



Radiation Health and Safety (RHS®)

Exam Outline and References

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

There are no eligibility requirements to take the RHS exam.

The purpose of the RHS exam is to ensure that individuals meet the minimum national standard for knowledge-based competence in radiation health and safety tasks critical to the health and safety of patients and dental healthcare personnel.

NELDA exams

Anatomy, Morphology and Physiology (AMP)

Radiation Health and Safety (RHS)

Infection Control (ICE®)

CDA exams

Radiation Health and Safety (RHS)

Infection Control (ICE)

General Chairside Assisting (GC)

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RHS Exam

Exam Weighting by Domain

- I. Purpose and Technique (50%)
- II. Radiation Safety (25%)
- III. Infection Prevention and Control (25%)

Exam Administration

Number of Multiple-Choice Questions	80
Time for Exam (minutes)	60
Time for Appointment (minutes)	65

Testing Options

This exam is 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 remotely monitored by webcam and microphone.

How DANB exams are administered

DANB uses computer adaptive testing (CAT). Exams are scored based on the level of difficulty of the questions answered 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 answer around 50% of the questions correctly.

RHS Exam Outline

I: Purpose and Technique (50%)

A. Purpose of radiographic images

1. Describe purpose of radiographic image
 - a. Periapical
 - b. Bitewing
 - c. Full mouth series
 - d. Occlusal
 - e. Panoramic
 - f. Cephalometric
 - g. CBCT (cone-beam computed tomography)
2. Identify survey used to examine or view specific conditions, teeth or landmarks.

B. Technique

1. Review patient medical and dental histories for contraindications, including medications.
2. Intraoral techniques, including error correction
 - a. Paralleling
 - b. Bisecting angle
3. Extraoral techniques, including error correction
 - a. Panoramic
 - b. Cephalometric
 - c. CBCT (cone-beam computed tomography) basics
4. Technique modifications based on anatomical variations and clinical conditions
5. Purpose and maintenance of radiographic equipment
6. Patient management techniques before, during and after exposure
7. Mount images using facial (buccal and labial) view.
 - a. Anatomical landmarks that aid in mounting
 - b. Match tooth views to tooth mount windows
 - c. Image viewing techniques
8. Anatomical structures and dental materials observed on images (e.g., differentiating between radiolucent and radiopaque areas)
9. Features of a diagnostically acceptable image
10. Prepare images for legal requirements, viewing, duplication and transfer (e.g., HIPAA).

II: Radiation Safety (25%)

- A. X-radiation production
 - 1. Sources of x-radiation for operators/other staff during x-radiation production
 - 2. Factors affecting x-ray production (e.g., kVp, mA, exposure time)
 - 3. X-radiation characteristics
 - 4. X-radiation physics
 - a. Primary
 - b. Scatter (secondary)
 - 5. X-radiation biology
 - a. Short-and long-term effects of x-radiation on cells and tissues
 - b. Concepts of x-radiation dose
- B. X-radiation safety
 - 1. Causes of unnecessary exposure to x-radiation
 - 2. Patient exposure to x-radiation (ALARA, ADA recommendations)
 - 3. Factors that influence x-radiation safety (e.g., filtration, shielding, collimation, PID length)
 - 4. Patient x-radiation concerns
 - 5. Informed consent or patient refusal for exposure to x-radiation
 - 6. Protocol for suspected x-ray machine malfunctions

III: Infection Prevention and Control (25%)

- A. Standard precautions for equipment and supplies according to ADA, CDC and OSHA, including but not limited to:
 - 1. breakdown and setup of treatment room.
 - 2. barriers.
 - 3. positioning devices.
 - 4. clinical contact surfaces.
 - 5. critical and semi-critical instrument sterilization.
- B. Standard precautions for patients and operators according to ADA, CDC and OSHA, including but not limited to:
 - 1. hand hygiene.
 - 2. PPE (donning, doffing).
 - 3. cross contamination.

RHS Exam Suggested References

DANB exam committees use the following textbooks and reference materials to develop this exam. This list does not include all available study materials; these are the resources that exam committees have determined provide the most up-to-date information needed to meet a determined level of competence on this exam. It is not an endorsement of the publications. Any one reference will likely not include all the study material required to 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.**

Suggested Exam Preparation References

1. Bird, Doni L., and Debbie S. Robinson. *Modern Dental Assisting*. 13th ed. Saunders, 2020.
2. Centers for Disease Control and Prevention (CDC). www.cdc.gov.
 - *Guidelines for Infection Control in Dental Health-Care Settings — 2003* (MMWR 2003;52(No. RR-17).
 - *Summary of Infection Prevention Practices in Dental Settings: Basic Expectations for Safe Care*. Atlanta, GA: Centers for Disease Control and Prevention, U.S. Department of Health and Human Services; October 2016.
3. Ianucci, Joen M. and Laura J. Howerton. *Dental Radiography Principles and Techniques*. 6th ed. Elsevier, 2020.
4. Thomson, Evelyn M. and Orlen N. Johnson. *Essentials of Dental Radiography for Dental Assistants and Hygienists*. 10th ed. Pearson, 2018.
5. Miller, Chris H. *Infection Control and Management of Hazardous Materials for the Dental Team*. 7th ed. Mosby, 2022.
6. U.S. Department of Labor, Occupational Safety and Health Administration (OSHA). www.osha.gov.
 - *Bloodborne Pathogens Standard* (1910.1030)
www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.1030

Additional/Optional Study Resources

1. American Dental Assistants Association (ADAA). www.dentalassistant.org.
 - *An Introduction to Basic Concepts in Dental Radiography* (Course #715)
2. The DALE Foundation. www.dalefoundation.org.
 - *DANB RHS Review*
 - *DANB RHS Practice Test*
 - *DANB ICE Review*
 - *DANB ICE Practice Test*

Acronyms

The following table lists acronyms that you may find on this exam. When you take the exam, the full list of acronyms will be available to you.

Abbreviation	What it stands for
°	degree symbol
µm	degrees Fahrenheit
AAOMR	American Academy of Oral and Maxillofacial Radiology
AAPD	American Academy of Pediatric Dentistry
ADA	American Dental Association
ADAA	American Dental Assistants Association
AMA	American Medical Association
C/kg	coulombs per kilogram
CBCT	cone beam computed tomography
CCD	charge-coupled device
CD	compact disc
CDC	Centers for Disease Control and Prevention
CMOS	complementary metal oxide semiconductor
CT	computed tomography
DHCP	Dental Healthcare Personnel
DICOM	digital imaging and communications in medicine
DNA	deoxyribonucleic acid
DVD	digital versatile disc
EPA	Environmental Protection Agency
FDA	Food and Drug Administration
FMX	full mouth x-ray
Gy	Gray
HIPAA	Health Insurance Portability and Accountability Act
HIV	human immunodeficiency virus
ICRP	International Commission on Radiological Protection
IQ	intelligence quotient
JPEG	Joint Photographic Experts Group
kVp	kilovoltage peak
MPD	maximum permissible dose
MRI	magnetic resonance imaging
NCRP	National Council on Radiation Protection & Measurements
OFD	object-film distance
OPIM	other potentially infectious materials
OSAP	Organization for Safety, Asepsis and Prevention
OSHA	Occupational Safety and Health Administration
OSL	optically stimulated luminescence
PA	posteroanterior
PID	position indicating device
PNG	portable network graphics
PPE	personal protective equipment
PSP	phosphor storage plate
SDS	safety data sheet
SLOB	same lingual, opposite buccal
Sv	Sievert
TB	Tuberculosis
TMJ	temporomandibular joint
USB	universal serial bus
USPHS	United States Public Health Service
XCP	extension cone paralleling

Exam Development and Maintenance

How exams are developed

DANB exams are developed using this exam outline, which is annually reviewed by subject matter experts. The outline is developed using a content validation study, which includes a job analysis survey where practicing DANB certificants and certificate holders are asked how often tasks are performed and how critical competent performance of tasks is to the health and safety of the public and oral healthcare worker. 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.

How the passing standard is determined

The exam passing standard is evaluated and a Standard Setting Study is conducted the year following a Content Validation Study. DANB uses a modified Angoff standard setting method and convenes a panel of subject matter experts to evaluate and make judgements about the difficulty of the exam items and the criticality of the content of the exam items. Modified Angoff standard setting methods are commonly used to set the passing standards for certification exams.

How exams are scored

In a criterion-referenced examination, a candidate must obtain a score equal to, or higher than, the passing score to pass the test. A minimum passing scaled score of 400 must be obtained to pass the exam with scores ranging from 100 to 900 points. Exam results are reported as a "scaled score" which is neither a "number correct" nor a "percent correct" score. Performance on the exam is not compared to the performance of others taking the exam.

Receiving your Pass or Fail status

Candidates will receive a preliminary Pass or Fail status at the test center, or a link to the results if taken through remote online proctoring, upon completion of the examination. A preliminary report may not be used for regulatory or employment decisions. Official exam results will be provided by DANB within one to three weeks.

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.