



Dental Assisting National Board, Inc.
Measuring Dental Assisting Excellence®

Radiation Health and Safety (RHS®)

Exam Outline and Suggested References

The RHS exam is a component of the National Entry Level Dental Assistant (NELDA®) and Certified Dental Assistant™ (CDA®) certification programs.

NELDA component exams

Anatomy, Morphology and Physiology (AMP)

Radiation Health and Safety (RHS)

Infection Control (ICE®)

CDA component exams

Radiation Health and Safety (RHS)

Infection Control (ICE)

General Chairside Assisting (GC)

Effective 01/01/2020

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Exam Outline Overview

RHS Exam Weighting by Domain

- I. Expose and Evaluate (26%)
- II. Quality Assurance and Radiography Regulations (21%)
- III. Radiation Safety for Patients and Operators (31%)
- IV. Infection Control (22%)

RHS Exam Administration Methods

Exam Characteristics	In-Person Testing	Live Online Remote Proctoring
Number of Multiple-Choice Questions	100	85
Time for Exam (minutes)	75	65
Tutorial Time (minutes)	5	5
Comment Time (minutes)	5	5
Total Exam Appointment Time (minutes)	85	75

The RHS exam is now administered in-person and through remote online proctoring. The candidate may choose the method they prefer. Remote proctoring allows candidates to take exams using their own computer while being monitored by webcam and microphone. The exams have the same number of scored exam items, but the remote proctored exams have fewer pretest (non-scored) exam items to accommodate remote proctored appointment time constraints. Candidates will not receive an advantage based on their administration mode. That is, the remotely administered exam is not easier (or harder) than the in-person version of the exam.

DANB uses computer adaptive testing (CAT). Candidates are scored based on the level of difficulty of the questions they answer correctly. This method can more accurately pinpoint a candidate's ability level. Each candidate is presented with the same percentage of questions from each domain. The average candidate will get around 50% of the questions correct.

RHS Exam Outline

DANB exams are created using the exam outline, which is annually reviewed by subject matter experts (e.g., Certified Dental Assistant™ [CDA®] certificants and dentists). The outline is developed using a Content Validation Study, which includes a job analysis survey where practicing CDA certificants are surveyed about how often tasks are performed and how important competent performance is to the health and safety of the public. This study is conducted every five to seven years to ensure the outline is consistent with current clinical practices. DANB's Board of Directors approves all updates to DANB exam outlines. The RHS exam measures a candidate's knowledge of national radiographic imaging practices.

NOTE: DANB uses "image receptor" to refer to conventional film or sensors used for digital imaging.

I: Expose and Evaluate (26%)

A. Assessment and Preparation

1. Describe patient preparation for radiographic exposures (e.g., inspect the patient's head and neck for removable appliances and foreign objects).
2. Select radiographic technique.
 - a. Describe use and purpose of intraoral and extraoral radiographic images, including but not limited to:
 - i. periapical.
 - ii. bitewing.
 - iii. occlusal.
 - iv. panoramic.
 - v. cephalometric and other extraoral views.
 - vi. cone beam CT.
 - b. Select radiographic survey to examine or view conditions, teeth or landmarks.
 - c. Describe technique modifications based on anatomical variations and clinical conditions.
3. Select equipment for radiographic technique.
 - a. Describe purpose or advantage of accessories.
 - b. Select image receptor size.

B. Acquire

1. Describe how to acquire radiographic images using various techniques.
 - a. Define radiographic exposure concepts.
 - b. Intraoral
 - i. Define factors that influence quality of the radiographic image.
 - ii. Compare paralleling and bisecting angle techniques (e.g., advantages, disadvantages).
 - iii. Describe the parts and functions of radiographic film packets and digital image receptors.
 - c. Extraoral
 - i. Identify function and maintenance of cassettes and digital sensor.
 - ii. Describe exposure technique (i.e., patient positioning).
 - a) Panoramic radiography.
 - b) Cephalometric radiography.
 - iii. Demonstrate basic understanding of CBCT (cone-beam computed tomography).
2. Demonstrate basic knowledge of digital radiography.
 - a. Advantages/disadvantages.
 - b. Image receptors.
3. Demonstrate basic knowledge of conventional film processing.
 - a. Functions of processing solutions.
 - b. Process exposed intra- and extraoral films using automatic processors.
 - c. Procedures for processing films.

C. Evaluate

1. Evaluate radiographic images for diagnostic value.
 - a. Describe features of a diagnostically acceptable radiographic image.
 - b. Identify and describe how to correct errors related to acquiring intraoral radiographic images.
 - c. Identify and correct radiographic processing errors.
 - d. Identify and describe how to correct improper film handling errors.
 - e. Identify and describe how to correct errors related to acquiring panoramic radiographic images.
2. Mount radiographic images.
 - a. Describe how to mount radiographic images using facial (buccal and labial) view.
 - i. Identify anatomical landmarks that aid in mounting.
 - ii. Match tooth views to tooth mount windows.
 - iii. Demonstrate understanding of radiographic image viewing techniques.
 - b. Identify anatomical structures and dental materials observed on radiographic images (e.g., differentiating between radiolucent and radiopaque areas).

D. Patient Management

1. Describe techniques for patient management before, during and after radiographic exposure (e.g., patients with special needs).
2. Describe techniques for patients with a severe gag reflex.

II: Quality Assurance and Radiography Regulations (21%)

A. Quality Assurance

1. Evaluate film/image receptor storage.
2. Identify and describe how to correct errors related to improperly storing film/image receptors.
3. Describe how to prepare, maintain and replenish automatic processor solutions.
4. Identify conditions required for image processing.
5. Describe how to implement quality assurance procedures.
6. Identify handling artifacts associated with digital image receptors.

B. Radiography Regulations

1. Describe how to prepare radiographic images for legal requirements, viewing, duplication and transfer (e.g., HIPAA).
2. Describe how to store chemical agents used in dental radiography procedures according to regulatory agencies, in compliance with the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard.
3. Describe how to dispose of chemical agents (e.g., disinfectants) and other materials used in dental radiography procedures.
4. Demonstrate understanding of how federal and state regulations applies to radiographic procedures and equipment (e.g., FDA-approved devices).

III: Radiation Safety for Patients and Operators (31%)

A. Identify current American Dental Association (ADA) guidelines for patient selection and limiting radiation exposure.

B. Apply the principles of radiation protection and hazards in the operation and location of radiographic equipment.

1. Factors affecting x-ray production (e.g., kVp, mA, exposure time).
2. X-radiation characteristics.
3. X-ray machine factors that influence radiation safety (e.g., filtration, shielding, collimation, PID [cone] length).
4. X-radiation physics.
 - a. Primary radiation.
 - b. Scatter (secondary) radiation.
5. Protocol for suspected x-ray machine malfunctions.
6. Treatment and surrounding areas (e.g., walls, hallways).

- C. Demonstrate knowledge of patient safety measures to provide protection from x-radiation.**
 - 1. Major causes of unnecessary x-radiation exposure.
 - 2. X-radiation biology:
 - a. short- and long-term effects of x-radiation on cells and tissues.
 - b. concepts of x-radiation dose (i.e., absorbed, equivalent, and effective dose).
 - 3. Reduce x-radiation exposure to patients (ALARA).
- D. Address patient radiation concerns (e.g., informed consent, patient refusal).**
- E. Identify operator safety measures to provide protection from x-radiation.**
 - 1. Sources of x-radiation to operators/other staff while exposing image receptors.
 - 2. Safety measures to reduce operator x-radiation exposure.
 - 3. X-radiation physics and biology pertaining to operator exposure.
- F. Describe methods for monitoring operator x-radiation exposure (e.g., personal monitoring device).**

IV: Infection Control (22%)

- A. Standard Precautions for Equipment**
 - 1. Demonstrate understanding of infection control techniques used to minimize cross-contamination during radiographic procedures according to ADA, Centers for Disease Control and Prevention (CDC) and OSHA guidelines for conventional and digital radiography.
 - 2. Demonstrate understanding of barriers used to minimize cross-contamination during radiographic procedures according to ADA, CDC and OSHA guidelines for conventional and digital radiography.
- B. Standard Precautions for Patients and Operators**
 - 1. Demonstrate understanding of infection control for radiographic procedures according to ADA, CDC and OSHA guidelines for conventional and digital radiography.
 - 2. Describe infection control techniques used during radiographic processing, following ADA, CDC and OSHA guidelines.

RHS Exam Suggested References

DANB exam committees use the following textbooks and reference materials to develop this exam. This list does not include all the available textbooks and materials for studying for this exam; these are simply the resources that exam committee subject matter experts have determined provide the most up-to-date information needed to meet or surpass a determined level of competency for this exam. Any one reference will likely not include all the material required to study to take and pass the exam. **Please note that previous editions of the resources below may be used for study purposes if the previous version was published within the past 7 years, unless noted otherwise.**

This list is intended to help prepare for this exam. It is not intended to be an endorsement of any of the publications listed. You should prepare for DANB certification and component exams using as many different study materials as possible.

Suggested References

1. Bird, Doni L., and Debbie S. Robinson. *Essentials of Dental Assisting*. 6th ed. St. Louis, MO: Elsevier/Saunders, 2017. **(THIS VERSION ONLY)**
2. Bird, Doni L., and Debbie S. Robinson. *Modern Dental Assisting*. 12th ed. St. Louis, MO: Elsevier/Saunders, 2018.
3. Ianucci, Joen M., and Laura J. Howerton. *Dental Radiography Principles and Techniques (with CD-ROM)*. 5th ed. St. Louis, MO: Elsevier/Saunders, 2017. **(THIS VERSION ONLY)**
4. Johnson, Orlen N., and Evelyn M. Thomson. *Essentials of Dental Radiography for Dental Assistants and Hygienists*. 10th ed. Upper Saddle River, NJ: Pearson Education, 2018. **(THIS VERSION ONLY)**
5. Miller, Chris H. *Infection Control and Management of Hazardous Materials for the Dental Team*. 6th ed. St. Louis, MO: Elsevier/Mosby, 2018. **(THIS VERSION ONLY)**
6. Phinney, Donna J., and Judy H. Halstead. *Dental Assisting: A Comprehensive Approach*. 5th ed. Clifton Park, NY: Delmar Cengage Learning, 2018. **(THIS VERSION ONLY)**

Additional/Optional Study Resources

1. Centers for Disease Control and Prevention (CDC). www.cdc.gov.
 - *Guidelines for Infection Control in Dental Health-Care Settings — 2003* (MMWR, Vol. 52, RR 17)
 - *Centers for Disease Control and Prevention. Summary of Infection Prevention Practices in Dental Settings: Basic Expectations for Safe Care. Atlanta, GA: US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Oral Health; 2016*
2. U.S. Department of Labor, Occupational Safety and Health Administration (OSHA). www.osha.gov.
 - *Hazard Communication Standard* (Code of Federal Regulations #29, Part 1910)
 - *Bloodborne Pathogens Standard* (1910.1030)
3. American Dental Assistants Association (ADAA). www.dentalassistant.org.
 - *An Introduction to Basic Concepts in Dental Radiography* (Course #715)
4. The DALE Foundation. www.dalefoundation.org.
 - *DANB RHS Review*
 - *Conventional Dental Radiography Review*
 - *DANB RHS Practice Test*
 - *Glossary of Dental Terms*



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State Regulations

Each state's dental board implements regulations and establishes rules for delegating legally allowable duties to dental assistants. Passing one or more of the DANB component exams or earning DANB certification only conveys authority to perform these duties in those states that recognize these exams or this certification as meeting state dental assisting requirements. This information is available at www.danb.org.