EDITION 13

MODERN DENTAL ASSISTING

DONI L. **BIRD** | DEBBIE S. **ROBINSON**

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MODERN DENTAL ASSISTING

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In addition, a sincere amount of gratitude goes to the sales associates who do all the legwork nationwide to get "MDA" to the instructors, dental assisting programs, and dental offices. You are the ones who make that first contact with each director and faculty member. Thank you for your determined effort every day.

We sincerely appreciate and thank the reviewers who took the time to review our work carefully and provide constructive suggestions and recommendations. You are our heroes, and we listen to feedback.

Finally, a special thank you to our family, friends, and colleagues for their ongoing support that goes hand in hand with working in the publishing world.

Doni and Debbie

About the Authors

Doni L. Bird served as the director of the Allied Dental Education Programs at Santa Rosa Junior College (SRJC) in Santa Rosa, California, for many years before retiring in 2012. Before becoming a dental assisting educator, she practiced as a dental assistant in private practice and at Mount Zion Hospital and Medical Center in San Francisco. Doni holds a Bachelor's Degree in Education and Master's Degree in Education from San Francisco State University and a degree in dental hygiene from the University of New Mexico in Albuquerque. She served as a member and Chairman of the Board of Directors of the Organization for Safety, Asepsis and Prevention (OSAP). She is a member of the American Dental Assistants Association (ADAA) and has served as president of the Northern California Dental Assistants Association and as chairman of the Dental Assisting National Board (DANB). She has served on the Board of Directors of the California Association of Dental Assisting Teachers (CADAT) and serves as a consultant in dental assisting education to the Commission on Dental Accreditation (CODA) of the American Dental Association (ADA). She has served as a member and president of the California Dental Hygiene Educators Association and as a member of the Foundation Board of the California Dental Association. Doni has written many articles and presented numerous continuing education programs at major state and national meetings.

Debbie S. Robinson is currently a Research Associate Professor at the University of North Carolina, where she is involved in clinical research at the Gillings School of Global Public Health. Her educational background includes an Associate Degree in Dental Assisting from Broward Community College, Bachelor's Degree in Health Administration from Florida Atlantic University, and Master of Science Degree in Dental Auxiliary Teachers Education from the University of North Carolina. Her clinical experience includes practicing as a clinical chairside assistant in a pediatric and orthodontic dental office, dental research center, and special patient care clinic. With over 20 years of teaching, Debbie has held teaching positions in the community college setting in Florida and North Carolina and as Clinical Assistant Professor and Director of the Dental Assisting Program and Dental Assisting Specialty Program at the University of North Carolina at Chapel Hill (UNC-CH) Adams School of Dentistry. She has presented continuing education for practicing dental assistants at local, state, and international meetings. She served as a member of the Dental Assisting National Board (DANB) test construction committee for two terms and has authored and co-authored journal articles for *The Dental Assistant.* Additional endeavors include consulting with community colleges and proprietary schools in the development of curricula for dental assisting programs across the country.

Preface

Congratulations on your choice in a career in dental assisting!

When Hazel O. Torres and Ann Ehrlich published the first edition of *Modern Dental Assisting* in 1976, their intent was to provide dental assisting students and educators with the most comprehensive textbook ever for dental assisting education. It provided the background, principles, and techniques necessary to become an educationally qualified and competent dental assistant.

Since then, continuing changes have taken place in the profession of dental assisting. It is now recognized that oral health and general health are interwoven and that people cannot be healthy without good oral health. Advances in scientific research, the prevention of oral diseases, emerging technology, and regulatory changes have significantly influenced the evolving roles and responsibilities of the professional dental assistant.

In the 13th edition of *Modern Dental Assisting,* we uphold the same core educational values and goals instilled in us by Hazel Torres and Ann Ehrlich. However, the knowledge and skills necessary to reach competency in each of the many new techniques and procedures are constantly being expanded.

Chapters are revised to reflect changes resulting from evidence-based research, the increasing use of digital imaging, advancement of dental materials, and advances in technology that have allowed new clinical functions to be delegated to dental assistants in certain states and provinces. Every effort is made to create a balance to retain foundational knowledge while incorporating the most current principles and procedures to remain on the cutting edge of dental assisting practice today.

Our team of authors and editors continuously listen to dental assisting educators and students throughout the United States and Canada and has responded to their requests. Our reviewers, who represent a diverse community of dental assisting educators throughout North America and Canada, have helped us ensure inclusion of the most current knowledge.

Who Will Benefit From This Book?

Whether you are a new student to dental assisting, preparing for your state or national certification examination, or expanding your role in this profession, *Modern Dental Assisting* will provide you with the tools and resources to move forward.

Organization

The book is divided into 11 parts, from historical and scientific information to the general and specialized practice of dentistry. Each part opener provides an introduction and lists the related chapters that are found within that section.

The ease of reading each comprehensive chapter and the additional materials provides students with the maximum opportunity to learn. The driving force in the development of this package was to create a competent dental assistant. With that goal in mind, this package meets and exceeds accreditation standards and certification requirements.

The Learning Package

The 13th edition of *Modern Dental Assisting* is designed as a comprehensive learning package.

The Student Package includes the following:

- Textbook
- Evolve Resources
- Student Workbook (sold separately)
- Dental Assisting Online (sold separately)

The Faculty Package includes all student resources, plus the following:

- Evolve Resources instructor-only assets
- TEACH Instructor Resources
- Accreditation Mapping Guides

The entire package has been designed with the student and educator in mind.

New to This Edition

Textbook

- **NEW content** addresses new nutrition guidelines and the *Healthy People 2030* report, updates on the classification of waste management, the epidemic of opioids, advancement of digital imaging, and advancement of chronic diseases and access to care.
- **NEW illustrations** focus on dental instruments, clinical application, and up-to-date dental practices.
- **NEW, full-color photos** show the latest technology, instruments, and procedures.

Evolve Resources

- **Fully updated assets** for instructors and students correspond to new and updated information in the textbook.

Student Workbook

- **Updated exercises** match new content in the textbook and provide students extra opportunity to learn the material.

Dental Assisting Online

- **New art** corresponds to the textbook.
- **Updated glossary** has additional terms from the textbook.

Support

If you have questions or need assistance with ordering or adopting the *Modern Dental Assisting* learning package, contact Educator Support at 1-800-222-9570 or via email at sales.inquiry@elsevier.com.

If you have questions or need assistance with the electronic components of the *Modern Dental Assisting* learning package, you can contact Technical Support at 1-800-692-9010 (Option 2) or via email at technical.support@elsevier.com or through the Support section of the main Evolve Web site at http://evolve.elsevier.com.

Doni L. Bird
Debbie S. Robinson

The Learning Package

Modern Dental Assisting is the learning package for preparing students to become dental assistants. It provides a solid foundation for the basic and advanced clinical skills students must master to achieve competence. The layout is student-friendly to simplify even the most complex concepts and procedures to help prepare for Dental Assisting National Board (DANB) certification.

Textbook

- Comprehensive coverage that spans the entire dental assisting curriculum
- Cutting-edge content and approachable writing style
- Expert authorship
- Top-notch art program
- Step-by-step procedures for basic and expanded functions
- *Recall* questions throughout chapters that summarize key issues and facts
- *CDC* boxes highlighting specific recommendations of the Centers for Disease Control and Prevention
- *Legal and Ethical Implications* features
- *Patient Education* features with tips and strategies
- *Eye to the Future* features that introduce cutting-edge and evolving research and practice
- *Critical Thinking* questions and mini-scenarios that encourage content application
- *Key Terms and Definitions* with phonetic pronunciations presented at the beginning of each chapter and highlighted in boldface color within the text discussion
- A back-of-book *Glossary* with chapter cross-references
- *Learning and Performance Outcomes* at the beginning of each chapter
- *Electronic Resources* to highlight ancillary content applicable to that chapter

Evolve Resources

Elsevier has created a Web site dedicated solely to support this learning package: http://evolve.elsevier.com/Bird/modern/. The Web site includes a student site and an instructor site.

Student Site

- Audio Glossary
- Canadian Content to supplement topics that differ between Canada and the United States, such as nutrition and privacy regulations
- Mock dental assisting board examination
- Practice quizzes for each chapter
- Tray setup questions and identification exercises
- Video clips of dental assisting procedures
- Video scripts in English and Spanish
- Video review questions and answers
- Dentrix Practice Management Software

Plus the Interactive Dental Office Online!

The interactive portion of this learning package offers exercises for the immediate application of knowledge to help the student develop and retain critical thinking and problem-solving skills. The *Interactive Dental Office* is built around 25 in-depth patient case studies with questions, charting and tooth-numbering exercises, and radiographic mounting exercises to help students assimilate content from various chapters and apply it in a realistic, patient-centered setting. A content mapping guide indicates the corresponding chapter to each activity for every patient.

Instructor Site

- Access to all the student resources
- Chapter pretests
- Competency skill sheets for all procedures in the book
- Image collection
- Mapping guides for ADA accreditation, for the Dental Board of California, and for syllabus conversion
- Test bank with 2500 questions, answers, rationales for correct and incorrect choices, page-number references for remediation, cognitive level, CDA exam blueprint category, and chapter objectives to which the question maps; available in Exam View
- TEACH Instructor Resources (explained in more detail in the next section)
  - TEACH Lesson Plans
  - TEACH PowerPoints
  - TEACH Student Handouts
  - TEACH Answer Key

TEACH Instructor Resources

TEACH for Modern Dental Assisting stands for *Total Education and Curriculum Help* and is an all-in-one resource designed to save educators time and take the guesswork out of classroom planning and preparation. TEACH includes detailed Lesson Plans, providing a chapter teaching focus; lesson preparation checklist; materials and supply list; key terms covered in each lesson; homework assignments; lecture outline; and related class discussions, activities, and critical thinking questions, all designed to fit into 50-minute classroom increments to ease the work involved in classroom preparation. Online activities are also provided to further enhance the learning experience outside the classroom. These Lesson Plans

are centered around the mapping of textbook, ancillary, and Evolve content to specific chapter learning and performance outcomes. In addition, the lecture outlines reflect the detailed chapter lecture slides that come as part of TEACH. These PowerPoint slides provide teaching notes and talking points for educators as a ready-to-use classroom resource. A PDF file of the PowerPoint slides from each chapter is also provided. It contains the slides without the instructor talking points, so it can be distributed directly to students. Finally, an answer key is provided for the textbook *Recall* questions and the *Student Workbook* questions and exercises.

Note: If you are unable to access TEACH on the Evolve Web site, contact your Elsevier Education Solutions Consultant.

Student Workbook

The Student Workbook is an optional supplement to the learning process (sold separately). The content of the workbook matches the book chapter by chapter to help students master and apply key concepts and procedures to a clinical situation through short-answer and multiple-choice questions, as well as fill-in-the-blank statements. Case study scenarios and associated questions encourage application of key concepts. Clinical competency forms are located within appropriate chapters of the Student Workbook, allowing students to evaluate both their strengths and weaknesses in performing procedures. Dentrix practice exercises are included in relevant chapters so that students can become familiar with working in dental office systems. As a bonus, flashcards are in the back of the workbook as a study tool, focusing on terms, instruments, and procedures.

An Externship Guide is also provided. An externship is an integral part of a dental assistant's education, and the guide includes resources for students to stay organized. These include time sheets, record of clinical activities, and student journal prompts.

Dental Assisting Online for *Modern Dental Assisting*

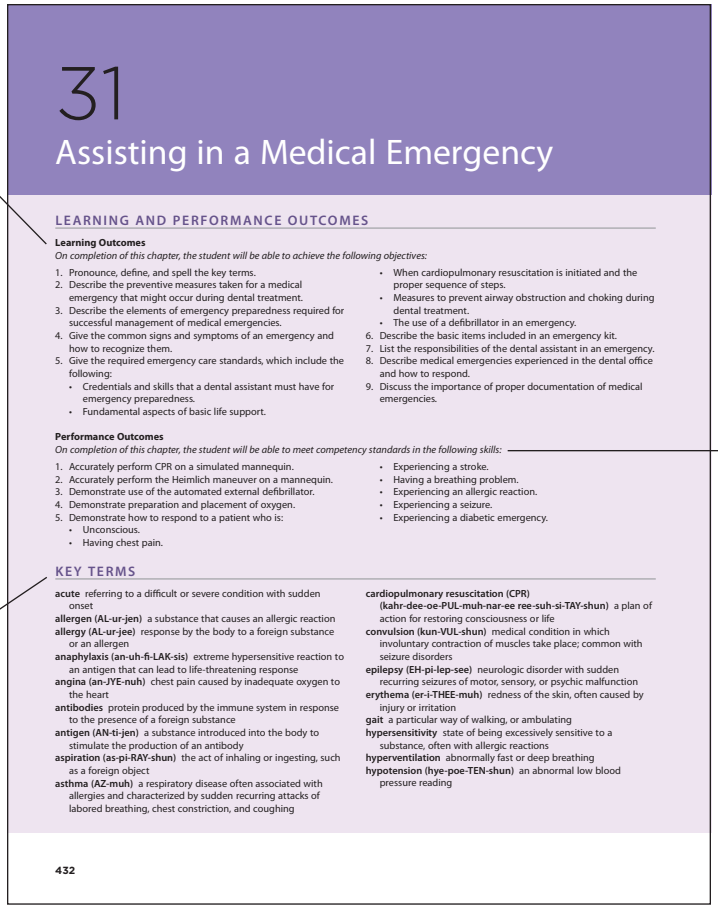
This online course (sold separately) contains 42 modules, each of which correlates to a specific chapter in the textbook. Modules take the most challenging content within the corresponding chapters and present it in an interactive and engaging way to help promote true content mastery. Brief summary content screens are interspersed with interactive exercises, videos, animations, and quizzes to provide a range of audio and visual learning opportunities that reach far beyond the traditional model of classroom instruction and encourage students to immerse themselves in the learning process and develop a more comprehensive understanding of the material presented in the textbook. A turnkey design makes incorporating the course into your program easy and seamless.

How to Use *Modern Dental Assisting*

Learning Outcomes assist you in achieving the cognitive objectives on completion of the chapter and guide you in exam preparation.

Key Terms and a complete **Glossary** with definitions and pronunciations reinforce new terminology. In the pronunciations, the main accented syllable is capitalized.

Performance Outcomes help you master the clinical skills necessary to become a competent dental assistant.



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Assisting in a Medical Emergency

LEARNING AND PERFORMANCE OUTCOMES

Learning Outcomes

On completion of this chapter, the student will be able to achieve the following objectives:

1. Pronounce, define, and spell the key terms.
2. Describe the preventive measures taken for a medical emergency that might occur during dental treatment.
3. Describe the elements of emergency preparedness required for successful management of medical emergencies.
4. Give the common signs and symptoms of an emergency and how to recognize them.
5. Give the required emergency care standards, which include the following:
   - Credentials and skills that a dental assistant must have for emergency preparedness.
   - Fundamental aspects of basic life support.
   - When cardiopulmonary resuscitation is initiated and the proper sequence of steps.
   - Measures to prevent airway obstruction and choking during dental treatment.
   - The use of a defibrillator in an emergency.
6. Describe the basic items included in an emergency kit.
7. List the responsibilities of the dental assistant in an emergency.
8. Describe medical emergencies experienced in the dental office and how to respond.
9. Discuss the importance of proper documentation of medical emergencies.

Performance Outcomes

On completion of this chapter, the student will be able to meet competency standards in the following skills:

1. Accurately perform CPR on a simulated mannequin.
2. Accurately perform the Heimlich maneuver on a mannequin.
3. Demonstrate use of the automated external defibrillator.
4. Demonstrate preparation and placement of oxygen.
5. Demonstrate how to respond to a patient who is:
   - Unconscious.
   - Having chest pain.
   - Experiencing a stroke.
   - Having a breathing problem.
   - Experiencing an allergic reaction.
   - Experiencing a seizure.
   - Experiencing a diabetic emergency.

KEY TERMS

acute referring to a difficult or severe condition with sudden onset
allergen (AL-ur-jen) a substance that causes an allergic reaction
allergy (AL-ur-jee) response by the body to a foreign substance or an allergen
anaphylaxis (an-uh-fi-LAK-sis) extreme hypersensitive reaction to an antigen that can lead to life-threatening response
angina (an-JYE-nuh) chest pain caused by inadequate oxygen to the heart
antibodies protein produced by the immune system in response to the presence of a foreign substance
antigen (AN-ti-jen) a substance introduced into the body to stimulate the production of an antibody
aspiration (as-pi-RAY-shun) the act of inhaling or ingesting, such as a foreign object
asthma (AZ-muh) a respiratory disease often associated with allergies and characterized by sudden recurring attacks of labored breathing, chest constriction, and coughing
cardiopulmonary resuscitation (CPR) (kahr-dee-oe-PUL-muh-nar-ee ree-suh-si-TAY-shun) a plan of action for restoring consciousness or life
convulsion (kun-VUL-shun) medical condition in which involuntary contraction of muscles take place; common with seizure disorders
epilepsy (EH-pi-lep-see) neurologic disorder with sudden recurring seizures of motor, sensory, or psychic malfunction
erythema (er-i-THEE-muh) redness of the skin, often caused by injury or irritation
gait a particular way of walking, or ambulating
hypersensitivity state of being excessively sensitive to a substance, often with allergic reactions
hyperventilation abnormally fast or deep breathing
hypotension (hye-poe-TEN-shun) an abnormal low blood pressure reading

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Patient Education provides tips and strategies to help interact and share information with patients.

Legal and Ethical Implications help you focus on the legal and ethical behaviors you will need to know to protect yourself, your patients, and the practice for which you work.

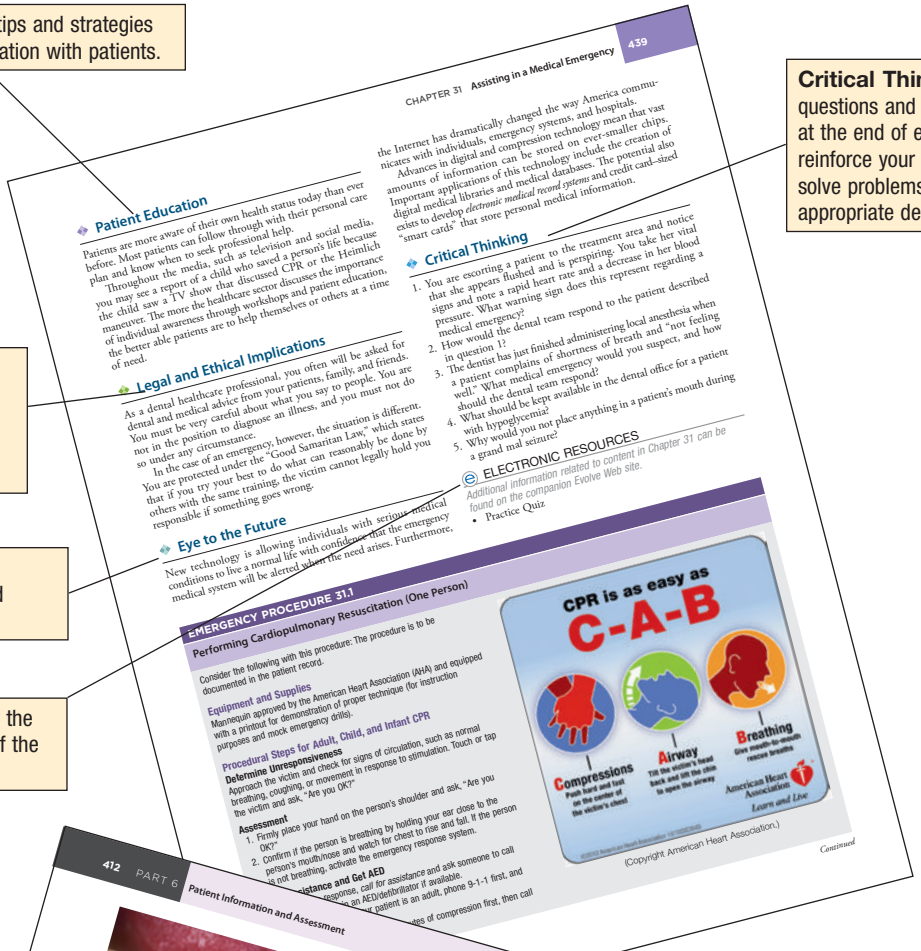
Eye to the Future introduces you to cutting-edge research, future trends, and topics relating to the chapter content.

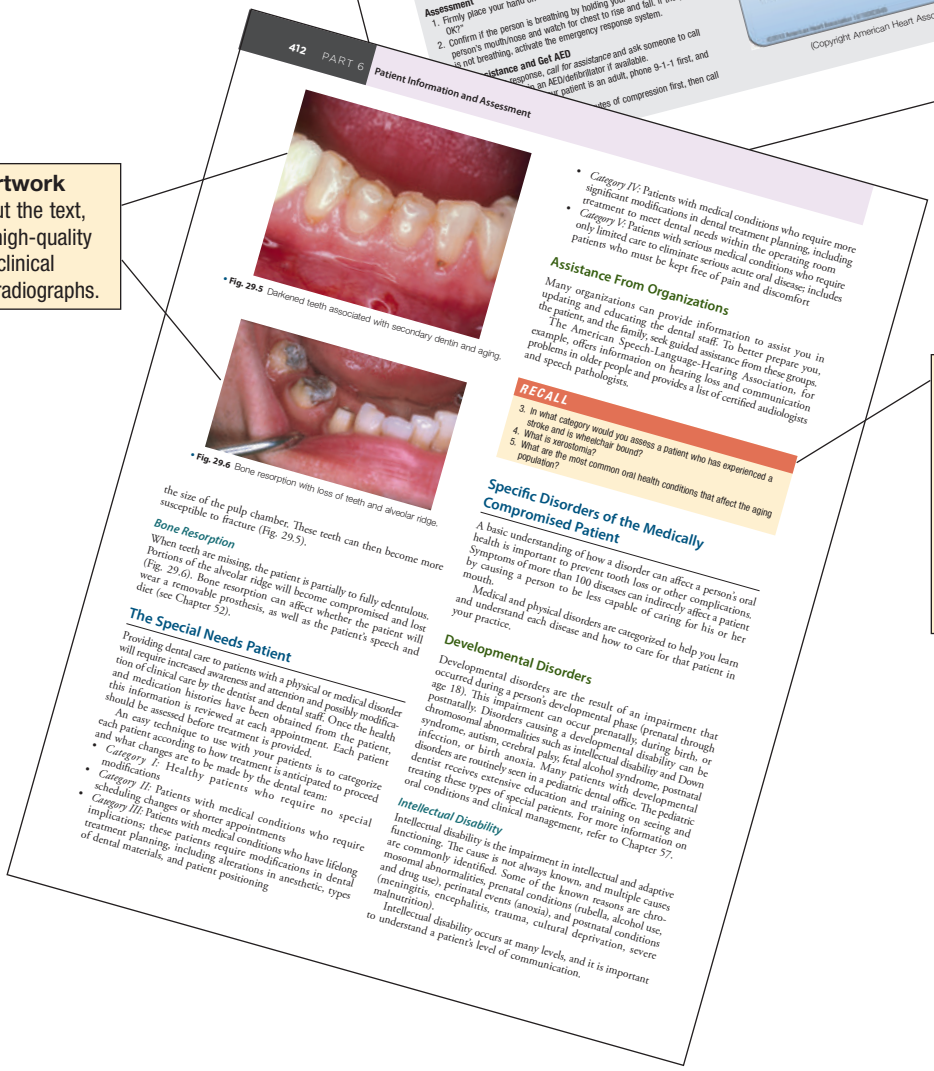
Electronic Resources link together the locations of the electronic components of the learning package.

Outstanding artwork abounds throughout the text, with a mixture of high-quality color illustrations, clinical photographs, and radiographs.

Critical Thinking questions and scenarios at the end of each chapter reinforce your ability to solve problems and make appropriate decisions.

Recall Questions are interspersed throughout each chapter to help you retain the previous information before going on to the next topic. The answers to the Recall questions are available to instructors in the TEACH resources, available on the Evolve Web site.





Step-by-step procedures in the textbook include illustrations, the equipment and supplies you will need, and the rationale behind certain steps. At the end of many procedures are samples of how you would enter the procedure in the patient's chart.

2. Mr. Jones, a patient of the practice, has diabetes and is taking metformin. How would Mr. Jones' type of diabetes be classified? What dental considerations might apply to Mr. Jones?
3. You are preparing Mrs. Rodriguez for a dental procedure when she mentions that pollen has been bothering her lately. You review her medical-dental history and notice that she has asthma. What type of drugs should be minimized for an asthmatic patient such as Mrs. Rodriguez?
4. Describe three ways to help treat a patient with coronary artery disease in the dental office.
5. Describe a personal experience you may have had with a medically or physically compromised patient and what techniques you found to be helpful in daily care.

ELECTRONIC RESOURCES

Additional information related to content in Chapter 29 can be found on the companion Evolve Web site.

- Practice Quiz

PROCEDURE 29.1

Transferring a Patient From a Wheelchair

Equipment

- Gait belt

Procedural Steps

1. Clear all items from the pathway of the wheelchair to the dental chair.
2. When entering the treatment room, determine whether it is best to go forward or to back the patient into the area.
   PURPOSE You want the patient to be positioned the same way he or she would be seated in the dental chair.
3. Move the wheelchair as close to the dental chair as possible so that it is at a 45-degree angle to the dental chair.
   PURPOSE Allows the patient to move closer to the chair without having to pivot as much.
4. Lock the wheelchair and raise the footrests.
5. Ask the patient to scoot forward in the wheelchair so a gait belt can be placed around the waist. Make sure the belt is positioned over the clothing and that the clip is in front. This will allow for easier belt adjustments and removal. Bring the patient to the edge of the wheelchair if possible.

6. Ask the patient to slide forward to the edge of the wheelchair seat, making sure the patient's feet are placed flat on the floor.
7. Stand facing the patient with your feet slightly apart and knees bent.
8. Place your fingers between the gait belt and the patient, using an underhand motion to grasp the gait belt. Ask the patient to stand as you lift him or her with the belt and guide the patient to the transfer location.

9. Help the patient stand slowly.
10. Pivot the patient so that the patient's backside is where the patient should be seated in the dental chair.
11. Help the patient to safely sit down. Ask the patient to slide back a bit so not in danger of falling from the seated location. Once the patient is safely seated on the transfer location, remove the gait belt.
12. Swing the patient's legs over and onto the dental chair.

Photos courtesy Kathleen Muzzin and Bobi Robles, Dallas, TX.

- Know the surfaces of teeth.
- Know charting symbols.

If you chart the wrong tooth or the wrong condition, you initiate a compromising legal situation.

Eye to the Future

With increased intake of fluoridation in the population, dentists are finding it challenging to detect decay in areas of the teeth that are more difficult to examine. New devices are being designed that use laser light energy (wavelength) that can be directed to a specific area of a tooth surface. When illuminated, the carious lesion will become fluorescent. These devices will measure the laser fluorescence and calculate a value. Calculated values will be used to determine a course of action ranging from no action, to preventive therapy, to monitoring of caries development, to placement of sealants, and, finally, to restoration of the tooth.

Critical Thinking

1. During which portion of the diagnosis and treatment planning examination would tooth mobility be evaluated?
2. Describe two areas of the face that would be included in the soft tissue examination.
3. What instruments and supplies are included in the tray setup for the charting of teeth?
4. When the periodontium is charted, tooth #4 has a reading of a 5-mm pocket on the mesiofacial surface and a 6-mm pocket on the mesiolingual surface with bleeding. Should these areas be charted? If so, how is the bleeding indicated on the chart?
5. With a charting form in front of you, chart the following conditions:
   - Tooth 1 is missing.
   - Tooth 2 has occlusal decay.
   - Tooth 7 has a porcelain-fused-to-metal (PFM) crown.
   - Tooth 11 has an MI composite.
   - Tooth 13 has disto-occlusal decay.
   - Tooth 16 is missing.
   - Tooth 19 has a root canal.
   - Tooth 21 has a sealant.
   - Teeth 23 to 26 have a bridge to replace teeth 24 and 25.
   - Tooth 29 has a periapical abscess.
   - Tooth 32 is impacted.

ELECTRONIC RESOURCES

Additional information related to content in Chapter 28 can be found on the companion Evolve Web site.

- Dentrix Exercise
- Practice Quiz
- Video: Extraoral and Intraoral Photography

PROCEDURE 28.1

Extraoral and Intraoral Photography (Expanded Function)

Consider the following with this procedure: Confirm with state guidelines before performing this procedure.

Equipment and Supplies

- Camera setup
- Cheek retractors
- Mouth mirror
- Reflection mirror

A

B

Procedural Steps

Readying Your Camera

1. Calibrate the camera system so that you become familiar with the settings for intraoral and extraoral photographs.
   NOTE For intraoral photography, set your camera to landscape mode, and for extraoral photography, use the portrait mode.

A

B

Expanded Function procedures feature a different color background to further differentiate them from the more foundational procedures and include a list of prerequisite skills required of dental assistants.

CDC feature boxes highlight the latest guidelines developed by the Centers for Disease Control and Prevention for safe dental practice.

CDC RECOMMENDATIONS FOR ENVIRONMENTAL INFECTION CONTROL

General Recommendations

- Follow the manufacturers' instructions for correct use of cleaning and EPA-registered hospital disinfecting products. (Categories IB and IC.)
- Do not use liquid chemical sterilants/high-level disinfectants for disinfection of environmental surfaces (clinical contact or housekeeping). (Categories IB and IC.)
- Use PPE, as appropriate, when cleaning and disinfecting environmental surfaces. (Category IC.)

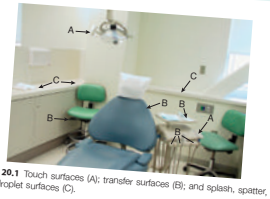
Clinical Contact Surfaces

- Use surface barriers to protect clinical contact surfaces, particularly those that are difficult to clean, and change barriers between patients. (Category II.)
- Clean and disinfect clinical contact surfaces that are not barrier protected by using an EPA-registered hospital disinfectant with low-level (i.e., human immunodeficiency virus [HIV] and hepatitis B virus [HBV] label claims) to intermediate-level (i.e., tuberculocidal claim) activity after each patient. Use an intermediate-level disinfectant if visibly soiled with blood. (Category IB.)

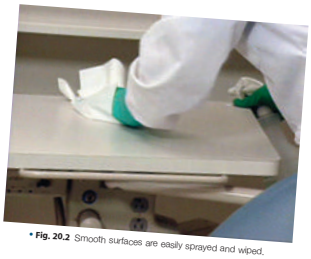
Housekeeping Surfaces

- Clean housekeeping surfaces (e.g., floors, walls, sinks) with a detergent and water or an EPA-registered hospital disinfectant/detergent on a routine basis, depending on the nature of the surface and the type and degree of contamination, and as appropriate according to location within the facility, and when visibly soiled. (Category IB.)
- Clean mops and cloths after use and allow to dry before reuse, or use single-use disposable mop heads or cloths. (Category II.)
- Prepare fresh cleaning or EPA-registered disinfecting solutions daily and as instructed by the manufacturer. (Category II.)
- Clean walls, blinds, and window curtains in patient care areas when they are visibly dusty or soiled. (Category II.)

EPA, Environmental Protection Agency; HBV, hepatitis B virus; HIV, human immunodeficiency virus; PPE, personal protective equipment.



• **Fig. 20.1** Touch surfaces (A); transfer surfaces (B); and splash, spatter, and droplet surfaces (C).



• **Fig. 20.2** Smooth surfaces are easily sprayed and wiped.

TABLE 20.1 Comparison of Surface Barriers and Precleaning/Disinfection

	Advantages	Disadvantages
Surface barrier	Protects surfaces that are not easily cleaned and disinfected Prevents contamination when properly placed Less time consuming Reduces handling and storage of chemicals Provides patient with visual assurance of cleanliness Does not damage equipment or surfaces	Adds plastics to the environment after disposal May be more expensive than precleaning and disinfecting Requires a variety of sizes and shapes May become dislodged during treatment
Precleaning and disinfecting	May be less expensive than surface barriers Does not add plastic to the environment Some dentists do not like the appearance of plastic barriers	Requires more time and therefore may not be done properly Not all surfaces can be adequately precleaned Over time, some chemicals are destructive to dental equipment surfaces No method to determine whether the microbes have been removed or killed Some disinfectants must be prepared fresh daily Chemicals are added to the environment upon disposal

This edition is dedicated to the Dental Assisting National Board (DANB) and its 40 years of longevity. Today, there are more than 37,000 dental assistants currently certified nationwide. DANB has strived since its inception to enhance the profession of dental assisting to meet the needs of its profession. A big reason for the advancement and its reputation is the work of Cynthia Durley, Executive Director of DANB and the DALE Foundation. She has continuously risen to the occasion to better the profession of dental assisting, and we thank her for all her contributions.

Contents

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MODERN DENTAL ASSISTING

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PART 1

The Dental Assisting Profession

The dental assistant is a significant member of the dental healthcare team, and the profession of dental assisting can be exciting, challenging, and very rewarding. The credentialed dental assistant can look forward to job satisfaction, a challenging career, and financial reward. It is a career that offers opportunities for someone just graduating from high school, as well as to the individual looking for a career change at any age.

Professionalism is difficult to define, but it is an attitude that is apparent in everything a person says and does, at and away from the office. Professionalism distinguishes people who "have a job" from those who "pursue a career." By always behaving in a professional manner, the dental assistant earns respect and recognition as a dental healthcare professional.

The chapters in this section are designed to provide an overview of the dental profession. The section begins with a look at the history of dentistry through the ages, introduces the other members of the dental healthcare team, and explains the legal and ethical responsibilities expected of a dental professional.

1

History of Dentistry

LEARNING OUTCOMES

On completion of this chapter, the student will be able to achieve the following objectives:

1. Pronounce, define, and spell the key terms.
2. Compare and contrast the early contributions in dentistry of ancient cultures in Egypt, Greece, China, and Rome, which include:
   - The role of Hippocrates in history.
   - The basic premise of the Hippocratic Oath.
   - The culture that first developed a silver amalgam paste for filling teeth.
   - Important Romans who contributed to oral hygiene and dentistry.
3. Identify the important contributors and their contributions during the Renaissance period in dental history.
4. Identify the important contributions of early America in dental history, including the individual credited with beginning the science of forensic dentistry.
5. List the important contributions in dental education and professional development, which include:
   - The contributions of Horace H. Hayden and Chapin A. Harris.
   - Two major contributions of G. V. Black.
   - The scientist who discovered x-rays.
   - The physician who first used nitrous oxide for tooth extractions.
6. Identify key women in dental history, which include:
   - The woman dentist who discovered oral hairy leukoplakia.
   - The first woman to graduate from a college of dentistry.
   - The first woman to practice dentistry in the United States.
7. Identify key African Americans in dental history, including the first African American woman to receive a dental degree and the first African American to receive the DMD degree.
8. Identify key American Indians in dental history, including the first male and female American Indians to receive a dental degree.
9. Identify key historical contributors in the field of dental assisting and dental hygiene, who include:
   - The first dentist to employ a dental assistant.
   - The contributions of Ann Ehrlich and Hazel Torres to dental assisting education.
   - The first person to become a dental hygienist.
   - The contribution of Dr. Alfred C. Fones to the dental profession.
10. Explain the process of dental accreditation and its importance.
11. Discuss the purpose and activities of the National Museum of Dentistry.

KEY TERMS

Commission on Dental Accreditation of the American Dental Association Commission that accredits dental, dental assisting, dental hygiene, and dental laboratory educational programs

dental treatise (TREE-tis) formal article or book based on dental evidence and facts

forensic (fuh-REN-zik) dentistry area of dentistry that establishes the identity of an individual on the basis of dental evidence such as dental records, impressions, bite marks, and so forth

periodontal (per-ee-oe-DON-tul) disease infections and other conditions of the structures that support the teeth (gums and bone)

preceptorship (PREE-sep-tor-ship) study under the guidance of a dentist or other professional

Saint Apollonia recognized as the "Patroness of Dentistry"

silver amalgam (uh-MAL-gum) paste a mixture of mercury, silver, and tin

teledentistry the process of using electronic transfer of images and other information for consultation and/or insurance purposes in dentistry

Dentistry has a long and fascinating history. From the earliest times, humans have suffered from dental pain and have sought a variety of resources to alleviate it. As they developed tools, humans also cleaned and cared for their teeth and oral cavity. Early toothbrushes ranged from wooden sticks with frayed ends for scraping the tongue to ivory-handled brushes with animal-hair bristles for cleaning the teeth.

It is easy to believe that the ideas and techniques used in dentistry today are new or have been recently discovered or invented. Actually, many of the remarkable techniques in modern dentistry can be

traced to the earliest times in every culture. People may think of "cosmetic dentistry" as a relatively new field, but skulls of ninth-century BC Mayans have numerous inlays of decorative jade and turquoise on the front teeth. Skulls of the Incas discovered in Ecuador have gold pounded into prepared holes in the teeth, similar to modern gold inlay restorations. As early as the sixth century BC, the Etruscans were able to make false teeth using gold and cattle teeth (Fig. 1.1). More than 2200 years ago, a cleft palate was repaired on a child in China. Muhammad introduced basic oral hygiene into the ritual of Islam in the seventh century AD. He recognized the value of Siwak, a tree twig containing natural minerals, as an oral hygiene device.

As B. W. Weinberger noted in *Dentistry: An Illustrated History* (Ring, 1985), a profession that is ignorant of its past experiences has lost a valuable asset because "it has missed its best guide to the future." Table 1.1 lists major highlights in the history of dentistry.

• **Fig. 1.1** Ancient Etruscan gold-banded bridge with built-in calf's tooth. (Courtesy Musée de l'Ecole Dentaire de Paris.)

Early Times

The Egyptians

As long as 4600 years ago in Egypt, physicians began to specialize in healing certain parts of the body. A physician named *Hesi-Re* was the earliest dentist whose name is known. He practiced about 3000 BC and was called "Chief of the Toothers and the Physicians." Three teeth fastened together with gold wire, apparently an early fixed bridge, were found with the remains of an Egyptian who lived about 3100 BC.

A radiograph of the skull of Thuya, mother-in-law of Pharaoh Amenhotep III, showed bone loss in her jaws, an indication of **periodontal disease**. Some dental problems have been attributed to the Egyptian diet, which was primarily vegetarian. Grain was ground with stone pestles, which mixed sand and grit into the food, resulting in severe wear of the *occlusal* (biting) tooth surfaces and exposure of the pulp.

RECALL

1. Who was Hesi-Re?
2. How long has dental disease existed?

The Greeks

During the fifth century BC in Greece, the practice of medicine and dentistry was based on the worship practices of the priesthood. Priests would give patients a sleeping potion and perform healing rituals. During this period, *Hippocrates* (460–377 BC) began to outline a rational approach to treating patients. He suggested that

TABLE 1.1 Highlights in the History of Dentistry

Date	Group/Individual	Event
3000–2151 BC	Egyptians	Hesi-Re is earliest dentist known by name.
2700 BC	Chinese	Chinese Canon of Medicine refers to dentistry.
900–300 BC	Mayans	Teeth receive attention for religious reasons or self-adornment.
460–322 BC	Greeks	Hippocrates and Aristotle write about tooth decay.
166–201 AD	Romans	Restore decayed teeth with gold crowns.
570–950	Muslims	Use Siwak as a primitive toothbrush.
1510–1590	Ambroise Paré	Writes extensively about dentistry, including extractions.
1678–1761	Pierre Fauchard	Becomes "Father of Modern Dentistry."
1728–1793	John Hunter	Performs first scientific study of teeth.
1826	M. Taveau	Introduces amalgam as "silver paste."
1844	Horace Wells	Uses nitrous oxide for relief of dental pain.
1859		American Dental Association is founded.
1885	C. Edmund Kells	Employs first dental assistant.
1895	G. V. Black	Becomes "Grand Old Man of Dentistry" and perfects amalgam.
1895	W. C. Roentgen	Discovers x-rays.

TABLE 1.1 Highlights in the History of Dentistry—cont'd

Date	Group/Individual	Event
1908	Frederick McKay	Discovers that fluoride is connected with prevention of dental caries.
1913	Alfred C. Fones	Establishes first dental hygiene school in Bridgeport, Connecticut.
1923		American Dental Hygiene Association is founded.
1924		American Dental Assistants Association is founded.
1948		Dental Assisting National Board is founded.
1970	Congress	Creates Occupational Safety and Health Administration.
1978	*Journal of the American Dental Association*	Publishes a report on infection control for dental offices.
1980		First cases of what later became known as acquired immunodeficiency syndrome (AIDS) are reported.
1982		First hepatitis B vaccine becomes commercially available.
1983		Human immunodeficiency virus (HIV) is identified as the cause of AIDS.
2000		*Oral Health in America: A Report of the Surgeon General* is released.
2003	Centers for Disease Control and Prevention	Releases *Guidelines for Infection Control in Dental Health-Care Settings—2003.*

four main fluids in the body—blood, black bile, yellow bile, and phlegm—along with heat, cold, dry air, and wet air, must remain in balance, or disease would occur. His approach to treatment of patients earned him the title "Father of Medicine."

Hippocrates stressed the importance of keeping the teeth in good condition. His writings described the teeth, their formation, and their eruption, as well as diseases of the teeth and methods of treatment. He also developed a dentifrice and mouthwash. The famous Hippocratic Oath, a solemn obligation to refrain from wrongdoing and to treat patients with confidentiality and to the best of one's ability, still serves as the basis of the code of ethics for medical and dental professions.

Aristotle (384–322 BC), the great philosopher, referred to teeth in many of his writings. However, he mistakenly stated that the gingiva was responsible for tooth formation, and that men had 32 teeth and women had only 30. Many of his erroneous ideas were not corrected until the Renaissance.

Diocles of Carystus, an Athenian physician of Aristotle's time, recommended rubbing the gums and teeth with bare fingers and "finely pulverized mint" to remove adherent food particles. Other materials used to clean the teeth included pumice, talc, emery, ground alabaster, coral powder, and iron rust.

The Chinese

By 2000 BC, the Chinese were practicing dentistry. They used arsenic to treat decayed teeth. This probably relieved the toothache. About the second century AD, the Chinese developed a **silver amalgam** paste for fillings, more than a thousand years before dentists in the West used a similar substance. In the eleventh century, *T'ing To-t'ung* and *Yu Shu* described the entire process of chewing and swallowing. Their description of the process was accurate, but they were incorrect about what happened to the food when it reached the stomach. They believed that digestion was a result of vapors arising from the spleen.

The Romans

When the medical profession in Rome was just beginning, dentistry was already being practiced. Several Roman physicians wrote extensively about dental treatment, although many people still believed that a "toothworm" was responsible for toothaches. In addition to extracting teeth, the Romans were skilled in restoring decayed teeth with gold crowns and replacing missing teeth by means of fixed bridgework.

The Romans had a high regard for oral hygiene and developed tooth-cleaning powders made from eggshells, bones, and oyster shells mixed with honey. Dinner guests of upper-class Romans picked their teeth between courses with elaborately decorated toothpicks of metal, often gold, and were invited to take their gold toothpicks home as gifts.

Saint Apollonia was one of a group of virgin martyrs who suffered in Alexandria during a local uprising against the Christians before the persecution of Decius. According to legend, her torture included having all of her teeth violently pulled out or shattered. For this reason, she is popularly regarded as the patroness of dentistry and those suffering from toothache or other dental problems (Fig. 1.2).

Cornelius Celsus (25 BC–50 AD) wrote *De Medicina,* a digest of medical and surgical science from the earliest times to the period of Augustus Caesar. This book contains the earliest record of orthodontic treatment.

Claudius Galen (130–200 AD) is considered to be the greatest physician after Hippocrates. In his writings, Galen listed the teeth as bones of the body. He is the first author to mention the nerves in the teeth: "The teeth are furnished with nerves both because as naked bones they have need of sensitivity so that the animal may avoid being injured or destroyed by mechanical or physical agencies, and because the teeth, together with the tongue and other parts of the mouth, are designed for the perception of various flavors" (Guerini, 1909).

• **Fig. 1.2** Saint Apollonia is an oil-on-canvas picture painted by Spanish artist Francisco de Zurbarán in 1636. It is currently held and exhibited at the Louvre in Paris. (By Francisco de Zurbarán, via Wikimedia Commons.)

RECALL

3. Who is the "Father of Medicine"?
4. What is the Hippocratic Oath?
5. Who is the Patroness of Dentistry?
6. Were Western dentists the first to use silver amalgam as fillings?

The Renaissance

One of the most important achievements of the Renaissance was the separation of science from theology and superstition. During the fifteenth and sixteenth centuries, new interest arose in the study of anatomy and the human body. Artists became more aware of human anatomy and used it to enhance their artwork. *Leonardo da Vinci* (1452–1519) sketched every internal and external structure of the body. He also studied the skull in great detail and was the first anatomist to describe the differences between molars and premolars.

Ambroise Paré (pah-RAY) (1510–1590) began his career in Paris in about 1525 as an apprentice to a barber surgeon. His extensive writings describe dental extraction methods and reimplantation of teeth. He described a toothache as "the most atrocious pain that can torment a man without being followed by death" (Ring 1985). At that time, the practice was to treat soldiers with gunshots by washing the wound with boiling oil, which caused extreme pain. After one battle, the supply of oil was depleted, and Paré had to treat a soldier's wounds with a mixture of egg whites, oil of roses, and turpentine. After using this soothing mixture, Paré vowed that he would "never so cruelly burn poor wounded men." He is also credited with being the first to use artificial eyes, hands, and legs. Paré is known as the "Father of Modern Surgery."

• **Fig. 1.3** Pierre Fauchard, the "Father of Modern Dentistry." (From Fauchard P: *Le Chirurgien dentiste ou traité des dents,* Paris, 1746, Pierre-Jean Mariette.)

Pierre Fauchard (fo-SHAR) (1678–1761), a physician who earned great fame and respect in his lifetime, willingly shared his knowledge at a time when physicians typically guarded their knowledge and skills (Fig. 1.3). Fauchard developed dentistry as an independent profession and originated the title of "surgeon dentist," a term the French still use today. In the United States, the degree conferred on dentists is Doctor of Dental Surgery (DDS).

Fauchard dispelled the theory that tooth decay was caused by a toothworm. He was ahead of his time in understanding periodontal disease and recognized that scaling the teeth could prevent gum disease. In his book, *Le Chirurgien Dentiste,* Fauchard covered the entire field of dentistry and described his method of removing caries from a tooth and filling the cavity with lead or tin. He suggested using either human teeth or teeth carved from hippopotamus or elephant ivory to make denture teeth. Although advanced in his thinking, Fauchard firmly believed that to ensure good health, people should rinse their mouth every morning with several spoonfuls of their own fresh urine.

Chapin A. Harris, the great American dentist, said of Fauchard: "Considering the circumstances under which he lived, Fauchard deserves to be remembered as a noble pioneer and sure founder of dental science. That his practice was crude was due to his times, that it was scientific and comparatively superior and successful was due to himself" (Ring 1985). Fauchard is known as the "Father of Modern Dentistry."

RECALL

7. Which artist first distinguished molars from premolars?
8. Who is the "Father of Modern Surgery"?
9. Who is the "Father of Modern Dentistry"?

Early America

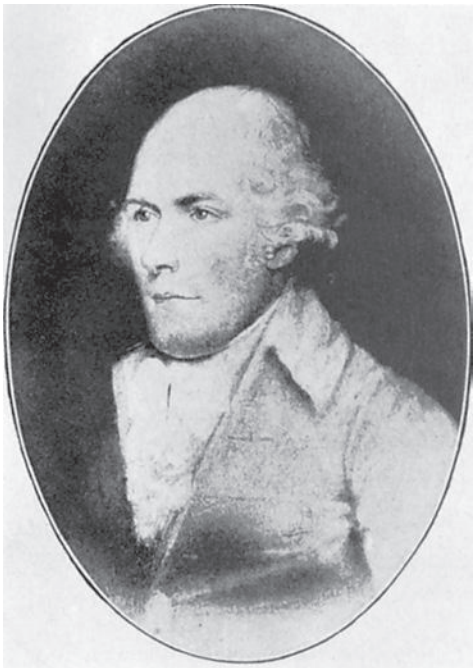
In 1766 *Robert Woofendale* was one of the first dentists to travel throughout the American colonies. His advertisement in *The New York Mercury* stated that he "performs all operations upon the teeth, sockets, gums and palate, likewise fixes artificial teeth, so as to escape discernment" (Ring 1985). A short time later, *John Baker* arrived from Cork County, Ireland, where he studied dentistry. Although he was a physician, Baker practiced dentistry in Boston, New York, Philadelphia, and many other colonial cities. He was one of George Washington's dentists (Fig. 1.4).

Paul Revere (1735–1818), the famous colonial patriot, was a silversmith by trade, but he studied dentistry as an apprentice under Dr. Baker in Boston. When Baker moved to New York in 1768, Revere took over his practice. However, Revere was primarily interested in using his skills as a silversmith to make artificial teeth and surgical instruments. After 6 years of part-time work, he gave up his dental practice.

Paul Revere is credited with beginning the science of **forensic dentistry** and performed the first identification of a corpse recorded in dental history. Dr. Joseph Warren was killed at the Battle of Bunker Hill in 1775 and was buried by the British in a mass grave. A year later, the bodies were exhumed but were unrecognizable. Revere studied the skulls and identified Warren's body on the basis of a two-unit bridge he had made.

RECALL

10. Who was John Baker's famous patient?
11. Which famous colonial patriot first used forensic evidence?
12. Who was Robert Woofendale?



• **Fig. 1.4** John Greenwood, dentist to George Washington, was the second son of Isaac Greenwood, who is regarded as the first native-born American dentist. John Greenwood served in the colonial army at age 14 during the Revolutionary War and later became a dentist. (From Kock CRD: *History of dental surgery,* vol 3, Fort Wayne, Indiana, 1910, National Art Publishing.)

Educational and Professional Development in the United States

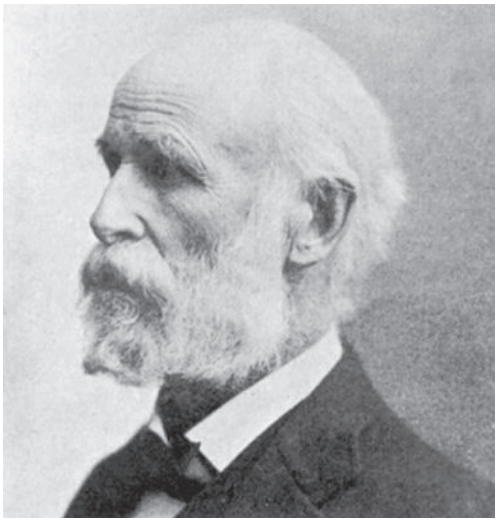
In the early days, no colleges for dentistry existed in the United States. Dentists learned their profession through a **preceptorship** while studying and learning under the direction of a skilled professional. During 1839 and 1840 *Horace H. Hayden* and *Chapin A. Harris* set the foundation for the profession of dentistry.

Horace H. Hayden (1769–1844) was inspired by his own dentist, John Greenwood, and became a reputable dentist. He lectured to medical students on the topic of dentistry and wrote for professional journals. Chapin A. Harris (1806–1860), a student of Hayden, was instrumental in establishing the first nationwide association of dentists in the United States. His book, *The Dental Art: A Practical Treatise on Dental Surgery,* was reissued over 74 years in 13 editions; no other **dental treatise** can match this record. Together, in 1840 Hayden and Harris established the first dental college in the world, the *Baltimore College of Dental Surgery,* which is now the University of Maryland School of Dentistry.

Dr. Green Vardiman Black (1836–1915), known worldwide as *G. V. Black,* earned the title of the "Grand Old Man of Dentistry" through his unmatched contributions to the profession (Figs. 1.5 and 1.6). Dr. Black thought that dentistry should stand as a profession independent from and equal to that of medicine. He invented numerous machines for testing metal alloys and dental instruments. He taught in dental schools, became a dean, and wrote more than 500 articles and several books. Two of his major contributions to dentistry were (1) the principle of *extension for prevention,* in which the margins of a filling were extended to within reach of a toothbrush for cleaning the tooth, and (2) standardized rules of cavity preparation and filling.

A man of vision, Black told his dental students at Northwestern University, "The day is surely coming, and perhaps within the lifetime of you young men before me, when we will be engaged in practicing preventive, rather than reparative, dentistry" (Ring 1985).

Wilhelm Conrad Roentgen (RENT-ken) (1845–1923) was a Bavarian physicist who discovered x-rays in 1895 (Fig. 1.7). His discovery revolutionized diagnostic capabilities and forever changed the practice of medicine and dentistry (see Chapter 38).



• **Fig. 1.5** G. V. Black, the "Grand Old Man of Dentistry." (From Kock CRD: *History of dental surgery,* vol 1, Chicago, 1909, National Art Publishing.)

• **Fig. 1.6** Black's dental treatment room, as reconstructed in a Smithsonian exhibit.

• **Fig. 1.7** W. C. Roentgen discovered the early potential of an x-ray beam in 1895. (Courtesy Carestream Health, Inc.)

Horace Wells (1815–1848) is the dentist credited with the discovery of inhalation anesthesia in 1844, one of the most important medical discoveries of all time. Before this innovation, the only remedies for pain were brute force, alcohol (brandy, rum, whiskey), and opium. Oral drugs could not be properly dosed, and patients were generally undermedicated or overmedicated. If an operation lasted longer than 20 minutes, it was possible for the patient to die of exhaustion or shock. Realizing the potential for pain-free dental surgery with the use of nitrous oxide, Wells said, "Let it be as free as the air we breathe" (Ring, 1985) (see Chapter 37).

Women in Dental History

In the eighteenth and early nineteenth centuries, dental schools throughout the world did not accept women. Yet women such as Nellie E. Pooler Chapman and Lucy B. Hobbs-Taylor broke those barriers and led the way for other women to follow as dental professionals (Figs. 1.8 and 1.9).

• **Fig. 1.8** Dental instrument kit belonging to Nellie E. Pooler Chapman. She practiced dentistry in Nevada City, California. She died in 1906. (Courtesy School of Dentistry, University of California San Francisco.)

• **Fig. 1.9** Lucy B. Hobbs-Taylor, the first female graduate of dental school. (Courtesy Kansas State Historical Society, Topeka, KS.)

Today, women represent almost 50% of students in some dental schools and are active in dental associations, specialty organizations, public health, and the military (Table 1.2).

Dr. Deborah Greenspan is recognized worldwide for her research into the dental issues related to the human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS). She discovered oral "hairy" leukoplakia (see Chapter 17) and opened a new arena of research into both HIV/AIDS and Epstein-Barr virus. Her work has influenced oral healthcare worldwide. She is a professor and Chair of the Oral Facial Sciences Department at the University of California San Francisco School of Dentistry.

• **Fig. 1.10** Dr. Faith Sai So Leong, the first female graduate at the College of Physicians and Surgeons (now the University of Pacific Arthur A. Dugoni School of Dentistry).

Dr. Faith Sai So Leong was 13 years old and spoke no English when she immigrated to the United States in 1894. When she was 24 years old, she became the first woman to graduate from the College of Physicians and Surgeons (now the University of the Pacific Arthur A. Dugoni School of Dentistry) in 1904. She practiced dentistry in San Francisco (Fig. 1.10).

RECALL

13. Who founded the first dental school in America?
14. Who earned the title of "Grand Old Man of Dentistry"?
15. Who was the first dentist to use nitrous oxide?
16. Who was the first woman in the United States to graduate from a dental school?
17. Who was the first person to discover oral "hairy" leukoplakia?

African Americans in Dental History

African Americans were not accepted for training at any dental schools until 1867, when Harvard University initiated its first dental class and accepted *Robert Tanner Freeman* as its first African American student (Fig. 1.11). *George Franklin Grant* graduated from Harvard in 1870 and later was appointed to the school's dental faculty.

Ida Gray-Rollins (1867–1953) was the first African American woman in the country to earn a formal DDS degree and the first African American woman to practice dentistry in Chicago. She graduated from the University of Michigan School of Dentistry and practiced dentistry in Chicago until she retired in 1928. In 1929 she married William Rollins and used the name Dr. Ida Gray-Rollins for the rest of her life (see Table 1.2).

TABLE 1.2 Highlights of Women in Dentistry

Date	Group/Individual	Event
1859	Emeline Robert Jones	First woman to establish a regular dental practice in the United States.
1866	Lucy B. Hobbs-Taylor	First woman to graduate from a recognized dental college in the United States; received credit for time as a preceptor in her husband's practice.
1869	Henriette Hirschfeld	First woman to complete the full dental curriculum in a U.S. dental school.
1870	Nellie E. Pooler Chapman	First woman to practice dentistry in California.
1873	Emilie Foeking	First female graduate of the Baltimore College of Dental Surgery. Wrote a thesis titled *Is Woman Adapted to the Dental Profession?*
1876	Jennie D. Spurrier	First female dentist in Illinois. Her first patient needed an extraction, for which she was paid 50 cents. She had the coin engraved with the date and "My first."
1885	Malvina Cueria	First female dental assistant.
1890	Ida Gray-Rollins	First African American female dental graduate from a U.S. dental college.
1892	Mary Stillwell-Kuedsel	Founded the Women's Dental Association of the United States with 12 charter members.
1906	Irene Newman	First dental hygienist.
1927	M. Evangeline Jordan	Author of the first textbook on pediatric dentistry.
1951	Helen E. Myers	U.S. Army's first female dentist.
1984	Deborah Greenspan	Discovered and published first paper on oral "hairy" leukoplakia.
1991	Geraldine T. Morrow	First female president of the American Dental Association.

African Americans have been appointed deans and faculty members at a number of American dental schools (Table 1.3).

American Indians in Dental History

Dr. George Blue Spruce, Jr., is the first American Indian dentist in the United States. He graduated dental school from Creighton University in 1956, where he was the only American Indian on campus (Fig. 1.12). He began treating patients on American Indian reservations and later in his career became an Assistant Surgeon General in the United States Public Health Service. He is currently the Assistant Dean for American Indian Affairs at the Arizona School of Dentistry and Oral Health.

• **Fig. 1.11** Robert Tanner Freeman, the first African American graduate of Harvard School of Dental Medicine. (Courtesy Harvard Medical Library in the Francis A. Countway Library of Medicine, Boston, MA.)

• **Fig. 1.12** Dr. George Blue Spruce, Jr. (Courtesy Dr. George Blue Spruce, Jr.)

"Never be afraid to go after your dream. You, too, can meet and beat the challenges that come your way. Sometimes simply discovering and sharing your dreams can be a big step forward."

DR. GEORGE BLUE SPRUCE, JR.

Jessica A. Rickert became the first recognized American Indian female dentist in 1975. She attended the University of Michigan School of Dentistry, and she was the only American Indian in a class of approximately 150 students. During this time there were very few female dentists or female dental students. She received the 2005 Access Recognition Award from the American Dental Association (ADA) for leadership in helping people in need gain access to dental care. In particular, she was nominated for her work in educating American Indians on dental care and encouraging them to pursue careers in the dental field. In 2009 she was honored for her work by being inducted into the Michigan Women's Hall of Fame (Fig. 1.13).

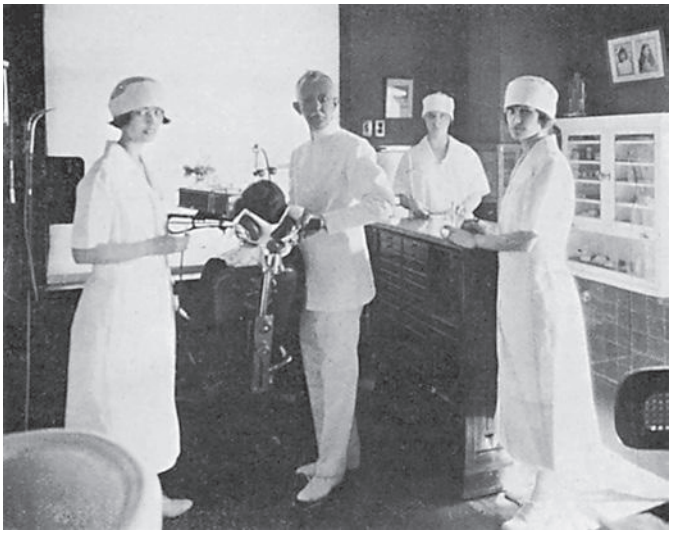
TABLE 1.3 Highlights of African Americans in Dentistry

Date	Individual	Event
1765	Peter Hawkins	Native-born, an itinerant preacher in Richmond, Virginia, did extractions for parishioners.
1851	John S. Rock	Awarded a silver medal for making artificial teeth. Examples of his work were exhibited by the Benjamin Franklin Institute.
1869	Robert Tanner Freeman	First African American dentist to receive the DMD degree from Harvard University.
1963	Andrew Z. Kellar	Published "The Epidemiology of Lip, Oral and Pharyngeal Cancers" in *American Journal of Public Health.*
1967	Van E. Collins	First African American dentist in regular military service to be promoted to the rank of colonel.
1973	Konneta Putman	Installed as the president of the American Dental Hygienists Association.
1975	Jeanne C. Sinkford	First African American female dean of a U.S. dental school.
1989	Raymond J. Fonseca	Appointed dental dean at the University of Pennsylvania.
1994	Juliann Bluitt	The first woman dentist elected president of the American College of Dentists.
1994	Caswell A. Evans	The first African American dentist elected president of the American Public Health Association.
	Eugenia Mobley	The first African American woman dentist to earn a degree in public health and the second female dean of a U.S. dental school.
	Clifton O. Dummett	Distinguished professor emeritus of the University of Southern California School of Dentistry and author and historian for the National Dental Association.

History of Dental Assisting

C. Edmund Kells (1856–1928), a New Orleans dentist, is usually credited with employing the first dental assistant (Fig. 1.14). In 1885

• **Fig. 1.13** Dr. Jessica Rickert. (Courtesy Dr. Jessica Rickert/William A. Strait Photography.)



• **Fig. 1.14** C. Edmund Kells and his "working unit," about 1900. Assistant on the left is keeping cold air on the cavity, while assistant on the right mixes materials, and "secretary" records details. (From Kells CE: *The dentist's own book,* St Louis, 1925, Mosby.)

the first "lady assistant" was really a "lady in attendance," who made it respectable for a woman patient to visit a dental office unaccompanied. The assistant helped with office duties, and by 1900 Kells was working with both a chairside dental assistant and a secretarial assistant. Soon other dentists saw the value of dental assistants and began to train dental assistants in their own offices.

In 1930 a curriculum committee was formed to draft courses of training to be used as educational guides. In 1948 the Certifying Board of the American Dental Assistants Association was established (now the Dental Assisting National Board [DANB]). By 1950, 1- and 2-year programs were available for dental assisting education.

• **Fig. 1.15** Hazel O. Torres, CDA, RDAEF, MA, founding coauthor of the *Modern Dental Assisting* textbook, shown here with her husband, Carl.

Hazel O. Torres and *Ann Ehrlich* forever set the standard for dental assisting textbooks in 1976, when their coauthored *Modern Dental Assisting* became the first major textbook written by dental assistants for dental assistants. Now in its eleventh edition, *Modern Dental Assisting* is the premier international learning system for dental assisting education.

Hazel Torres (Fig. 1.15) described herself as a sponge for knowledge. She began her career as an on-the-job trained dental assistant, continued her education, and later developed and taught in two dental assisting programs at community colleges in California. Among her many contributions to the profession of dental assisting, she was the first dental assistant to serve as a member of the California Board of Dental Examiners and served as a commissioner on the Commission of Dental Accreditation of the American Dental Association. She served as president of the American Dental Assistants Association (ADAA) and was awarded the Lifetime Achievement Award.

Ann Ehrlich (Fig. 1.16) began her career as a "wet-fingered" dental assistant in New Jersey. She had a passion for dental assisting and later completed her master's degree, became an educator, and taught dental assisting full time at the University of North Carolina. As a member of the ADAA, for years she assumed an important role in the authoring and publication of the *Journal of the American Dental Assistants Association.* She also served as a consultant to the Dental Assisting National Board.

• **Fig. 1.16** Ann Ehrlich, CDA, MA, founding coauthor of the *Modern Dental Assisting* textbook.

RECALL

18. Who was the first African American to graduate from the dental school at Harvard University?
19. Who was the first African American female dentist in the United States?
20. Who was the first American Indian dentist in the United States?

History of Dental Hygiene

The first person to become a dental hygienist was *Irene Newman,* a dental assistant in Bridgeport, Connecticut, in the early 1900s. At that time *Alfred C. Fones,* a dentist, thought women could be trained to provide preventive services and thus give the dentist time to perform more complex procedures. Dr. Fones trained Irene Newman in dental hygiene and then developed a school for dental hygienists in 1913 (Fig. 1.17). The school exists today in Connecticut as the University of Bridgeport Fones School of Dental Hygiene.

Dental Accreditation

By 1900 the profession of dentistry had become well established and dental schools were being founded across the country (Fig. 1.18). Educational requirements for dentists, dental hygienists, and dental assistants have increased dramatically over the years.

Today, the **Commission on Dental Accreditation of the American Dental Association** is responsible for the evaluation and accreditation of dental educational programs in the United States. These include graduate dental programs, postgraduate

• **Fig. 1.17** Dental hygienist during the 1960s working in a standing position. (Digital/print image courtesy of University of Detroit Mercy Archives and Special Collections.)

• **Fig. 1.18** Dental students at the University of California San Francisco School of Dentistry treat patients in the dental clinic in the early 1900s. (Courtesy School of Dentistry, University of California San Francisco.)

• **Fig. 1.19** Modern dental-assisting students practicing chairside skills with their instructor in an accredited dental-assisting program.

• **Fig. 1.20** Dr. Samuel D. Harris National Museum of Dentistry. (Courtesy National Museum of Dentistry, Baltimore, MD.)

specialty programs, and residency programs for dentists. The Commission also sets standards for educational programs in dental assisting, dental hygiene, and dental laboratory technology.

To maintain accreditation status, schools are reviewed every 7 years through comprehensive self-study and a visit by members of an accreditation team. The accreditation process provides assurance to students and to the public that the program continues to meet the high standards set forth by the dental profession (Fig. 1.19).

National Museum of Dentistry

The *Dr. Samuel D. Harris National Museum of Dentistry* is an affiliate of the Smithsonian Institution and is the largest and most comprehensive museum of dentistry in the world. In 2003 it was declared the nation's official dental museum by a joint resolution of the U.S. Congress. The museum is located on the grounds of the Baltimore College of Dental Surgery in Baltimore, Maryland, the world's first dental college. The museum's name honors Dr. Samuel D. Harris, a retired pediatric dentist who in 1992 was instrumental in founding the museum (Fig. 1.20).

The museum provides many interactive exhibits, historic artifacts, and engaging educational programs. Visitors learn about the heritage and future of dentistry, achievements of dental professionals, and the importance of oral health in a healthy life. To obtain more information, visit the Web site at http://www.dental.umaryland.edu/museum.

RECALL

21. Who was the first dentist to use a dental assistant?
22. Who founded dental hygiene education in America?
23. Where is the Dr. Samuel D. Harris National Museum of Dentistry located?

Legal and Ethical Implications

The public views the profession of dentistry with respect and trust. As important members of the oral healthcare profession, dental assistants should remember the trials and errors, struggles, and contributions made over the years to advance the dental profession.

Remember: To learn, we must stand on the shoulders of those who went before us.

Eye to the Future

Teledentistry uses information technology and telecommunications to provide oral healthcare to patients in remote or underserved areas by collaborating with dentists and specialists in other areas. It is also used in providing oral health education and public awareness.

Teledentistry also can be used by general dentists to consult with specialists in other states or other areas of the world. It can also improve services to underserved populations such as in rural or less developed areas.

Dentists, dental hygienists, and dental assistants are equipped with portable imaging equipment and electronic patient record systems, which they use to gather radiographs, photographs, medical histories, and dental charts that are uploaded to a secure Web site, where they are reviewed by a dentist or specialist in another location. Teledentistry is especially useful in providing oral healthcare in underserved areas such as geographically remote areas, nursing homes, schools, and facilities for the disabled.

The expanding use of teledentistry makes this an exciting time to be entering the dental healthcare profession.

Critical Thinking

1. What would you say to a 50-year-old patient who was reluctant to come to the dentist because of his negative experiences in the dental office as a child?
2. What would you tell the mother of a child who believes dental decay began when soft drinks and candy were discovered?
3. Who can serve as historic role models for young women today who face any type of discrimination in their career choices?
4. What would you say to someone who does not understand why you are studying the history of dentistry?
5. Do you think that the Hippocratic Oath is important today? Why?

ELECTRONIC RESOURCES

Additional information related to content in Chapter 1 can be found on the companion Evolve Web site.

- Practice Quiz
- Canadian Content Corner

2
The Professional Dental Assistant

LEARNING OUTCOMES

On completion of this chapter, the student will be able to achieve the following objectives:

1. Pronounce, define, and spell the key terms.
2. Describe and demonstrate the characteristics of a professional dental assistant, including the importance of patient confidentiality in a dental office and the purpose of the Health Insurance Portability and Accountability Act of 1996 (HIPAA).
3. Describe the educational requirements and career opportunities for the educationally qualified dental assistant.
4. Describe the role and purpose of the American Dental Assistants Association (ADAA) and the Dental Assisting National Board (DANB), including benefits of membership and certification.

KEY TERMS

American Dental Assistants Association (ADAA) professional organization that represents the profession of dental assisting on a national level

certified dental assistant (CDA) the nationally recognized credential of the dental assistant who has passed the DANB certification examination and keeps current in practice through continuing education

Dental Assisting National Board (DANB) national agency responsible for administering the certification examination and issuing the credential of certified dental assistant

HIPAA the Health Insurance Portability and Accountability Act of 1996 specifies federal regulations that ensure privacy regarding a patient's healthcare information

professional person who meets the standards of a profession

You chose an exciting and challenging career when you decided to become a professional dental assistant. A highly skilled dental assistant is a vital member of the dental healthcare team. You help reduce patient anxiety, simplify treatment procedures, apply appropriate infection control and safety measures, and improve the quality of patient care (Fig. 2.1).

A career in dental assisting offers variety, job satisfaction, opportunity for service, and financial reward. Dental assisting is a career that requires dedication, personal responsibility, integrity, and a commitment to continuing education.

Characteristics of a Professional Dental Assistant

Becoming a dental assistant involves more than acquiring the knowledge and developing the skills necessary to perform a variety of duties. Becoming a dental assistant is about becoming a **professional**.

Professionalism is what distinguishes people who "have a job" from those who "pursue a career." Professionalism is an attitude that is apparent in everything you do and say, in and out of the dental office. The public has a higher expectation of healthcare workers than expectations of individuals in other occupations. As a dental assistant, you must be able to demonstrate patience and compassion when communicating with patients and other team members. Every day you demonstrate your professionalism, you receive respect and acknowledgment from your colleagues and patients that you are a valued member of the dental healthcare team.

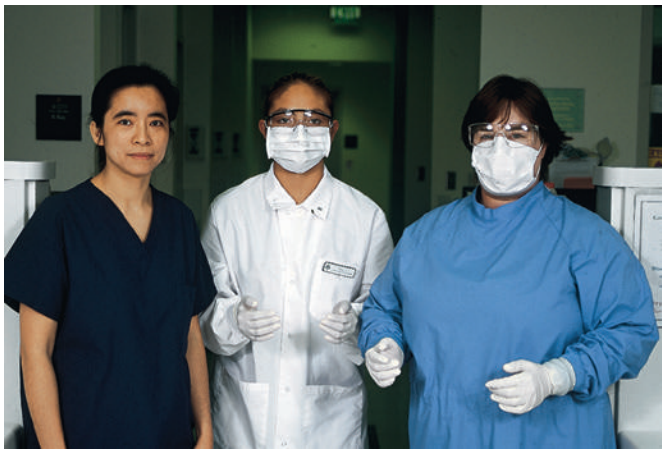
Professional Appearance

The professional appearance of the dental assistant promotes the patient's confidence in the entire office and improves his or her dental experience. The essential aspects of a professional appearance include (1) good health, (2) good grooming, and (3) appropriate dress.

To stay in *good health,* you must get an adequate amount of rest, eat well-balanced meals, and exercise enough to keep fit. Dental assisting is a physically demanding profession.

Good grooming requires paying attention to the details of your personal appearance. Personal cleanliness involves taking a daily bath or shower, using a deodorant, and practicing good oral hygiene. Do not use perfume or cologne. You are working in very close personal proximity to coworkers and patients who may be allergic to or irritated by some scents. Avoid the use of tobacco products because the odor lingers on your hair and clothing and is offensive to many patients and dental team members.

• **Fig. 2.1** The dental assistant is an important member of the dental healthcare team.



• **Fig. 2.2** The professional dental assistant's attire may vary depending on the duties performed. *(Left)* Scrubs are acceptable at times. *(Center)* Full personal protective wear is indicated for chairside procedures. *(Right)* Surgical gowns may be indicated for surgery or hospital dentistry.

Appropriate dress involves wearing clothing appropriate for the type of position in which the dental assistant is working (see Chapter 3). Regardless of the type of professional wear, it must be clean, wrinkle free, and worn over appropriate undergarments (Fig. 2.2). In any dental position, excessive makeup and jewelry are not considered appropriate for a professional appearance. Infection control requirements also must be considered when selecting clinical wear (see Chapter 19).

RECALL

1. How can a dental assistant demonstrate "professionalism"?
2. Name the three essential aspects of a professional appearance.

Knowledge and Skills

Depending on the type of dental practice, the responsibilities of a dental assistant will vary. Ideally, dental assistants should have both front desk (business) and chairside (clinical) skills. This is very important when a team member is absent from the office. Generally, dental assistants choose to stay in the position they prefer. Regardless of the type of dental practice, the day of a dental assistant is never boring or "routine."

GUIDELINES FOR A PROFESSIONAL APPEARANCE

- Uniform or scrubs should be clean, pressed, and in good repair
- Shoes and laces should be clean and in good condition
- Hair should be styled so that it stays out of your face
- Jewelry should be avoided
- Fingernails should be clean and short
- Artificial fingernails should not be worn; they can harbor bacteria
- Perfumes and body scents should not be worn
- Tobacco products should not be used
- Makeup should be subtle and natural
- Avoid visible tattoos, body piercings, bright fingernail polish, and extreme hairdos
- Bathe each day and use deodorant
- Maintain good oral hygiene
- Implement procedures for infection control and prevention of disease transmission

Teamwork

Teamwork is extremely important in a dental office. The letters in the word *team* mean that "*T*ogether, *E*veryone *A*ccomplishes *M*ore." Dental assistants should offer to do an absent colleague's work and should be willing to help coworkers when other tasks are completed. When several assistants work in an office, each should be able and willing to substitute for the others in an emergency.

Attitude

Patients, coworkers, and employers appreciate the dental assistant who has a good attitude. It is important for the dental assistant to show a willingness to get along by avoiding gossiping or criticizing others. It is important to show appreciation for what others have done and to be willing to pitch in and help. The dental office can be a stressful place for patients and staff, so it is important to maintain a positive attitude.

Dedication

Professional dental assistants are dedicated to their dental practice, their patients, and the profession of dental assisting. Dedication is possible only if the assistant truly cares for people, is empathetic to their needs, and maintains a positive attitude.

Responsibility and Initiative

The dental assistant can demonstrate work responsibility by (1) arriving on time, (2) staying for the full shift, (3) being a cooperative team member, and (4) not asking to leave early. Assistants should understand what is expected of them regularly and, if time permits, should volunteer to help others who may be overworked.

You can show a willingness to learn additional skills by asking questions and observing others. Show initiative by finding tasks to perform without being asked. Show responsibility by calling the office when you are ill or unavoidably late. Do *not* discuss your personal problems in the dental office with your patients or with other staff members.

RECALL

3. How can you demonstrate that you are a responsible person?

Confidentiality

Everything that is said or done in the dental office must remain confidential. Dental assistants have access to a vast amount of personal and financial information about their patients. Such information must be held in strict confidence and must not be discussed with others. Breaches of confidentiality are unethical and can also result in lawsuits against all parties involved.

You cannot reveal the identity of a patient or any information from his or her records without the patient's written consent. *Never* discuss patients with anyone outside the dental office.

HIPAA (the Health Insurance Portability and Accountability Act of 1996) is a set of federal privacy laws. These laws apply to all types of healthcare providers regarding methods that must be used to ensure that patient privacy is protected while health information is shared among healthcare providers. You will learn the details of these laws in Chapter 63.

Personal Qualities

Many people do not enjoy a visit to the dentist, and they are often stressed or intimidated by being in the dental office. The dental assistant must (1) demonstrate sensitivity to the patient's needs, (2) show empathy, (3) say "the right thing at the right time," and (4) *be sincere.*

It is nearly impossible to build rapport with patients in your office if they do not trust you.

Educational Requirements

Types of Programs

Dental assistants can receive their formal education through various types of programs. These include academic programs at community colleges, vocational schools, career colleges, technical institutes, universities, and dental schools. Most academic programs require 8 to 11 months to complete. Some schools offer accelerated programs, part-time programs, or training via distance education. Graduates of these programs usually receive certificates.

Career Opportunities

Employment Settings

Today, many dentists employ two or more dental assistants. Employment opportunities for dental assistants are excellent. The types of practice settings available to dental assistants include the following:

- Solo practice (practices with only one dentist)
- Group practice (practices with two or more dentists)
- Specialty practices (such as orthodontics, oral surgery, endodontics, periodontics, and pediatric dentistry)
- Office managers
- Financial coordinators
- Scheduling coordinators
- Public health dentistry (settings such as schools and clinics)
- Hospital dental clinics
- Dental school clinics

Other Career Opportunities

In addition to assisting in the delivery of dental care, other excellent career opportunities are available for dental assistants. These opportunities include the following:

- Insurance company workers, processing dental insurance claims
- Educators, teaching dental assisting in vocational schools, technical institutes, community colleges, dental schools, and universities (some may require associate or baccalaureate college degrees)
- Dental product sales representatives

Salaries

The salary of a dental assistant depends primarily on the skills and abilities of the individual and the responsibility associated with the specific position. Earning potential also can be influenced by the geographic location of the place of employment.

Generally, dental assistants earn salaries equal to those of other healthcare professionals with similar training and experience, such as medical assistants, physical therapy assistants, occupational therapy assistants, veterinary technicians, and pharmacy technicians.

Professional Organizations

American Dental Assistants Association

The **American Dental Assistants Association (ADAA)** is the organization that represents the profession of dental assisting. The ADAA was formed in 1924 by *Juliette A. Southard* (Fig. 2.3). Her vision was of "an educated, efficient dental assistant with her own place in the profession of dentistry."

The ADAA is a national nonprofit corporation based in Bloomingdale, Illinois. Membership is *tripartite,* which means that when you join the ADAA, you become a member of (1) the state component, (2) the local component, and (3) the national organization (Fig. 2.4). By becoming a member of the ADAA, dental assistants can be proactive and take leadership positions within organized dentistry and the healthcare profession.

Benefits of Membership

By joining the ADAA, you can grow personally and professionally and keep abreast of legislative issues and current information. ADAA members can attend local, state, and national meetings, where they can participate in workshops, earn continuing education

• **Fig. 2.3** Juliette A. Southard, founder of the American Dental Assistants Association (ADAA). (Courtesy ADAA, Chicago, IL.)

credit, hear prominent speakers, and establish lifelong friendships with other dental assistants.

Other benefits of membership include a subscription to *The Dental Assistant,* the journal of the ADAA; professional liability, accidental death and dismemberment, and medical insurance options; awards and scholarship opportunities; credit card options; and other discounts. Student membership is available for those enrolled in formal training programs.

Participating in ADAA activities enhances "people skills" and teaches leadership. You can influence the future of your profession and show that you are serious about your career.

MANY ROLES OF DENTAL ASSISTANTS

Chairside Dental Assistant

Works directly with the dentist in the treatment area. Primary responsibilities in this role include, but are not limited to, the following duties:

- Seating and preparing for patients
- Charting
- Instituting infection control procedures
- Mixing and passing dental materials
- Assisting the dentist during procedures
- Ensuring patient comfort
- Exposing and processing radiographs
- Pouring and trimming models, as well as performing other laboratory procedures
- Providing patient education
- Providing postoperative instructions to patients
- Overseeing inventory control and ordering dental supplies
- Ensuring compliance with regulations of the Occupational Safety and Health Administration (OSHA)

Expanded-Functions Dental Assistant

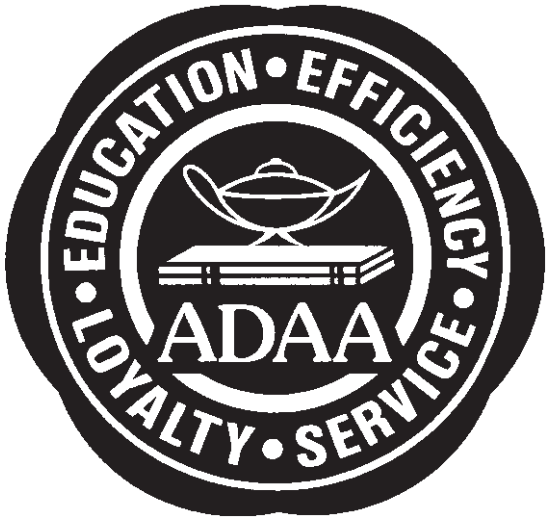
Delegation of the following functions varies among states, depending on the individual state's or province's Dental Practice Act:

- Placing dental sealants
- Taking impressions
- Fabricating temporary crowns and bridges
- Placing retraction cord
- Applying fluoride
- Applying topical anesthetic
- Placing and removing dental dams
- Placing and removing matrices and wedges
- Applying liners, varnishes, and bases
- Placing, carving, and finishing amalgam or composite restorations
- Removing sutures
- Placing and removing periodontal dressings
- Performing additional functions as specified in the Dental Practice Act of the state in which the dental assistant is employed. It is important to be aware of the laws of the state, province, or territory in which you practice.

Administrative Assistant

Also known as the *secretarial assistant, business assistant,* or *receptionist.* The administrative assistant is responsible for the efficient operation of the business office and performs the following duties:

- Greeting patients and answering the phone
- Scheduling patient visits
- Managing patient records
- Managing accounts receivable and accounts payable
- Managing the recall system
- Maintaining privacy of patient information
- Overseeing and monitoring practice marketing activities



• **Fig. 2.4** The seal of the American Dental Assistants Association (ADAA). (Courtesy ADAA, Chicago, IL.)

CHECK YOUR PERSONAL QUALITIES AS A DENTAL ASSISTANT

- How do I interact with patients?
- Am I friendly? Do I have a pleasant attitude?
- Do I listen more than I talk?
- Am I courteous?
- Am I considerate, respectful, and kind?
- Do I control my temper?
- Do I try to see the other person's point of view?
- Am I responsible?
- Am I dependable?
- Am I attentive to details?
- Am I calm in an emergency?
- Am I responsible for my own actions?
- Do I tend to blame others or find fault with others?
- Do I offer to help others without being asked?
- Do I avoid office gossip?

MISSION STATEMENT OF THE AMERICAN DENTAL ASSISTANTS ASSOCIATION (ADAA)

To advance the careers of dental assistants and to promote the dental-assisting profession in matters of education, legislation, credentialing, and professional activities that enhance the delivery of quality dental healthcare to the public.

WHERE TO OBTAIN MORE INFORMATION: ADAA

American Dental Assistants Association
140 North Bloomingdale Road
Bloomingdale, IL 60108-1017
Phone: 630-994-4247
Toll Free: 877-874-3785
Fax: 630-351-8490
www.dentalassistant.org

RECALL

4. What is the purpose of the ADAA?
5. What are some benefits of being a member of the ADA?

Dental Assisting National Board

The **Dental Assisting National Board (DANB)** is the recognized agency responsible for testing dental assistants and issuing the credential of **certified dental assistant (CDA)**. The American Dental Association recognizes DANB as the national certification agency for dental assistants. Certification is a voluntary credential and is not mandatory in all states, although some states require a dental assistant to be a CDA to legally perform specific "expanded functions" within their state.

By earning DANB certification, dental assistants demonstrate their commitment to excellence. In addition, a CDA in the dental office promotes the image of professionalism.

For dental assistants to be permitted to teach in an ADA-accredited dental assisting program, they must be currently certified by the DANB.

DANB also offers state-specific dental assisting expanded-function examinations.

Certified Dental Assistant

To earn CDA certification, there are specific eligibility requirements stated by the DANB.

Pathway I
- Graduation from a CODA-accredited dental assisting or dental hygiene program
- Current CPR from a DANB-accepted provider

Pathway II
- High school graduation or equivalent
- Minimum of 3500 hours of approved work experience
- Current CPR from a DANB-accepted provider

Pathway III
- Former DANB CDA status, or graduation from a CODA Accredited DDS or DMD program, or graduation from a dental degree program outside the United States or Canada
- Current CPR from a DANB-accepted provider

The DANB offers the option to take any of its examinations in a computerized format throughout the year. Successful completion of the DANB examination entitles the assistant to use the CDA credential, wear the official certification pin (Fig. 2.5), and display the CDA certificate.

• **Fig. 2.5** Official DANB CDA pin Design. (Courtesy DANB, Chicago, IL.)

DANB offers five national certifications to help advance your career; Certified Dental Assistant (CDA), Certified Orthodontic Assistant (COA), National Entry Level Dental Assistant (NELDA), Certified Preventive Functions Dental Assistant (CPFDA), and Certified Restorative Functions Dental Assistant (CRFDA).

Certified Dental Assistant (CDA). The CDA examination focuses on General Chairside Assisting and is DANB's primary certification. The CDA examination contains three separate components: General Chairside (GS), Radiation Health and Safety (RHS), and Infection Control (ICE).

Certified Orthodontic Assistant (COA). The COA examination contains two separate components: Orthodontic Assisting (OA) and Infection Control (ICE). DANB offers the option to take any of its examinations in a computerized format throughout the year.

National Entry Level Dental Assistant (NELDA). The NELDA examination consists of three component examinations: Radiation Health (RHS), Infection Control (ICE), and Anatomy, Morphology and Physiology (AMP).

Certified Preventive Functions Dental Assistant (CPFDA). The CPFDA examination consists of four component examinations: Coronal Polishing (CP), Sealants (S), Topical Anesthetic (TA), and Topical Fluoride (TF).

Certified Restorative Functions Dental Assistant (CRFDA). The CRFDA examination consists of six examinations: Anatomy, Morphology and Physiology, Impressions, Isolation, Sealants, Temporaries, and Restorative Functions.

BENEFITS OF DANB CERTIFICATION

For the Patient
- Provides assurance that the dental assistant has the necessary knowledge and skills
- Strengthens a patient's confidence in the dental team
- Enhances the dental assistant's reputation regarding delivery of quality services
- Provides a level of professionalism that is beneficial to the practice
- CDAs stay in the field nearly three times as long as noncertified dental assistants

For the Dentist-Employer
- Certification provides a sense of personal achievement
- Promotes the dental assistant's professional pride
- Demonstrates a commitment to excellence and lifelong learning

For the Dental Assistant
- Certification provides a sense of personal achievement
- Promotes the dental assistant's professional pride
- Demonstrates a commitment to excellence and lifelong learning
- Provides greater earning power and job satisfaction. Dental assistants with DANB certificates earn nearly $2 more per hour than those who are not certified
- Provides career advancement because DANB is recognized or required by 39 states, the District of Columbia, the U.S. Air Force and the Department of Veterans Affairs

WHERE TO OBTAIN MORE INFORMATION: DANB

Dental Assisting National Board
444 N. Michigan Avenue, Suite 900
Chicago, IL 60611
Phone: 800-FOR-DANB or 312-642-3368
Fax: 312-642-8507
www.danb.org

RECALL

6. Which credentials are issued by DANB?
7. Where can you obtain additional information about the DANB examinations?

Eye to the Future

Increased demand for dental care and a shortage of dental professionals have created many opportunities for qualified dental assistants. The current demand for educationally qualified dental assistants is at an all-time high. Employment opportunities are abundant and extremely varied. The future is promising and challenging for the educationally qualified dental assistant.

Visit the ADAA Web page and the DANB Web page to enhance your knowledge and pride in your chosen profession.

Critical Thinking

1. Imagine yourself as a nervous patient entering the dental office to have your wisdom teeth extracted. The dental assistant who greets you is chewing gum and has long purple artificial fingernails, dangling earrings, a tattoo on her arm, and long hair hanging over her shoulders. What would be your first impression of the office and the dentist?
2. Dr. Wong is interviewing two dental assistants for a chairside position. Both are graduates of a local dental assisting program. Both seem pleasant and capable, but only one is a CDA and a member of the ADAA. Why would Dr. Wong hire one over the other? Why?
3. While you and a friend are having lunch at a local restaurant, you think of an embarrassing but funny event that happened to a patient in your dental office. You would like to share this story, but do you? Why or why not?
4. What would be your preference for a future position within a dental office; office manager or chairside dental assistant position? Why?
5. Carol is one of four dental assistants in your office. She frequently gossips about patients and other staff members. You and the other team members want Carol's gossiping to stop. How would you handle this situation?

ELECTRONIC RESOURCES

Additional information related to content in Chapter 2 can be found on the companion Evolve web site.

- Practice Quiz
- Canadian Content Corner

3

The Dental Healthcare Team

LEARNING OUTCOMES

On completion of this chapter, the student will be able to achieve the following objectives:

1. Pronounce, define, and spell the key terms.
2. List the members of the dental healthcare team and explain their roles, which include:
   - The minimal educational requirements for each member of the dental healthcare team.
   - The nine dental specialties recognized by the American Dental Association.
   - The various job opportunities and responsibilities that are available to a qualified dental assistant.

KEY TERMS

certified dental technician (CDT) a dental laboratory technician who has passed a written national examination and who performs dental laboratory services such as fabricating crowns, bridges, and dentures, as specified by the dentist's written prescription

dental assistant oral healthcare professional trained to provide supportive procedures for the dentist and for patients

dental equipment technician specialist who installs and maintains dental equipment

dental hygienist licensed oral healthcare professional who provides preventive, therapeutic, and educational services

dental laboratory technician professional who performs dental laboratory services such as fabricating crowns, bridges, and dentures, as specified by the dentist's written prescription. Most frequently trained on the job as an apprentice

dental public health specialty that promotes oral health through organized community efforts

dental spa dental practices that offer many services not normally associated with dental care: facials, paraffin wax hand treatment, reflexology, micro-dermabrasion, massage therapy, and many other pampering, therapeutic, and rejuvenation offerings

dental supply person representative of a dental supply company who provides dental supplies, product information, services, and repairs

dentist oral healthcare provider licensed to practice dentistry

detail person representative of a specific company who provides information concerning the company's product

endodontics dental specialty that diagnoses and treats diseases of the pulp

oral and maxillofacial radiology dental specialty that deals with the diagnosis of disease through various forms of imaging, including x-ray films (radiographs)

oral and maxillofacial surgery dental surgical specialty that diagnoses and treats conditions of the mouth, face, upper jaw (maxilla), and associated areas

oral pathology dental specialty that diagnoses and treats diseases of the oral structures

orthodontics specialty within dentistry that focuses on preventing, intercepting, and correcting skeletal and dental problems

pediatric dentistry dental specialty concerned with neonatal through adolescent patients, as well as patients with special needs in these age groups

periodontics dental specialty involved with the diagnosis and treatment of diseases of the supporting tissues

prosthodontics dental specialty that provides restoration and replacement of natural teeth

The goal of the dental healthcare team is to provide quality oral healthcare for patients in the practice. The **dentist** is the individual who is legally responsible for the care of patients and the supervision of all other members of the team. Because of this, the dentist is often referred to as the leader of the team.

The dental healthcare team consists of the following:

- Dentist (general dentist or specialist)
- Dental assistant (clinical, expanded-functions, business)
- Dental hygienist
- Dental laboratory technician

Dentist

Dentists trained in the United States must graduate from a dental university approved by the Commission on Dental Accreditation of the American Dental Association (ADA). Most dentists have attained an undergraduate degree before they are admitted to a dental university. Dental education programs usually last 4 academic years. Upon graduation, the dentist must successfully pass the written National Board Dental Examination (NBDE) and a state-specific clinical examination to obtain a license to practice dentistry in a particular state.

Training in the dental university includes dental sciences and intensive clinical practice on patients in the university's clinic. When dentists graduate from a dental university, they are awarded the *Doctor of Dental Surgery (DDS)* or the *Doctor of Medical Dentistry (DMD),* depending on which dental school they attended. Before going into practice, all dentists must pass a *written* national board examination. Dentists are then required to take a *clinical* board examination in the state or region in which they choose to practice.

Dentists have a variety of practice options available to them. Some will choose to practice alone, some may choose to have a practice partner, and others may enter a large group practice. Other options for dentists include the military, public health, community clinics, research, teaching, or returning to school for specialty training.

Although a general dentist is trained and is legally permitted to perform all dental functions, many dentists prefer to refer more difficult cases to specialists who have advanced training in certain areas. Most dentists are members of their professional organization, the ADA.

ROLES AND RESPONSIBILITIES OF DENTAL HEALTHCARE TEAM MEMBERS

Dentist or Dental Specialist

- Is legally responsible for the care of the patient
- Assesses the patient's oral health needs as related to physical and emotional well-being
- Uses up-to-date diagnostic skills
- Uses current techniques and skills in all aspects of patient care
- Provides legally required supervision for dental auxiliaries

Clinical Dental Assistant (Chairside Assistant, Circulating Assistant)

- Seats and prepares patients
- Maintains and prepares treatment rooms and instruments
- Assists dentist at chairside during patient treatment
- Prepares and delivers dental materials
- Provides postoperative patient instructions
- Oversees infection control program
- Performs radiographic procedures
- Performs basic laboratory procedures (e.g., pouring impressions to create diagnostic casts)
- Provides assurance and support for the patient
- Ensures that patient privacy measures are followed

Expanded-Functions Dental Assistant (EFDA)

- Performs only those intraoral (inside mouth) procedures that are legal in the state in which the EFDA practices
- Check with your state board of dentistry for a current listing of dental assistant duties

Dental Hygienist

- Assesses the periodontal status of patients, including measurement of the depth of periodontal pockets and assessment of conditions of the oral tissues
- Performs dental prophylaxis (e.g., removal of plaque from crowns and root surfaces)
- Performs scaling and root-planing procedures
- Exposes, processes, and evaluates the quality of radiographs
- Performs additional procedures, such as administration of local anesthetic and administration of nitrous oxide if allowed by the state

Business Assistant (Administrative Assistant, Secretarial Assistant, Receptionist)

- Greets patients and answers the phone
- Makes and confirms appointments
- Manages patient records, payroll, insurance billing, and financial arrangements
- Ensures that patient privacy measures are in place and followed
- Oversees patient relations

Dental Laboratory Technician

- Performs laboratory work only under the licensed dentist's prescription
- Constructs and repairs prosthetic devices (e.g., full and partial dentures)
- Constructs restorations (e.g., crowns, bridges, inlays, veneers)

Dental Specialist

The ADA recognizes nine dental specialties. Depending on the type of specialty, additional education required to become a specialist takes from 2 to 6 years to complete. Most dentists who are specialists belong to a professional organization created for their specialty, in addition to maintaining membership in the ADA.

DENTAL SPECIALTIES RECOGNIZED BY THE AMERICAN DENTAL ASSOCIATION

Dental public health involves development of policies at county, state, and national levels for programs to control and prevent disease. Examples include dental public health professionals involved with community fluoridation issues, community oral health education, and Head Start programs. Dental public health also includes dental screenings within a community to assess the needs of the community. In dental public health, the community, rather than the individual, is the patient. For additional information, contact the American Association of Public Health Dentistry (http://www.aaphd.org).

Endodontics involves the cause, diagnosis, prevention, and treatment of diseases and injuries to the pulp and associated structures. The common term for much of the treatment is *root canal.* The specialist is an *endodontist* (see Chapter 54). For additional information, contact the American Association of Endodontics (http://www.aae.org).

Oral and maxillofacial radiology became the first new dental specialty in 36 years when it was granted recognition by the ADA in 1999. The *dental radiologist* uses new and sophisticated digital imaging techniques to locate tumors and infectious diseases of the jaws, head, and neck and assists in the diagnosis of patients with trauma and temporomandibular disorders (see Chapter 42). For additional information, contact the American Academy of Oral and Maxillofacial Radiology (http://www.aaomr.org).

Oral and maxillofacial surgery involves the diagnosis and surgical treatment of diseases, injuries, and defects of the oral and maxillofacial regions. It consists of much more than tooth extractions. The specialist is an *oral and maxillofacial surgeon* (see Chapter 56). For additional information, contact the American Association of Oral and Maxillofacial Surgeons (http://www.aaoms.org).

Oral pathology involves examination of the nature of diseases that affect the oral cavity and adjacent structures. A major function is to perform biopsies and work closely with oral surgeons to provide a diagnosis. The specialist is an *oral pathologist* (see Chapter 17). For additional information, contact the American Academy of Oral and Maxillofacial Pathology (http://www.aaomp.org/about/).

Orthodontics involves the diagnosis, treatment, and prevention of malocclusions of the teeth and associated structures. This specialty entails much more than fitting of braces. The specialist is an *orthodontist* (see Chapter 60). For additional information, contact the American Association of Orthodontists (https://www.aaoinfo.org/).

Pediatric dentistry involves the oral healthcare of children from birth to adolescence. The *pediatric dentist* often treats children with emotional and behavioral problems (see Chapter 57). For additional information, contact the American Academy of Pediatric Dentistry (http://www.aapd.org).

Periodontics involves the diagnosis and treatment of diseases of the oral tissues that support and surround the teeth. The specialist is a *periodontist* (see Chapter 55). For additional information, contact the American Academy of Periodontology (http://www.perio.org).

Prosthodontics involves the restoration and replacement of natural teeth with artificial constructs such as crowns, bridges, and dentures. The specialist is a *prosthodontist* (see Chapters 50, 52, and 53). For additional information, contact the American College of Prosthodontists (https://www.prosthodontics.org/).

• **Fig. 3.1** Dental hygienist performing an oral prophylaxis. (From Darby M, Walsh M: *Dental hygiene: theory and practice,* ed 4, St Louis, 2015, Elsevier.)

RECALL

1. Name the members of the dental healthcare team.
2. Name the nine dental specialties.

Registered Dental Hygienist

Generally, a registered dental hygienist (RDH) removes deposits on the teeth, exposes radiographs, places topical fluoride and dental sealants, and provides patients with home care instructions (Fig. 3.1). Duties delegated to the **dental hygienist** vary from state to state. In many states, dental hygienists are allowed to administer local anesthesia. It is important for dental hygienists to have a thorough understanding of the laws of the state in which they practice. Employment opportunities for dental hygienists are found in private and specialty dental offices, health clinics, school systems, research facilities, public health departments, and educational programs, as well as in the marketing and sales of dental products.

The minimal education required for an RDH is 2 academic years of college study and an associate's degree in an ADA-accredited dental hygiene program. Dental hygiene is also offered in bachelor's and master's degree programs.

The RDH must pass both written national or regional board examinations and clinical state board examinations to be licensed by the state in which he or she plans to practice. In most states, the RDH is required to work under the supervision of a licensed dentist.

Dental hygienists may be members of their professional organization, the *American Dental Hygienists Association (ADHA).* For additional information on dental hygiene, visit the Web site at http://www.adha.org.

RECALL

3. What is the minimal length of education for dental hygiene licensure?

Dental Assistant

An educationally qualified **dental assistant** is able to assume many activities that do not require the professional skill and judgment of the dentist. However, responsibilities assigned to a dental assistant are limited by the regulations of the Dental Practice Act of the state in which the practice is located (see Chapter 5).

Although not all states require formal education for dental assistants, minimal standards for schools accredited by the Commission on Dental Accreditation require a program of approximately 1 academic year in length, conducted in a post–high school educational institution. The curriculum must include didactic, laboratory, and clinical content. Dental assistants may also receive training at vocational schools or proprietary schools accredited through the state's Board of Dentistry.

As modern dentistry changes and procedures and techniques become more complex, the role of the dental assistant will continue to evolve. Many important and varied roles are available within dentistry for dental assistants. Each dental practice is unique and has specific needs, and the educationally qualified dental assistant is quick to adapt to new situations as the need arises.

Clinical Dental Assistant

The clinical dental assistant is directly involved in patient care. The role of the clinical dental assistant is usually defined as *chairside* or *circulating assistant.*

Chairside Assistant

The chairside assistant works primarily with the dentist who uses four-handed dentistry techniques. The term *four-handed dentistry* describes the seated dentist and chairside assistant working as an efficient team (Fig. 3.2). The chairside assistant mixes dental materials, exchanges instruments, and provides oral evacuation during dental procedures. An equally important role of the chairside dental assistant is to make the patient comfortable and relaxed.

• **Fig. 3.2** Dentist and chairside dental assistant working together.

• **Fig. 3.3** Chairside dental assistant supported by a circulating dental assistant.

Circulating Assistant

The circulating assistant serves as an extra pair of hands where needed throughout the clinical areas of the practice. This is referred to as *six-handed dentistry* (Fig. 3.3).

In many practices, the circulating assistant is responsible for seating and dismissing patients, as well as for preparing and caring for instruments and treatment rooms.

Community Work

Many dental assistants find it personally rewarding to volunteer for participation in activities such as the national Give Kids a Smile Day, community health fairs, preschool visitations, and other oral health education events (Fig. 3.4).

Mobile Dental Facilities

Some communities and nonprofit agencies own vans that are fully equipped with dental operatories, sterilization equipment, and x-ray machines. The vans are operated and staffed by dentists and dental assistants, and they travel to underserved areas and provide much-needed dental services (Fig. 3.5).

Sterilization Assistant

In many offices, the responsibility for sterilization procedures is delegated to a specific individual. In other offices, all dental assistants share this important responsibility. The sterilization assistant efficiently and safely processes all instruments and manages biohazard waste. Other responsibilities include weekly monitoring of sterilizers and maintenance of sterilization monitoring reports (Fig. 3.6). The sterilization assistant is also responsible for selecting infection control products and performing quality assurance procedures (see Chapters 20 and 21).

• **Fig. 3.4** Dental assistants find volunteering at community dental health events very rewarding.

• **Fig. 3.5** (A) Mobile dental van. (B) Treatment area inside the dental van. (Courtesy St. Joseph Health, Sonoma County, CA.)