



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

# Radiation Health and Safety (RHS®)

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## Exam Blueprint and Suggested References

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# RHS

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## Exam Blueprint Overview

### RHS Exam Weighting by Sub-Content Area

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

#### **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 at [www.danb.org](http://www.danb.org).

# RHS Exam Blueprint

DANB exams are created using the exam blueprint, which is annually reviewed by subject matter experts. The blueprint is developed through a rigorous content validation study (CVS) and validated by DANB certificants using a job analysis survey. A CVS is conducted every five to seven years to ensure the blueprint is consistent with current clinical practices. DANB's Board of Directors approves all updates to DANB exam blueprints.

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

## Sub-Content Area 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.
  - b. Select radiographic survey to examine or view conditions, teeth or landmarks.
  - c. Describe technique modifications based on anatomical variations.
3. Select equipment for radiographic technique selected.
  - a. Describe purpose or advantage of accessories.
  - b. Select image receptor size.
  - c. Describe purpose and advantage of double (dual) film packets.

### 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 film cassettes and intensifying screens.
    - 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. Handling errors.
    - c. Image receptors.
  3. Demonstrate basic knowledge of conventional film processing.
    - a. Functions of processing solutions.
    - b. How to process exposed intra- and extraoral films using automatic processors.
    - c. Identify 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 and label 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, dental materials and patient information 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.

## Sub-Content Area II: Quality Assurance and Radiology Regulations (21%)

### A. Quality Assurance

1. Evaluate film storage areas.
2. Identify and describe how to correct errors related to improperly storing radiographic film.
3. Describe how to prepare, maintain and replenish automatic processor solutions.
4. Identify conditions required for film processing.
5. Describe how to implement quality assurance procedures.

### B. Radiology Regulations

1. Describe how to prepare radiographic images for legal requirements, viewing, duplication and transfer.
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 and other materials used in dental radiography procedures.

## Sub-Content Area 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 of radiographic equipment.

1. Demonstrate understanding of factors affecting x-ray production (e.g., kVp, mA, exposure time).
2. Describe x-radiation characteristics.
3. Demonstrate understanding of x-ray machine factors that influence radiation safety (e.g., filtration, shielding, collimation, PID [cone] length).
4. Demonstrate understanding of x-radiation physics.
  - a. Primary radiation.
  - b. Scatter (secondary) radiation.
5. Describe protocol for suspected x-ray machine malfunctions.

**C. Demonstrate knowledge of patient safety measures to provide protection from x-radiation.**

1. Identify major causes of unnecessary x-radiation exposure.
2. Demonstrate understanding of x-radiation biology:
  - a. short- and long-term effects of x-radiation on cells and tissues.
  - b. concepts of x-radiation dose and effective dose.
3. Identify ways to reduce x-radiation exposure to patients (ALARA).

**D. Address patient concerns about radiation (e.g., informed consent, patient refusal of radiography).**

**E. Demonstrate understanding of operator safety measures to provide protection from x-radiation.**

1. Identify sources of x-radiation to operators/other staff while exposing image receptors.
2. Identify safety measures to reduce operator x-radiation exposure.
3. Demonstrate understanding of x-radiation physics and biology pertaining to operator exposure.

**F. Describe techniques for monitoring individual x-radiation exposure.**

## **Sub-Content Area IV: Infection Control (22%)**

**A. Standard Precautions for Equipment**

1. Demonstrate understanding of infection control techniques 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 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

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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 determined as providing 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 the exam.

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.

## Textbook References

1. Bird, Doni L., and Debbie S. Robinson. *Essentials of Dental Assisting*. 5th ed. St. Louis, MO: Elsevier/Saunders, 2013.
2. Bird, Doni L., and Debbie S. Robinson. *Modern Dental Assisting*. 10th and 11th ed. St. Louis, MO: Elsevier/Saunders, 2012 and 2015.
3. Frommer, Herbert H., and Jeanine J. Stabulas-Savage. *Radiology for the Dental Professional*. 9th ed. St. Louis, MO: Elsevier/Mosby, 2011.
4. Iannucci, Joen M., and Laura J. Howerton. *Dental Radiography Principles and Techniques* (with CD-ROM). 4th and 5th ed. St. Louis, MO: Elsevier/Saunders, 2012 and 2017.
5. Johnson, Orlen N., and Evelyn M. Thomson. *Essentials of Dental Radiography for Dental Assistants and Hygienists*. 9th ed. Upper Saddle River, NJ: Pearson Education, 2012.
6. Miles, Dale A., Margot L. Van Dis, Gail F. Williamson, and Catherine W. Jensen. *Radiographic Imaging for the Dental Team*. 4th ed. St. Louis, MO: Elsevier/Saunders, 2009.
7. Miller, Chris H. *Infection Control and Management of Hazardous Materials for the Dental Team*. 5th ed. St. Louis, MO: Elsevier/Mosby, 2014.
8. Phinney, Donna J., and Judy H. Halstead. *Dental Assisting: A Comprehensive Approach*. 4th ed. Clifton Park, NY: Delmar Cengage Learning, 2013.

## Organizational References

1. American Dental Assistants Association (ADAA). [www.dentalassistant.org](http://www.dentalassistant.org).
  - *An Introduction to Basic Concepts in Dental Radiography* (Course #715)
2. The DALE Foundation. [www.dalefoundation.org](http://www.dalefoundation.org).
  - *DANB RHS Review*
  - *Conventional Dental Radiography Review*
  - *DANB RHS Practice Test*
  - *Glossary of Dental Terms*



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*Measuring Dental Assisting Excellence®*

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**

General Chairside Assisting (GC)

**Radiation Health and Safety (RHS)**

Infection Control (ICE)