta Percha</td>
<td>Root canals</td>
<td>Routine home care</td>
<td>No changes in cleaning endodontically treated tooth</td>
</tr>
<tr>
<td>Thermoplastics</td>
<td>Bleaching trays, orthodontic appliances</td>
<td>Daily rinsing and brushing with a soft-bristled, wet toothbrush, professional cleansers also available and acceptable, no cleaning with hot water</td>
<td>No cleaning in office with hot water, could lead to distortion</td>
</tr>
<tr>
<td>Metal Alloys</td>
<td>Partial denture clasps</td>
<td>Regular brushing (with denture brush) and rinsing to remove plaque daily</td>
<td>Clean in ultrasonic with denture cleaner</td>
</tr>
<tr>
<td>Stainless Steel</td>
<td>Crowns</td>
<td>Regular brushing and interproximal cleanings</td>
<td>Routine scaling and polishing</td>
</tr>
<tr>
<td>Titanium</td>
<td>Implants</td>
<td>Regular cleaning recommended</td>
<td>Special instruments available for scaling</td>
</tr>
</tbody>
</table>
Dental assistants and dental hygienists provide information in an easy, comfortable chairside manner with patients.

Dental health education theory suggests that although a patient may be educated on a particular health behavior, that knowledge will not positively impact dental health until the patient changes the behavior and it becomes a habit. A behavior change is simply changing a behavior, such as decreasing the amount of sugar in one’s diet, whereas a habit is a behavior that becomes automatic, such as daily brushing. Although dental hygienists may provide an effective presentation that the patient understands, that does not guarantee the patient will practice the dental health behaviors discussed. Therefore, it is necessary to change a person’s values regarding the behavior before the behavior is changed. Values are the ideas and beliefs a person possesses that influence behavior. A person may develop values early in life from family, teachers, or other influential people from whom that person seeks love and acceptance. Values generally must first be changed if behavior is to change. If dental providers could change values that the population holds toward dental health, they could dramatically decrease if not totally eliminate suffering from dental diseases.

Unfortunately, changing values is a bit of a challenge.

**Skill Development in Patient Motivation and Compliance**

Realizing the influence of a patient’s values is important when providing education. Getting to know the patient is necessary to assess individual literacy, knowledge and values. Once the provider understands the patient’s level of dental health literacy, communication should be tailored to the appropriate level. Next, it is important to understand the knowledge base, so patient instruction can be provided in a way that matches their level of dental understanding. The instruction should be provided in a manner that is congruent with the dentist’s treatment plan. Understanding what motivates a patient and his/her inherent values,
will aid in developing a plan for education and promotion of daily oral hygiene behaviors.²

Many suggest the implementation of motivational interviewing, which can be defined as a collaborative, person-centered form of guiding to elicit and strengthen motivation for change.⁶⁻¹⁰ Motivational interviewing is a communication strategy that includes a series of open ended questions to help assess patients’ feeling about certain behavior, such as flossing around a newly-placed crown. Using motivational interviewing techniques are valuable, because they allow the patients to participate in coming up with a solution to the problem. This can help patient education to be more participatory instead of paternalistic in nature. In a participatory environment, the patient is actively involved in the learning process. In a paternalistic environment, the provider tends to impart his/her knowledge to the patient and dictating the desired patient behavior.

Conclusion
Understanding dental materials various classifications is necessary during handling and patient education, such as how to prevent decay or material failure. The dental assistant or dental hygienist must assess the patient to provide individualized education that motivates the patient to maintain dental health. Communication between the provider and patient should be interactive and participatory, which will increase the likelihood for practicing healthy behaviors at home. By providing this instruction, dental providers are helping to improve and maintain the patient's dental health and the longevity of their dental restorations.
**Course Test Preview**

To receive Continuing Education credit for this course, you must complete the online test. Please go to: [www.dentalcare.com/en-us/professional-education/ce-courses/ce497/start-test](http://www.dentalcare.com/en-us/professional-education/ce-courses/ce497/start-test)

1. **Providing optimum dental treatment is only part of the solution for achieving dental health. Equally important to providing treatment is the delivery of effective patient education on the materials, procedures and homecare.**
   a. The first statement is true, the second statement is false.
   b. The first statement is false, the second statement is true.
   c. Both statements are true.
   d. Both statements are false.

2. **Which of the following are ideal characteristics of dental materials?**
   a. Cleanable
   b. Ability to fabricate outside the mouth
   c. Resistant to fluoride
   d. Both B and C

3. **Which of the following is an example of a direct restorative material?**
   a. Inlay
   b. Onlay
   c. Crown
   d. Amalgam

4. **When considering the difference between an inlay and an onlay, which additional surface does the onlay replace?**
   a. Occlusal
   b. Interproximal
   c. Pit and fissures
   d. Cusp(s)

5. **To prevent further bone loss, an overdenture includes (an) __________.**
   a. abutment teeth
   b. crowns
   c. implant(s)
   d. pontic(s)

6. **Acrylic should be cleaned with a denture brush and __________.**
   a. denture paste
   b. toothpaste
   c. sodium fluoride
   d. acidulated phosphate fluoride

7. **Which of the following can be defined as “instruction regarding health behaviors that bring an individual to a state of health awareness?”**
   a. Health Behavior
   b. Health Education
   c. Health Literacy
   d. Health Promotion
8. **Dental health education refers to educating a patient on a particular dental health behavior. Knowledge alone will not impact dental health until the patient positively changes the behavior and it eventually becomes a habit.**
   a. The first statement is true, the second statement is false.
   b. The first statement is false, the second statement is true.
   c. Both statements are true.
   d. Both statements are false.

9. **Which of the following must be addressed before a behavior change can occur?**
   a. Needs
   b. Values
   c. Financial setting
   d. Demand

10. **When the patient is actively involved in the learning process it is referred to as paternalistic communication. The term participatory communication is when the provider imparts his/her knowledge to the patient and dictates the desired patient behavior.**
    a. The first statement is true, the second statement is false.
    b. The first statement is false, the second statement is true.
    c. Both statements are true.
    d. Both statements are false.
References

Additional Resources

About the Author
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Christine Nathe is a professor and director of the University of New Mexico, Division of Dental Hygiene in Albuquerque, New Mexico. She also serves as Vice Chair of the UNM Department of Dental Medicine. She is author of the textbooks entitled: Dental Public Health and Research (editions 1-4) and Primary Preventive Dentistry (editions 7-8). She is the American Dental Hygienists’ Association, National Board Review Speaker on Dental Materials and Dental Public Health. She has won several awards for teaching and education and was an ADHA Excellence in Dental Hygiene Award winner. Most recently, she received the Irene Newman Professional Service in Dental Hygiene Award.

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