

This handbook provides important information for persons planning to take the Bone Densitometry Equipment Operator (BDEO) examination for purposes of state licensing.

EXAMINATION HANDBOOK

*for State Licensing Exams
administered by ARRT in*

2022

*for Bone Densitometry
Equipment Operator*

Policies, procedures, and information in this handbook supersede previous editions. Please review this information carefully; you are responsible for understanding the contents of this handbook. Direct questions and/or correspondence to the state agency with which you applied for licensing.

NOTE: *This handbook will no longer be mailed as of January 1, 2023.
Handbooks can be accessed at www.state.arrt.org.*

Important Notice: State Licensing is Not ARRT Credentialing

The American Registry of Radiologic Technologists® does not certify and register individuals based upon the results of the Bone Densitometry Equipment Operator Examination. ARRT administers this examination program solely for use by state agencies. If you are interested in national certification and registration in bone densitometry or other disciplines, consult the www.arrt.org website or phone ARRT at (651) 687-0048.

How to Use This Handbook

Licensing vs.

Certification and Registration

The information contained in this handbook pertains to state licensing only.

*This exam, its eligibility and application process bear **no relation** in any way to national credentialing in radiologic technology offered by ARRT.*

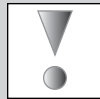
This Examination Handbook is designed to help state licensing candidates understand and prepare for the examination. It is published for each calendar year, but changes to content specifications and policies and procedures may occur during the year so be sure to check www.state.arrt.org for updates. To ensure that your exam experience is as successful as possible, you will want to read the following information very carefully and keep the handbook for future reference.

The information in this handbook supersedes that in any prior publications of the ARRT. Earlier versions may contain outdated information. It is your responsibility to obtain a handbook corresponding to the year in which your examination is to be taken, as noted on the front cover of the handbook and to familiarize yourself with the contents.

ARRT does not discriminate against individuals on the basis of their race, color, creed, religion, national origin, sex, marital status, status with regard to public assistance, familial status, disability, sexual orientation, gender identity, veteran status, age, or any other legally protected basis.

ARRT is unable to respond to questions regarding individual state licensing requirements and application procedures. Direct your questions to your state licensing agency. A link to individual state licensing agency contact information can be found at www.state.arrt.org.

Watch for These Symbols



This exclamation point is your pointer to key pieces of information you need to know.



This icon tips you to ways you can streamline your journey through the examination process.

NOTE: 2022 will be the last year the handbook will be printed. Beginning 2023, the handbook will be online only at www.state.arrt.org.

The American Registry of Radiologic Technologists®

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Visit our website at www.arrt.org

2022 Examination Handbook for Bone Densitometry Equipment Operator

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State Licensing vs. ARRT Credentialing

Examinations for radiologic technologist state licensing are administered by The American Registry of Radiologic Technologists®, on behalf of your state licensing agency, but state licensing is *not* ARRT credentialing.

State Licensing

More than 75 percent of states have licensing laws covering the practice of radiologic technology. In those states, you must obtain a state license before you can work as a radiologic technologist. In addition, many states use ARRT exam scores and/or credentials when making licensing decisions.

Application to take an examination for ARRT certification and registration must be made directly to the ARRT and you must meet all other criteria for ARRT certification and registration. Under no circumstances does application to your state licensing agency constitute application to ARRT for certification and registration. ARRT and the state follow separate application procedures.

Administration of state licensing laws differs from state to state.

Direct any questions about licensing requirements to your state licensing agency. ARRT is unable to respond to questions regarding licensing requirements of specific states. Individual state contact information can be found at www.state.arrt.org.

Examination

ARRT designs examinations in collaboration with consultants from various specialties. The exams consist of questions designed to measure the knowledge and cognitive skills underlying the performance of the major tasks typically required within the profession.

Consult the content specifications in Appendix A of this handbook for the list of topics covered by the examination. ARRT does not provide specific lists of study materials or textbooks because the exams are built using many references. ARRT neither recommends nor endorses any review programs, mock registries, or study guides for any of its examinations.

ARRT owns the copyright for the examinations. Law prohibits any attempt to reproduce all or part of the examinations. Anyone caught removing exam content from the test center, whether by physical removal or by reproducing materials from memory, will be prosecuted to the full extent of the law and will have eligibility for certification revoked. See the “Upholding Exam Security” section on the next page for more information.

Exam Fees

Fees paid to the ARRT are not refundable under any circumstances, nor can they be transferred to another discipline of examination.

Upholding Exam Security

ARRT has strict security regulations and takes exam security seriously. ARRT prohibits you from cheating on your exam or taking action that would help another candidate cheat. If you violate the regulations, you can face legal action and/or risk being banned from future testing.

Why Does Security Matter So Much?

It's a matter of public health.

Security is critical to ensuring that the examination is an accurate and reliable measure of the critical knowledge and cognitive skills underlying the tasks typically required for the practice of medical imaging, interventional procedures, and radiation therapy. In fact, subverting the integrity of ARRT's exams is illegal, based on a Minnesota law that went into effect on August 1, 2010. More information can be found by visiting www.state.arrt.org.

Candidate Agreement On

Exam Disclosure

Disclosing exam information using language that is substantially similar to that used in questions and/or answers on the ARRT exams is considered an attempt to subvert the integrity of the exam when such information is gained as a direct result of having been a candidate. This includes (but is not limited to) disclosures to: students in educational programs, graduates of educational programs, educators or anyone else involved in the preparation of candidates to sit for the exam. It is also considered an attempt to subvert the integrity of the exam to receive, from an exam candidate, exam information that uses language that is substantially similar to that used in questions and/or answers on the ARRT exam from a candidate, whether requested or not, or to relay such information.

Ask yourself: Would you want a loved one to receive care from an individual who passed the ARRT-administered exam because they got a sneak peek at questions and memorized the answers rather than having learned all the critical content that the questions scientifically sample?

Disclosing Exam Information: The Bright Line Between What's OK and What's Not

Candidates for state licensing and/or permit examinations see language in the ARRT state licensing examination handbooks, as well as the non-disclosure screens at the test center that clarify what they are agreeing to comply with regarding exam security. This language is reproduced in the box on page 14.

Failing to comply with these agreements can result in an ARRT investigation which may lead up to the invalidation of the results of the current and any prior examinations. This could also permanently bar the candidate from all future exams as well as result in the appropriate state licensing agency being notified. Violating these agreements could also lead to legal action. See Appendix C for a list of potential exam disclosure scenarios.

Questions about your responsibilities under ARRT's exam disclosure policy? Visit www.state.arrt.org. A video depicting the consequences of violating this policy is available at www.arrt.org/video-library.

Help Us Protect Exam Security

If you know of any situations in which the security of ARRT exam materials might be compromised, we invite you to visit www.state.arrt.org.

Before the Examination

Schedule an appointment to test during your assigned 90-day exam window, at any of hundreds of test centers across the U.S. and internationally.

CSR Info Incorrect?

If the information on your Candidate Status Report is incorrect, contact your state licensing agency — not ARRT — right away, and before scheduling an exam appointment.

Processes for Examination

Application to State:

Before paying ARRT for your examination, you must submit your license and/or permit application and any appropriate application fees directly to your state licensing agency. If your state licensing agency determines you're eligible for examination, they will notify you. The notification you receive from your state licensing agency should provide you with instructions for paying your examination fee to ARRT. ARRT will accept payment by credit card only. It is important to note that the examination fee paid to ARRT is different than the application fee you submit to your state licensing agency.

Create an Account at www.state.arrt.org:

After receiving notification from your state licensing agency that you are eligible to sit for an examination, ARRT requires that you create an online account at www.state.arrt.org. Third-party individuals, schools, or businesses will not be allowed to create the online account for you. Before paying your examination fee, you will be required to read and respond to:

- An *Agreement of State Candidates* which is your attestation to not divulge or receive examination information that uses language that is substantially similar to that used in questions and/or answers on ARRT examinations; and
- Electronically indicate yes or no regarding your potential need and consideration for testing accommodations based on the Americans with Disabilities Act (ADA) guidelines. (See page 7 for further details)

After responding to these questions, you will be directed to pay your examination fee. You are responsible for making sure your state licensing agency submitted your correct name and address, as well as correct examination discipline. This information will appear after you create your online account as well as appearing on the payment page for you to verify before submitting your fee. If any of the information appearing on your online account is incorrect, please notify your state licensing agency immediately and **before** paying your examination fee. Do not make your examination payment until your information has been corrected by your state licensing agency. All updates by your state licensing agency will automatically appear on your online account. Once you confirm any necessary updates have been completed, you can go online to pay for your examination. After making your online credit card payment, you will not be able to change the state-assigned examination. Examination fees are nonrefundable and non-transferrable.

After ARRT processes your examination fee, your information will be sent to Pearson VUE. You will also receive an examination handbook and a Candidate Status Report (CSR) via USPS mail, which has your personal ARRT ID#. Your CSR will also be available on your online account. Once you review your CSR and determine everything is correct, you can contact Pearson VUE to schedule your examination appointment. (See page 8 for more details.)

One Exam at a Time

Individuals applying for ARRT and/or state exams can have only one exam record at time. Decide up front which exam you want to take first before submitting your applications.

ARRT 90-Day Examination Window

ARRT will assign you a 90-day exam window, which appears on your CSR. You should schedule your exam appointment for a date within the 90-day exam window printed on your CSR. Generally, examination windows begin on the Wednesday after your exam payment is processed at the ARRT and extend for 90 calendar days. For example, if an exam payment is processed on Thursday, April 14, 2022, the exam window begins on Wednesday, April 20, 2022, and ends on Monday, July 18, 2022.

Your exam window will close automatically after 90 days, or if you miss your appointment, your appointment is not canceled in time, if you fail to comply with the non-disclosure agreement at the test center (see page 14), the name on your IDs do not match the name on your CSR, or if you have an invalid ID. In addition, your fee is forfeited and in order to be assigned a new exam window you would have to re-apply through your state licensing agency.

Test Centers

ARRT examinations are administered by Pearson VUE, the electronic testing business of Pearson Education. Their network of more than 200 high-security test centers is specifically designed and built for professional licensure and certification markets in the U.S. and its territories. Certain international test centers are equipped to deliver ARRT exams in selected cities in Canada, Europe, Asia, and Australia. Current test center locations and driving directions may be viewed at www.pearsonvue.com/arrt.

Testing Accommodations

To comply with the Americans With Disabilities Act (ADA), we'll provide testing accommodations if our partner organization, Paradigm Testing, determines that you meet ADA requirements. Testing accommodations include any changes to standard testing procedures, including requests for additional time, a reader, as well as medical aids such as insulin pumps, Pico magnifiers, lumbar pillows, asthma inhalers, etc.

After logging into your online account at www.state.arrt.org, and before paying your examination fee, you will see a question asking if you wish to be considered for testing accommodations. If you respond with "yes," you will be provided with instructions for submitting an online application and supporting documents to Paradigm via its secure website. You must indicate "yes" each time you apply – including re-examination attempts. If you indicate "no," you cannot request accommodations at a later time.

We'll place your examination authorization on hold until you submit your accommodation request and Paradigm processes it. In addition, you won't be able to schedule your exam until we send you a decision letter based on Paradigm's review of your documentation. If you're denied an accommodation based on your documentation, you'll be able to appeal the decision by providing additional documentation. It is in your best interest to submit as much supporting documentation as possible with your original request to avoid delays in having your examination authorization released to allow scheduling your exam appointment. Details on supporting documentation requirements can be found at www.arrt.org/accommodations. Most accommodations decisions are made within 10 business days.

If you don't submit a request to Paradigm within a year of submitting your application, we'll process your exam authorization without accommodations and assign you an exam window. You will be notified your application has been processed and an exam window has been assigned. At that point, we can't grant any accommodations.

Notify the State, Not ARRT

You should notify your state — not ARRT — immediately of any name and/or address changes and before scheduling an examination appointment.

Address or Name Changes

You must immediately notify your state licensing agency — not ARRT — of any changes to your name or address as submitted on your application form. Changes cannot be processed by ARRT or the Pearson VUE Call Center or at the test center.

At the test center, the name on your IDs must match your name as it appears on your CSR (the only permissible exception is middle initial versus middle name, as long as the first letters match). Name change requests must be directed to your state licensing agency at least 10 business days before your scheduled appointment to allow enough time for your information to be submitted to Pearson VUE for processing. Requests received less than 10 business days before your exam may not be processed in time, which may result in you being turned away from the test center and forfeiting your exam fee. If the name on your IDs doesn't match your CSR, cancel your appointment (see page 9) and correct the discrepancy with your state licensing agency at the number listed on the front of your CSR. Don't schedule a new appointment until you receive a new CSR and verify the changes are correct. Updates will also appear on your online CSR at www.state.arrt.org.

Extending an Exam Window

If circumstances make it impossible for you to schedule your examination during your assigned 90-day exam window, you may request a window extension. Direct requests to your state licensing agency at the number listed on the front of your CSR for approval. If your state approves the change, it will contact ARRT to arrange a window extension. ARRT processes window extension requests only when they are received from your state licensing agency, not from you.

If you have an existing appointment, you must cancel it before requesting a window change, scheduling a new exam date, or changing the test center location. (See "Canceling or Rescheduling Your Appointment" on page 9.)

TIP

Window Extensions: Three Changes Maximum

If approved by your state licensing agency, you will be allowed a maximum of three window changes per exam application. If a third window change is allowed to expire, you forfeit your exam fee. To be considered for a new exam window, make your request to your state licensing agency.

The Exam Appointment

TIP

Internet Scheduling

After you have been notified of your eligibility to sit for the exam, you may schedule online at www.pearsonvue.com/arrt. When you arrive at the web page, the process will differ depending on if you're a first-time or returning user.

First-time users should click on the "Create an Account" link, where you will be asked for your ID number and personal information listed on your Candidate Status Report. Make sure the information you enter on the screen matches the information on the front of your CSR. When creating your profile, follow the prompts until you have completed the process and can select the "Finish" link. You will be provided a link to follow the prompts for scheduling your exam.

Returning users should click on the "Sign In" link. If you have forgotten your password, click on the "Forgot my Password" link and follow the prompts.

To schedule online, candidates must provide an email address. Otherwise, phone the Pearson VUE Call Center directly to schedule an appointment.

ARRT must receive a written request from your state — not from you — for a new window on or before the last day of your current 90-day examination window. If your window expires on a weekend or holiday, the request must be received on or before the last business day prior to the expiration date. (Saturday, Sunday and holidays are not considered ARRT business days.) Your new exam window will begin on the day ARRT processes the extension request. ARRT will not accept requests for specific window dates.

ARRT cannot process requests it receives after the last day of your current 90-day exam window or if an examination appointment has been scheduled. ARRT will send you a new CSR when your request is processed. You can also check your online CSR for updates at www.state.arrt.org.

Scheduling Your Appointment

Pearson VUE schedules appointments on a first-come, first-served basis. As soon as you receive your CSR, you may schedule your appointment one of two ways:

- call the Pearson VUE Call Center at the toll-free phone number shown on your CSR (Monday–Friday, 7 a.m.–7 p.m. Central Time); or
- online at www.pearsonvue.com/arrt

Even if you don't want to take your exam immediately, it's better to schedule early to obtain your desired choice of exam date. If you delay too long in scheduling your exam, you may not find an available appointment prior to your expiration date. If your window is allowed to expire, you must re-apply with your state licensing agency.

You will be providing and receiving a great deal of important information when scheduling your appointment with Pearson VUE. It is your responsibility to manage that information each step along the way.

Have Your Information Available

You cannot schedule a testing appointment until you receive your CSR. You will be able to select a test center from those listed on the Pearson VUE website.

When calling to schedule your appointment, you will be asked to verify your name as listed on your CSR and address and to provide your ID number from your CSR. Calls may be recorded for quality assurance purposes.

NOTE: Call Center staff cannot make changes (except adding email and phone info) to the application information you provided to your state and to ARRT. Resolve any discrepancies in name or address with your state licensing agency before you schedule your appointment.

Pearson VUE Call Center staff will help you schedule a date and time for your exam. Test centers are generally open Monday through Friday between the hours of 8 a.m. and 6 p.m. Some test centers offer extended evening or weekend hours.

Confirm Your Scheduling Information

Pearson VUE will immediately email a letter confirming your appointment. The letter will include the address, phone number, and directions to the test center, as well as the date and time of your exam and other important information. Driving directions are also available at www.pearsonvue.com/arrt.

NOTE: Occasionally the email confirmation may be filtered into a SPAM folder based on the security settings of your email account. Be aware that the email confirmation comes from PearsonVUEconfirmation@pearson.com. If you do not receive an email confirmation from VUE immediately, check your filter settings and/or contact the VUE Call Center to confirm your email address on file and your appointment date and time, and request that a new confirmation email be sent.

ARRT and your state licensing agency are not able to confirm testing dates, times, or locations for your exam, nor can we provide driving directions to test centers.



Follow-Up and Confirm



Your Exam Appointment

You are responsible for confirming the date, time, and location of your exam with Pearson VUE. If you don't receive an email confirmation immediately after scheduling, call the Pearson VUE Call Center to confirm over the phone and request that a duplicate confirmation letter be sent.

This applies to appointments scheduled via the Call Center as well as those scheduled on the Pearson VUE website.

Missing Your Appointment

If you fail to keep your appointment or reschedule it as detailed in the next section your file will close and you will forfeit your exam fee. ARRT and your state licensing agency are not responsible for appointment time discrepancies between you and the test center.

Canceling or Rescheduling Your Appointment

You may cancel or reschedule an appointment up to 24 hours (one business day) prior to the scheduled appointment — either by phoning (800) 632-9055 (leaving a voicemail on an answering machine is not acceptable) or at www.pearsonvue.com/arrt (be sure to follow the prompts to complete the process). Pearson VUE will immediately send you an email confirmation each time an appointment is scheduled, changed, or canceled. If you do not receive a confirmation, contact Pearson VUE to confirm the transaction. Pearson VUE charges a \$10 fee for exam appointments that are canceled or rescheduled. Pearson VUE will collect fees by credit card payment (American Express, MasterCard, Visa or Discover) at the time the appointment is canceled or rescheduled. This includes all changes made online and via the Pearson VUE Call Center.

The table below shows that appointments for a given time on the scheduled exam day must be canceled by that same time on the preceding business day:

Scheduled Exam Day	Cancel/Change Deadline (same time as appointment)
Monday	Friday of the preceding week
Tuesday	Monday of the same week
Wednesday	Tuesday of the same week
Thursday	Wednesday of the same week
Friday	Thursday of the same week
Saturday	Friday of the same week



Exception



Due to call center hours if your appointment is in a time zone ahead of Central (i.e., Eastern or further east), you must cancel any 8 a.m. appointment by 7 p.m. CT two days in advance.



TIP

Calling to Reschedule? Remember to Cancel

Just because you call to reschedule a testing appointment doesn't necessarily mean that your initial appointment is automatically canceled. And an uncanceled appointment is your responsibility, potentially resulting in forfeiting the application fee.

If you call Pearson VUE intending to reschedule a testing appointment, your initial appointment will remain in effect until you formally approve a new appointment date/time. If you can't find an appropriate alternative appointment and plan to call back later, your initial appointment will still be on the books.

Play it safe when changing your appointment. Be sure to specifically request that the initial appointment is canceled. You will receive an email confirmation immediately after your cancellation request is processed.

For example, if your exam is scheduled for 9 a.m. on Monday, you must call by 9 a.m. on Friday to cancel your appointment. VUE will follow-up with a confirmation email detailing your cancellation or appointment change information.

NOTE: National holidays and weekends are not considered business days.

If you fail to appear for your scheduled appointment and do not reschedule through the procedure above, you will forfeit your examination fee. Neither ARRT nor your state licensing agency are responsible for appointment errors. ARRT does not grant exceptions for missed appointments under any circumstances.

Exam Administration Day

Here's a preview of what you'll encounter when you open the test center's front door on the day of your BDEO exam appointment.

TIP

What to Expect on Exam Day

ARRT encourages you to watch the "What to Expect on Exam Day" video at www.rrt.org/video-library to familiarize yourself with the process. NOTE: You will not see a preliminary score after your exam as depicted in the video. (See page 16 for score information.)

TIP

Invalid ID? Cancel Appointment

If you arrive at the test center with invalid forms of ID, you will not be admitted to take your exam, and you will forfeit your fee.

Your ID is invalid if:

- *it is not current (expired), or*
- *the name on ID varies from that on your ARRT file, or*
- *there is no signature, or*
- *it is not an accepted form of ID (see box on next page).*

Cancel your appointment in time and re-schedule when you have acquired two forms of valid ID.

Test Center Environment

Pearson VUE test centers provide computerized testing for many organizations. Be aware that other exams may be administered in the test center at the same time as ARRT examinations.

Most test centers are located in buildings comprised of several other offices. Waiting areas at the test centers are small. Friends, relatives, or children will not be permitted to wait in the test center or to contact you during your examination.

Test center personnel try to maintain a comfortable temperature in the testing rooms. In spite of these efforts, the room may be too cool or too warm for an individual's preference, so dress accordingly. Be aware that outerwear (overcoat, windbreaker, jacket, etc.) is not allowed in the testing room; however, clothing typically worn indoors (sweater, sweatshirt without hood, blazer) is allowed.

Keep in mind that there will be other people at the test center taking exams, so typing, coughing and/or people entering and leaving the testing room may be heard. It is impossible to provide a completely noise-free exam environment. If you feel these distractions may be disruptive to your testing, be sure to request earplugs before beginning your exam. Noise reduction headphones can also be provided.

Follow Procedures

Test center personnel adhere to designated procedures to ensure that their operations meet ARRT criteria for standardized testing. Review the following information before the examination to become familiar with the procedures.

Arrive Early

Having already confirmed the location of the test center, plan your schedule and route to ensure that you arrive at least 30 minutes before your scheduled appointment, to allow time for check-in procedures. Be sure to allow ample time for your commute, especially if inclement weather is a factor.

If you arrive at the test center 15 minutes after your scheduled appointment, you may be required to forfeit your appointment. If an appointment is forfeited, the test center will report to ARRT your failure to take the examination and your file will close. ARRT does not refund examination fees on forfeited appointments. To be considered eligible for a new examination window, you must contact your state licensing agency.

▼ Palm Vein Recognition

● Replaces Fingerprint

As of January 1, 2011, a new biometric procedure was added to the admissions process, replacing the fingerprint process. Called palm vein technology, it scans the veins inside the hand to create a digital template that represents your vein pattern. The pattern reader uses a safe, near-infrared light source, similar to a television remote.

Learn more about the process at www.arrt.org.

ID, Photo, Signature, Palm Vein Recognition (PVR)

When you arrive at the test center, you will be required to show two forms of identification, both of which show your signature and your pre-printed name as it appears on your CSR. One of the IDs must be a current official government-issued photo ID. See box below for examples of the two types of IDs required.

Your name on your government-issued ID must be the same as that on record with ARRT, as reflected on your most recent CSR. Your ID may contain your full middle name as long as the middle initial on your CSR matches the first letter of your middle name. If your name has a cultural variation, ensure that the same variation appears on the CSR and both IDs.

If you arrive without proper ID or with discrepancies in your name listed on the IDs, you will not be admitted to the test center. You will not be allowed to re-schedule your exam appointment and will forfeit your examination fee. If you are admitted with questionable ID, you may have your score canceled following investigation by ARRT.

Upon checking in, you will be asked to provide a digital signature, which constitutes a) your consent for ARRT and/or Pearson VUE to retain and transmit personal data and exam responses; and b) your agreement to abide by the ARRT Rules Agreement, which will be presented to you prior to your exam.

You will also have your palm vein scanned and be photographed. If you leave the testing area for any reason, your palm will be scanned upon leaving and again before re-entering.

The palm-vein information and photo are for authentication purposes only. The information is kept confidential and not shared with any organization.

Assignment to Testing Station

Test center personnel will give you a short orientation, provide you with a copy of the ARRT Rules Agreement (See Appendix D) to read, and then escort you to an assigned workstation. You must remain in your assigned seat during your examination, except when authorized to leave by a test center staff member. You will be required to keep all personal items in a secure locker. Don't wear jewelry that may be noisy or disruptive in the testing room. You will be asked to remove jewelry that is wider than ¼" as such items can pose a threat to exam security. If you bring a phone or other electronic device, turn off the device and store it in your locker. You may not access any electronic device until you have completed your exam and are ready to leave the test center. You cannot access items placed in a secure locker or anywhere else in the test center building for the duration of your exam unless you receive written pre-approval from ARRT. This includes breaks. Test centers assume no responsibility for candidates' personal belongings.

If you need to leave the testing room for personal reasons, you must first raise your hand to get test center staff's permission. No additional time is allowed to make up for lost time due to this reason. Test center staff is required to file an incident report with ARRT on any candidate that leaves the testing room for more than 10 minutes.

Test center personnel are not trained to answer specific questions related to ARRT examination content.

▼ Acceptable Forms of Identification

● **PRIMARY:** Must be government-issued, have **pre-printed name, photo, and signature**, and not be expired.

- Government-issued driver's license
- State ID card
- Passport
- Military ID - bar code signature acceptable with Military IDs only

Very Important! Please note that Permanent Residence Cards ("Green Cards") or any other IDs that do not have your signature **will not be accepted** at the test center as valid primary or secondary identification.

● **SECONDARY:** Must have **pre-printed name and signature** and not be expired.

- Government-issued IDs (e.g., U.S. social security card)
- Employee ID or work badge
- Bank automated teller machine (ATM) card
- School ID
- Credit card
- Any form of ID on the primary list

Don't Bring Yours... Calculators Are Provided

Personal calculators aren't permitted, so don't even bring one to the test center. You can use theirs.

Calculators and Notes

Personal calculators are not permitted. Examples of calculators are presented in the tutorial at the beginning of the exam. Both scientific and basic four-function calculators are provided on the computer, or you may request a basic four-function calculator from test center personnel. Appendix B presents facsimiles of the computer calculators.

Test center personnel will provide a booklet and pen for notations, which may be replaced as needed during testing but may not be removed from the testing room at any time. You are not to use the booklet until after responding to the non-disclosure agreement, and may not hold your booklet up to the screen when responding to questions. Non-approved scratch paper, pens, or pencils are not allowed in the testing room.

Requesting Assistance

Raise your hand to notify test center personnel if:

- you need assistance adjusting the computer screen's brightness or contrast;
- you would like a hand-held calculator;
- you need earplugs;
- an image appears too large to be fully viewed;
- you suspect a problem with the computer;
- you need another booklet;
- you need a break;
- you have completed your exam; or
- you need a staff member for any other reason.

Test Center Misconduct and Score Cancellation

Numerous security measures are enforced during the exam administration to ensure the integrity of ARRT exams. Be aware that you will be observed at all times while completing the exam. This includes direct observation by test center staff, as well as video and audio recording of the testing session.

Zero Tolerance Policy

ARRT has a zero-tolerance policy regarding possession of cell phones and other electronic devices in the test center, as well as candidates leaving the test center building prior to completing the examination and attempting to re-enter the test center. Automatic score cancellation will result for any candidate violating this policy.

1. Under no circumstances are candidates permitted to access cell phones or any other type of electronic device after check-in at the test center. Test center personnel are instructed to dismiss any candidate found in possession of an electronic device after the candidate has completed the check-in procedures. This includes candidates on breaks.

Such electronic devices include, but are not limited to:

- cellular phones
- media players
- compact disc players or any other electronic communication/recording/listening device
- removable storage devices
- personal digital assistants (PDAs)
- calculator or computing watches
- scan pens
- laptop computers, tablets, or any computer device
- photographic devices

If a candidate is found possessing, or otherwise having access to, a cell phone or any other type of electronic device during the administration of their exam, the candidate will not be allowed to continue testing and the test center administrator will file an incident report. Possession of a cell phone or any other type of electronic listening device after check-in will result in automatic score cancellation.

Breaks

Exam timing is based on the number of questions in the exam. If you take a break, the exam clock is not stopped – which means you will have less time to spend on your exam.

2. If test center staff observes a candidate leaving the test center building and re-entering the test center prior to completing the exam, the candidate will not be allowed to continue testing and the test center administrator will file an incident report. Leaving the test center building and attempting to re-enter the test center will result in automatic score cancellation.
3. Candidates should not bring papers, pamphlets, books, notebooks, or study guides into the test center. If you bring these items they must remain in your locker for the duration of your exam. If you are found in possession of, or otherwise having access to, any prohibited item during the administration of your exam, you will not be allowed to continue testing and the test center administrator will file an incident report. This will also result in automatic score cancellation.
4. For any candidate demonstrating misconduct or irregular behavior during or in connection with the examination — as evidenced by observation, statistical analysis of exam responses or otherwise — the ARRT will withhold examination scores and may revoke or suspend a certificate, deny, or reject an application for renewal of certification and registration, censure or take any other appropriate action. This includes permanently barring the candidate from all future examinations, terminating candidate participation in the exam, and invalidating the results of that exam and any prior exam.

Examples of misconduct or irregular behavior include, but are not limited to:

- Removing items from a secured locker without prior authorization;
- Giving or receiving unauthorized help;
- Attempting to take the examination for someone else; or having someone else take an exam for you;
- Failing to follow test center staff instructions;
- Tampering with the operation of the computer or attempting to use it for any function other than completing the examination;
- Attempting to remove exam content (in any format) from the test center;
- Creating a disturbance of any kind; and
- Accessing notes, books, study guides or unauthorized electronic devices.

If found to be in violation of this policy, you may find yourself part of an ARRT ethics investigation, or even a federal court lawsuit for copyright infringement and/or breach of contract.

What if the Test Center is Closed?

If you are unsure whether a test center is closed because of inclement weather or some other factor, phone Pearson VUE's Call Center at (800) 632-9055. If the test center is open, it is your responsibility to keep your appointment. If it is closed, you will be given the opportunity to reschedule your appointment.

In the event of a test center closing, Pearson VUE will contact you via the email address you provided during scheduling to reschedule your exam appointment. You may also call Pearson VUE to reschedule your exam.

Severe Weather Looming?

If you anticipate severe weather and your appointment is more than 24 hours out, consider rescheduling to avoid transportation hassles. If you miss your appointment due to weather and the test center was open, you will forfeit your exam fee and you will need to contact your state licensing agency for a new eligibility period.

TIP**Pace Yourself...**

It's important to use your time economically. Time remaining is displayed in the upper right corner of the computer screen. If a question is difficult, guess at the answer, flag the question for review and go on to the next question. When you have finished the examination and there is still time left, go back to the questions that you flagged and review them. (See Appendix B for more information.)

Non-Disclosure Agreement

After the tutorial, a non-disclosure agreement will appear on the computer screen. You must accept the terms of the agreement in order to proceed with the exam. By accepting these terms, you agree not to disclose exam questions in any form or remove them from the test center. You have two minutes to indicate your acceptance of the agreement. If you do not respond within two minutes, the exam will end and you will have to submit a re-application form and fee to obtain a new exam window.

The agreement states: "This exam is confidential and is protected by copyright law. You are expressly prohibited from disclosing, publishing, reproducing, or transmitting this exam, in whole or in part, in any form or by any means, oral or written, electronic or mechanical, for any purpose."

The screen will instruct you to click the "A" (for Accept) button to symbolize your signature and to accept the terms. Selecting "A" will allow you to continue with the exam. If you do not accept these terms, click "N" (for Not Accept) to let test center staff know that you are through with the exam. If you click "N" but later decide to examine at a future date, you will need to submit a re-application form and fee.

Learn more about the non-disclosure agreement in the "What to Expect on Exam Day" video at www.arrt.org/video-library.

Exam Timing

Time allowed for completing an examination is based on the number of questions. You must also click "A" for the non-disclosure agreement (see box at left), which appears after the tutorial and before starting the exam.

The Bone Densitometry Equipment Operator Examination allocates 1.5 hours for answering exam questions. You will have one hour, fifty minutes total, allowing eight minutes for the tutorial before the exam, followed by two minutes to complete the non-disclosure agreement and 10 minutes for the survey at the end of the exam. You may not use this extra twenty minutes to answer exam questions. ARRT recommends that you complete the tutorial to familiarize yourself with the testing program and the online calculators.

Voluntary breaks are subtracted from the allowed exam time; that is, the clock is not stopped during voluntary breaks.

Pilot Questions

Pilot questions are unscored questions embedded in the exam. ARRT uses data from these pilot questions to evaluate new exam questions. This is a cost-effective way to develop exam materials for future candidates, just as past candidates assisted in piloting questions for today.

These questions are not identified as pilot questions, and they appear just like any other question on the exam. Up to 20 percent of your exam may be unscored pilot questions. Your answers to these questions will not affect exam scores.

Taking the Exam**Order of Questions**

ARRT examinations present questions in random order, which is consistent with the purposes of education and evaluation. When an individual learns an important concept, the intent is that he or she will take that knowledge beyond a specific context or environment and generalize that knowledge to the practice setting.

Item Format

Most exam items are standard multiple-choice with one best answer. ARRT is also introducing new formats on a limited basis. Some items may require that you select multiple answers from a list or use the mouse to sort a list of options into a particular order. A few items may require that you identify anatomic structures on an image by placing the mouse arrow (cursor) over the correct location on the screen. Others may ask you to answer a multiple-choice question after viewing a short video clip. Appendix B provides additional information on exam item formats.

Selecting Answers

An answer must be recorded for a question before the computer allows display of the next question. You may flag questions for later review if you are unsure of the answer. For further information, refer to Appendix B.

Pacing

It's important to use your time economically. Time remaining is displayed in the upper right corner of the computer screen. If a question is difficult, guess at the answer, flag the question for review, and go on to the next question. When you have finished the examination and there is still time left, go back to the questions that you flagged and review them by clicking on the "Review Flagged" button (see Appendix B).

Guessing

Exam scores are based upon the total number of correct answers. Therefore, it is to your advantage to answer every question, even if that means selecting an answer of which you are not sure. You must indicate some response to each question before the computer will proceed to the next question.

Candidate Comments

You may comment on a specific question at the time you answer the question by clicking on the “Comment” button at the top of that page. No additional testing time is allowed during the exam for making comments on questions.

You may comment on your test center experience in the evaluation survey at the end of your exam.

Leaving the Test Center

When you are finished with the examination and evaluation survey, raise your hand and test center staff will collect the booklet before dismissing you. Do not leave your seat until you have been dismissed. You may not remove your booklet from the testing room. Your palm will be scanned again before leaving the test center.

Appeals of Exam Administration

ARRT makes every effort to assure that examinations are fairly administered in a comfortable and safe environment.

On rare occasions, candidates may encounter technical difficulties at the test center. If you experience a technical difficulty, notify the test center administrator immediately. Test center personnel will make every effort to correct any difficulties as quickly as possible.

Should the test center experience a loss of power, back-up systems are in place, so every reasonable effort will be made to retrieve testing data. Once power is restored, you will be able to continue your testing session from the point where you were interrupted. If you are unable to continue the testing session due to severe technical difficulties, reasonable accommodations will be made, including re-scheduling of an exam appointment. ARRT will evaluate individual requests for re-scheduling at no cost.

If you believe that your examination was administered in a manner that substantially deviated from normal testing procedures, you may request a review of the procedures. If you experience a problem, verify with the test center administrator before you leave the test center that they will file a report regarding your issue—and request a copy of the incident number from that report.

If you wish to request a review, submit a completed Eligibility Appeal Request form (at www.state.arrt.org) detailing the specific nature of the alleged deviation from normal testing procedures.

Because ARRT will investigate complaints only if they are received before your results have been released, you have only two days to submit the request. You may fax the appeal form to 651.681.3295.

If ARRT finds that any such deviation unfairly interfered with your ability to complete the exam to the best of your ability in the allotted time, your original score will be canceled and you will be allowed to retake the examination at no cost. Under no circumstances will your score be adjusted based upon the findings of the review.

After the Examination

After the examination, all exam data is returned to ARRT, where scoring and analysis is completed. ARRT follows strict procedures to ensure accuracy of scoring.

Cancellation of Scores

ARRT may withhold or cancel scores if there is evidence that the security of the examination has been compromised. Such action may be necessary even in the absence of evidence indicating that a candidate was knowingly involved in the compromising activities. ARRT expects candidates to cooperate in any investigation. Once scores are cancelled, they are not available for reporting at a later date.

Some scores may be rendered invalid because of circumstances beyond a candidate's control, such as technical difficulties. ARRT investigates each of these situations. When this results in a cancellation of scores, ARRT arranges for a makeup administration of the exam at no additional cost.

Score Reporting

You will not see a preliminary score at the end of your exam at the test center. ARRT does not release scores to state candidates. Your score information is forwarded to your state licensing agency, which in turn determines your pass/fail status and notifies you of your official pass/fail status. Contact your state licensing agency — *not* ARRT — if you have not received your scores within four weeks.

Appeals of Exam Scoring

ARRT employs several quality control procedures to ensure that all examinations are scored with complete accuracy. However, you may request a review of the accuracy of the scoring process if you feel an error has occurred.

If you wish a review of scoring, complete the Eligibility Appeal Request form located at www.state.arrt.org — detailing the specific reason a scoring error is suspected. Requests must be accompanied by a \$25 fee, payable to ARRT. ARRT will review your responses to each question, compare those responses to the answer key, and recalculate raw scores.

ARRT will report its findings to you within 30 days of receiving the written request. If ARRT finds evidence of any scoring error, it will cancel your original score and notify your state of the corrected score. Final passing scores are determined by your state.

Re-examination

If you fail the examination, do not appear as scheduled, answer no or do not respond to the non-disclosure agreement, or allow your 90-day exam window to expire, or you were turned away due to invalid IDs you should contact your state licensing agency for information on their re-examination process. Once your state has determined you are eligible for re-examination, they will notify ARRT. Once ARRT processes your new exam fee, a new handbook and CSR indicating your new 90-day exam window will be mailed to you.

TIP

How/When Will I Receive Exam Results

Examination results are sent to your state for final pass/fail determination. Please allow up to four weeks for processing, then contact your state — not ARRT — for information on your exam results.

Appendices

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EXAMINATION CONTENT SPECIFICATIONS

ARRT BOARD APPROVED: **JANUARY 2017**
IMPLEMENTATION DATE: **JANUARY 1, 2018**

Bone Densitometry Equipment Operator

The purpose of the *Bone Densitometry Equipment Operator Examination*, which is made available to state licensing agencies, is to assess the knowledge and cognitive skills underlying the intelligent performance of the tasks typically required of operators of bone densitometry equipment at entry into the profession. The ARRT administers the examination to state approved candidates under contractual arrangement with the state and provides the results directly to the state. This examination is not associated with any type of certification and registration by the ARRT.

The knowledge and skills covered by the examination were determined by administering a comprehensive practice analysis survey to a nationwide sample of bone density equipment operators. The results of the practice analysis are reflected in this document.¹

The *Task Inventory for Bone Densitometry Equipment Operator* appears in *Attachment A* of this document. The content specifications identify the knowledge areas underlying performance of the tasks on the *Task Inventory for Bone Densitometry Equipment Operator*. Every content category can be linked to one or more activities on the task inventory.

The table below presents the major categories covered on the examination, along with the number of test questions in each category. The remaining pages of this document list the specific topics addressed within each category.

Section	Number of Scored Questions ²
Patient Care	12
Safety	8
Image Production	15
Procedures	<u>25</u>
Total	60

¹. A special debt of gratitude is due to the hundreds of professionals participating in the project as committee members, survey respondents, and reviewers.

². The exam includes an additional 15 unscored (pilot) questions.



Patient Care

1. Osteoporosis

- A. World Health Organization (WHO) Definition and Diagnostic Criteria
- B. Primary
- C. Secondary

2. Bone Physiology

- A. Functions of Bone
 - 1. structural support and protection
 - 2. storage of essential minerals
- B. Types of Bone
 - 1. cortical bone
 - 2. trabecular bone
- C. Bone Remodeling Cycle
 - 1. resorption/formation
 - 2. osteoblasts/osteoclasts

3. Bone Health and Patient Education

- A. Nutrition
- B. Exercise
- C. Risk Factors
 - 1. controllable (*e.g., smoking, alcohol, calcium, vitamin D, hormone therapy, medications)
 - 2. uncontrollable (heredity, race, gender, age, medical conditions)

4. Patient Preparation

- A. Patient Instructions and Explanation of Procedure
- B. Patient History
 - 1. medical history (e.g., bone disorder, prosthesis, peak height)
 - 2. contraindications (e.g., contrast agents, calcium supplements, pregnancy)
 - 3. clinical indications and guidelines (Bone Mass Measurement Act)
- C. Patient Factors
 - 1. limited mobility or mental impairment
 - 2. unusual anatomy, pathology, or body habitus
 - 3. removable artifacts
 - 4. pediatric patients

* The abbreviation "e.g.," is used to indicate that examples are listed in parenthesis, but that it is not a complete list of all possibilities.

Safety

1. Fundamental Principles

- A. ALARA
- B. Basic Methods of Protection
 - 1. time
 - 2. distance
 - 3. shielding

2. Biological Effects of Radiation

- A. Long-Term Effects
- B. Radiosensitive Tissues/Organs

3. Units of Measurement

- A. Absorbed Dose (e.g., Rad/Gray)
- B. Exposure (e.g., Rem/Sievert)

4. Radiation Protection in BD

- A. General Protection Issues
 - 1. radiation signs posted
 - 2. door closed
 - 3. only patient and operator in room
- B. Occupational Protection
 - 1. scanner-operator distance
 - 2. personnel monitoring
 - 3. exposure records
- C. Patient Protection
 - 1. comparison levels of radiation
 - a. peripheral DXA
 - b. axial DXA
 - c. natural background radiation
 - 2. strategies to minimize patient exposure
 - a. patient instructions
 - b. correct exam performance



Image Production

1. Fundamentals of X-ray Production

- A. Properties of X-ray Beam
 - 1. quality (kVp)
 - 2. quantity (mA)
 - 3. duration/time (S)
- B. Filters and Collimators
- C. X-ray Energy Production
- D. Fan Beam DXA Systems

2. Quality Control

- A. Equipment Safety (electrical, pinch points, emergency stop)
- B. Use of Phantoms and/or Calibration
- C. DXA Calibration
 - 1. in vivo precision study
 - 2. cross-calibration
- D. Troubleshooting
 - 1. shift or drift
 - 2. pass/fail
 - 3. need for service
- E. Record Maintenance

3. Measuring BMD

- A. Basic Statistical Concepts
 - 1. mean
 - 2. standard deviation
 - 3. coefficient of variation
- B. Reporting Patient Results
 - 1. BMD formula
 - 2. Z-score
 - 3. T-score
- C. FRAX® (WHO Fracture Risk Assessment Tool)
- D. Vertebral Fracture Assessment (VFA)
- E. Pediatric/Adolescent Scanning (ages 5-19)

4. Determining Quality in BMD

- A. Precision
- B. Accuracy
- C. Factors Affecting Accuracy and Precision
 - 1. scanner
 - 2. operator
 - 3. patient variables

5. File and Database Management

- A. Storage and Retrieval of Data
- B. Back-up and Archiving



Procedures

1. DXA Scanning of Lumbar Spine

- A. Anatomy
 - 1. regions of interest
 - 2. bony landmarks
 - 3. radiographic appearance
 - 4. adjacent structures
- B. Scan Acquisition
 - 1. patient instructions
 - 2. patient positioning
 - 3. evaluating pre-set scan parameters
- C. Scan Analysis
 - 1. accurate ROI placement
 - 2. BMC, area, and BMD
 - 3. T-score, Z-score
- D. Common Problems
 - 1. poor bone edge detection
 - 2. nonremovable artifacts
 - 3. variant anatomy
 - 4. fractures or pathology
- E. Follow-Up Scans
 - 1. unit of comparison
 - a. BMD
 - b. T-score
 - 2. reproduce baseline study

2. DXA Scanning of Proximal Femur

- A. Anatomy
 - 1. regions of interest
 - 2. bony landmarks
 - 3. radiographic appearance
 - 4. adjacent structures
- B. Scan Acquisition
 - 1. patient instructions
 - 2. patient positioning
 - 3. evaluating pre-set scan parameters
- C. Scan Analysis
 - 1. accurate ROI placement
 - 2. BMC, area, and BMD
 - 3. T-score, Z-score
- D. Common Problems
 - 1. poor bone edge detection
 - 2. nonremovable artifacts
 - 3. variant anatomy
 - 4. fractures or pathology

- E. Follow-Up Scans
 - 1. unit of comparison
 - a. BMD
 - b. T-score
 - 2. reproduce baseline study

3. DXA Scanning of Forearm

- A. Anatomy
 - 1. regions of interest
 - 2. bony landmarks
 - 3. radiographic appearance
 - 4. adjacent structures
- B. Scan Acquisition
 - 1. patient instructions
 - 2. patient positioning
 - 3. evaluating pre-set scan parameters
 - 4. selection (right versus left)
- C. Scan Analysis
 - 1. accurate ROI placement
 - 2. BMC, area, and BMD
 - 3. T-score, Z-score
- D. Common Problems
 - 1. poor bone edge detection
 - 2. nonremovable artifacts
 - 3. variant anatomy
 - 4. fractures or pathology
- E. Follow-Up Scans
 - 1. unit of comparison
 - a. BMD
 - b. T-score
 - 2. reproduce baseline study



BONE DENSITOMETRY EQUIPMENT OPERATOR
EXAMINATION CONTENT SPECIFICATIONS

ARRT BOARD APPROVED: **JANUARY 2017**
IMPLEMENTATION DATE: **JANUARY 1, 2018**

Attachment A
Task Inventory for Bone Densitometry Equipment Operator

Activity		Content Categories
		Legend: PC = Patient Care S = Safety, IP = Image Production, P = Procedures
1.	Perform routine QC tests on scanning equipment according to manufacturer guidelines.	IP.2.
2.	Inspect and interpret results of routine QC tests and determine need for corrective action.	IP.2.D.
3.	Arrange for corrective action or repairs based on the results of the QC tests.	IP.2.D.3.
4.	Record results of QC tests in binder, chart, or database.	IP.2.E.
5.	Inspect equipment to make sure it is safe and operable (*e.g., cables, cords, table pads).	IP.2.A.
6.	Troubleshoot mechanical problems of scanning equipment.	IP.2.D.
7.	Perform an in vivo precision study.	IP.2.C.1.
8.	Ensure that cross-calibration between new/existing machines is performed as needed.	IP.2.C.2.
9.	Clean and disinfect work area.	PC.4.
10.	Direct patients to where they can find more information about low bone density.	PC.1., PC.2., PC.3.
11.	Answer basic questions put forth by the patient or family members (or refer them to the appropriate resources) concerning bone health, fall prevention, exercise, and nutrition.	PC.1., PC.2., PC.3.
12.	Explain procedure of DXA exam including positioning, duration, and notification policy of results.	PC.4.A.
13.	Record patient history relevant to bone densitometry.	PC.4.B.
14.	Verify current clinical indications meet specifications of CMS billing and coding guidelines if appropriate.	PC.4.B.3.
15.	Determine if patient has recently received a radiopaque contrast agent or radionuclide.	PC.4.B.2.
16.	Determine if patient has recently ingested contraindicated medications or supplements (e.g., calcium).	PC.4.B.2.
17.	Question female patients of childbearing age about possibility of pregnancy.	PC.4.B.2.
18.	Measure and record patient's current height and weight.	PC.4.B.1.
19.	Ask patients about their peak height.	PC.4.B.1.

* The abbreviation "e.g.," is used to indicate that examples are listed in parenthesis, but that it is not a complete list of all possibilities.



Content Categories

Legend: PC = Patient Care
S = Safety, IP = Image Production,
P = Procedures

Activity

20. Determine if patient anatomy, pathology, or other limitations require special consideration in patient positioning.	PC.4.C.2.
21. Ensure that artifact-producing objects (e.g., zippers, buttons, jewelry) within scan area have been removed from the patient.	PC.4.C.3.
22. Prevent unnecessary persons from remaining in the area during x-ray exposure.	S.4.
23. Take appropriate precautions to minimize occupational x-ray exposure.	S.
24. Take appropriate precautions to minimize x-ray exposure to patient.	S.
25. Provide mobility assistance to patients with disabilities or limited mobility.	PC.4.C.
26. Assist patient onto and off the scanning table.	PC.4.C.
27. Review patient records and provider's request to determine appropriate anatomical sites to scan.	PC.4.B.
28. Review prior scans and reproduce patient positioning during follow-up scan appointments.	IP.4., P.1.E., P.2.E., P.3.E.
29. Select appropriate immobilization devices or positioning aids.	P.1.B., P.2.B., P.3.B.
30. Record positioning details in patient records to ensure consistency.	P.1.B., P.2.B., P.3.B.
31. Enter accurate patient data necessary to initiate scan to utilize correct reference data.	IP.3.
32. Select appropriate exam modes and perform necessary scans.	IP.
33. Position patient to scan desired region of interest (ROI) using bony landmarks and surface anatomical features.	P.1.A., P.2.A., P.3.A.
34. Evaluate accuracy of vertebral labels and intervertebral markers for scan of lumbar spine and modify if necessary.	P.1.C.
35. Evaluate automatic placement of region of interest (ROI) and modify if necessary.	P.1.C, P.2.C., P.3.C.
36. Enhance or modify image appearance.	P.1.D., P.2.D., P.3.D.
37. Compare bone density measurements from two different occasions (for same patient) to assess changes over time.	P.1.E., P.2.E., P.3.E.
38. Evaluate scan results for technical problems (e.g., incorrect scan mode or site) and take corrective action.	IP.4.



Content Categories

Legend: PC = Patient Care
S = Safety, IP = Image Production,
P = Procedures

Activity

39. Review scan results to identify bone density measurements that may be inaccurate due to artifacts, unusual anatomy, pathology, or positioning problems and rescan if necessary.	P.1.D., P.2.D., P.3.D.
40. Review scan results to determine if scanning an additional site is required in order to obtain more precise bone density measurements.	IP.4.
41. Identify bone density measurements that require interpreting provider's attention (e.g., low T-score, unreliable results).	IP.3.A., IP.3.B.
42. Utilize FRAX® tool to assess 10-year fracture risk.	IP.3.C.
43. Maintain patient records to include the archiving, copying, deleting, and retrieving functions.	IP.5.
44. Perform bone densitometry scans using a fan beam system.	IP.1.
45. Perform and analyze bone densitometry scans of the forearm utilizing DXA equipment.	P.3.
46. Perform and analyze bone densitometry scans of the proximal femur utilizing DXA equipment.	P.2.
47. Perform and analyze bone densitometry scans of the lumbar spine PA utilizing DXA equipment.	P.1.
48. Perform bone densitometry scans of the spine – VFA (vertebral fracture assessment).	IP.3.D.
49. Perform and analyze bone densitometry scans on pediatric patients (ages 5-19) utilizing DXA equipment.	IP.3.E.

Computer-Based Testing Overview

After you have completed check-in procedures, test-center staff will show you to a workstation and will make sure the computer is ready to deliver your exam. The testing session consists of four segments:

1. Introduction, Tutorial, and Non-Disclosure Agreement: During this segment, the computer will verify your name and allow you to complete a tutorial if you choose. We strongly urge candidates to spend the few minutes to take the tutorial. You will also be asked to read and accept a non-disclosure agreement – it requires that all candidates agree to *not* copy any test questions or otherwise disclose the content of the exam. You must accept the terms of the non-disclosure agreement; if you do not respond within 2 minutes your exam session will end. You will have up to eight minutes to complete the tutorial.

2. Examination Session: You will be given the exam during this period. In addition to answering questions, you can mark questions for later review or even comment on questions. The clock will be running, so pace yourself. Most questions are in the standard multiple-choice format and require you to select one best answer. In addition, a small portion of the exam may consist of the question formats noted below:

- a. **Select Multiple:** This format consists of a question or statement followed by a list of 4 to 10 response options. You are required to select all options that are correct.
- b. **Sorted List:** This format presents a list of 4 to 8 options and requires you to place them in correct sequence. You accomplish this by using the mouse to “click-and-drag” the options into a box so that they end up in a specified order, such as numerical, alphabetical or chronological.
- c. **Items with Hot Areas or Videos:** This format consists of a question accompanied by a medical image, drawing, graphic, or video.

To answer a ‘hot area’ question, place the cursor over the selected area and click the mouse; the highlighted areas are possible answers to the question. When selected, the area will become outlined and change color. To change your answer, move the mouse to another shaded area and click the mouse. The final selected shaded area will be recorded as your final answer.

For video items, you will need to read the question, open the exhibit, press the play arrow on the video, watch the video in its entirety, and then answer the question. You will not be able to move forward on the exam until you have opened and watched the entire video. The video controls are shown and described below. **Note: The videos are silent (no sound).**



Sample questions illustrating these formats can be obtained from the ARRT website (Examinations>Exam Format and Length), or by contacting the ARRT. In addition, the tutorial at the test center presents an example of each format.

- 3. Item Review and End Review:** After responding to all questions, you will have the opportunity to go back and review questions in the time remaining. You can change answers during the review. Once you select the “End Review” button you will no longer be able to go back to the exam. A sample review screen appears later in this Appendix.
- 4. Survey:** After the exam a short survey consisting of 13 questions will appear. Most people complete it in just a few minutes. The survey is important because it gives you the opportunity to let ARRT know about the quality of your testing experience. If something went wrong – or exceptionally right – this is the place to tell us.

The following pages illustrate the approximate appearance of a few of the more important computer screens. Taking a few minutes now to review these pages will help prepare you for exam day. This information is also provided during the tutorial review at the test center.

Appearance of Test Questions

When the examination starts, the clock will be reset to the time allowed for the exam you are taking (see Exam Timing under the Exam Administration Day Section of the handbook to find the time allotted for your exam). Exam questions are presented in random order. The exam consists of a set number of scored questions plus several unscored pilot questions. The content specifications provide additional information about the number of questions and topics covered.

The screenshot shows a testing interface with a top navigation bar and a main question area. The navigation bar includes a clock, a question counter, and buttons for 'Comment', 'Calculator', and 'Flag for Review'. The main area displays a multiple-choice question about the location of the Alamo, accompanied by a map of Texas with four numbered regions. At the bottom, there are 'Previous' and 'Next' navigation buttons.

This button allows you to mark questions for later review. If uncertain of the best answer, then choose your best guess and flag the question for later review by clicking on the flag icon.

The clock indicates the time left to complete the exam.

You can comment on specific exam questions by clicking on the "Comment" button. The "Calculator" button gives access to an on-screen calculator (see next page).

The counter indicates which question you are on and the total number of questions on the exam.

The Alamo is located in the state labeled as number.

A 1
 B 2
 C 3
 D 4

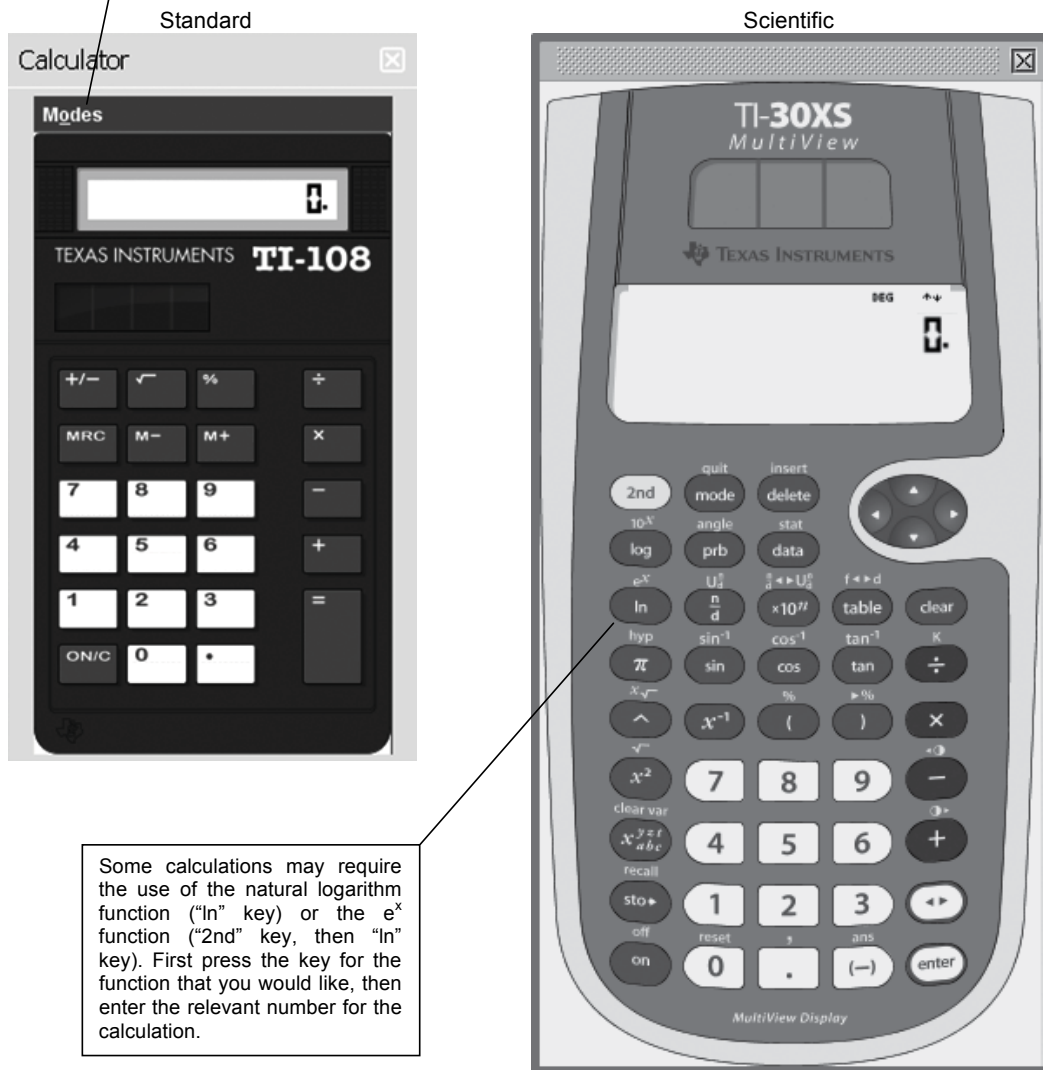
Here is the exam question. Choose one best answer by clicking the appropriate oval or letter (A, B, C, D).

Click on these buttons to go back to the previous question or ahead to the next one.

Online Calculator

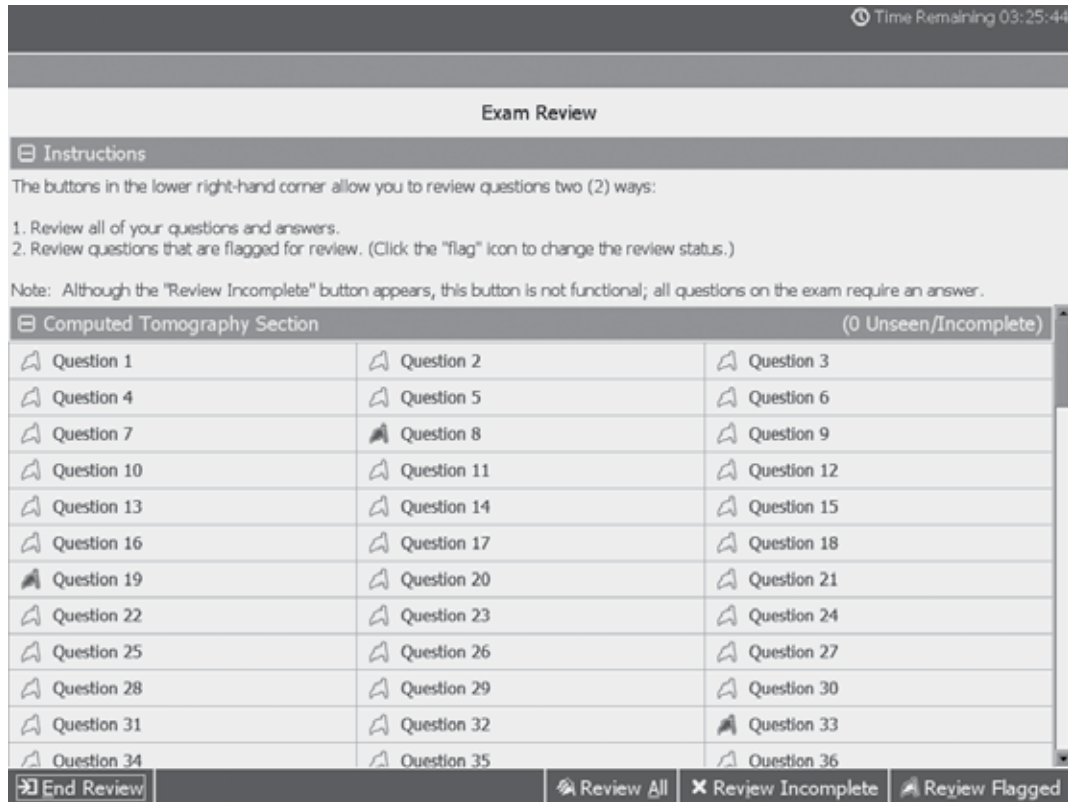
To use the calculator, click on the “Calculator” button at the upper left side of the exam screen. You can operate the calculator by using the mouse to click on numbers or arithmetic operations. Alternatively, the keyboard can be used. **Note: Please make sure to check the display screen on the calculator to verify the correct entry of numbers.**

The “Modes” button on the calculator allows you to toggle between the Standard and Scientific calculators. Note that most calculations on the exam can be done with the Standard calculator. However, some candidates may wish to use the Scientific calculator for certain calculations.



Exam Review

After you have completed all questions on the exam, a screen appears that allows you to go back to review questions. A filled-in flag icon appears next to any questions that you selected for review.



This button ends the exam. When you are done with your review, click this button to exit.

Once you click "End Review" you will no longer be able to review questions or change answers, **so be sure you are really ready to stop!**

You can return and review all questions on the exam by clicking on the "Review All" button.

You can return to the questions you selected for review by clicking on the "Review Flagged" button. To review all items on the exam, just click on "Review All."

If you click this button you will see that you have no incomplete questions, because skipping of questions is not an option on ARRT exams.

After the Examination

After you click "End Review" and confirm that you will not be able to return to the exam, a screen will appear to remind you not to discuss questions and/or answers with anyone.

A short survey appears on the screen. It asks a few important questions about the quality of the test administration and provides a place for you to type any general comments. We appreciate your feedback.

Potential Exam Disclosure Scenarios

Scenario	When it's OK	When it's not OK	Bottom line
Educator asking candidates to “stop by” after the exam to “let me know how it went.”	If the invitation and the feedback to the educator relates to their general experience (“I thought the test was not as difficult as I expected...”)	This type of invitation from an educator may be misinterpreted by the candidate — and the student may think that the educator is asking the candidate to reveal copyrighted information.	If the candidate is asked to reveal ARRT’s items or their answer options, then he or she will need to report the educator to the ARRT Ethics Committee. The educator should stop the candidate immediately from revealing any exam content, since doing so may subject the educator to ARRT’s ethics process.
Candidate tells another candidate, “The test was very difficult — I felt like I didn’t have enough time.”	The candidate is simply telling another candidate how they felt about the exam. This is all right because the candidate is not revealing any of ARRT’s items or the answer options.	One candidate (or potential candidate) asks another candidate questions about the specific items.	If ARRT’s items or answer options are shared, these individuals may find themselves part of an ARRT investigation and/or legal complaint as well as possible notification to their state licensing agency.
Candidate to educator: “You didn’t teach me about this item that asked [specific item]. I felt unprepared.”	Never.	It is not all right and it will never be all right to reveal ARRT’s copyrighted items (or answer options) to anyone.	Candidates agree to the Non-Disclosure Agreement at the beginning of their exam stating that they will not share exam items, and ARRT expects the examinees to abide by the agreement. Those who don’t may find themselves part of an ARRT investigation and/or legal complaint as well as possible notification to their state licensing agency.
Candidate tells a potential candidate that there were multiple-choice and sorted-list items on the test.	This is public information, noted in the handbook.	It’s not all right to reveal anything beyond what’s in the handbook.	Keep the conversation limited to what’s public information, such as the content specifications, and there’s no problem.
Candidate asks another candidate, “I don’t think that I understood this question...[relates question]... Do you know what they were asking?”	Never.	It is not all right and it will never be all right to reveal ARRT’s copyrighted items (or answer options) to anyone.	As noted two boxes up, candidates agree to the Non-Disclosure Agreement stating that they will not share exam items, and ARRT expects the candidates to abide by the agreement. Those who don’t may find themselves part of an ARRT investigation and/or legal complaint as well as possible notification to their state licensing agency.
Candidate says to a potential candidate, “If I were you, I would bring a sweater — it was cold at the test site.”	This candidate is simply telling another candidate about their surroundings at the test site. This is all right because the candidate is not revealing any of ARRT’s items or the answer options.	If it leads a candidate (or potential candidate) to ask another candidate questions about the specific items.	If ARRT’s items or answer options are shared, these individuals may find themselves part of an ARRT investigation and/or legal complaint as well as possible notification to their state licensing agency.
Potential candidate says to a candidate, “Were there a lot of questions on [specific topic]?”	Never.	This candidate should be aware of the topics that are contained in the exam from the content specifications published in the handbook and should not be asking for more specific information than is contained in that publication.	If the potential candidate is asking the candidate to reveal ARRT’s items or the answer options, then this conversation violates the Non-Disclosure Agreement the candidate agreed to at the beginning of the exam. If asked this type of question, the potential candidate should be shown the content specifications and should be warned of the consequences of revealing ARRT’s copyrighted items or their answer options.



ARRT Rules Agreement

Please review the following information and ask the Test Administrator if you have questions.

1.	ARRT has a zero-tolerance policy regarding possession of cell phones and other electronic devices at the test center. If you are found to be in possession of, or otherwise have access to, one of these devices after initial check-in (including during scheduled or unscheduled breaks), you will not be allowed to resume your exam or assessment, you will forfeit your exam or assessment fee, your score will be canceled, and it will count as an attempt in your three-attempt, three-year time period. For SSA participants, you will be assigned the full prescription for your discipline. Should you bring an electronic device into the test center, you must turn off the device and store it in one of the test center's lockers before you enter the testing room. Do not access your electronic device again until you have fully completed your exam or assessment.
2.	Jewelry that is wider than 1/4 in (1 cm) is not permitted inside the testing room, and you will be asked to remove it.
3.	Do not use the booklet provided by the Test Administrator until after you have responded to the Non-Disclosure Agreement. If you need a clean booklet during the exam or assessment, you should raise your hand to get the Test Administrator's assistance. You must return all items to the Test Administrator after completing your exam or assessment.
4.	Eating, drinking, smoking, chewing gum, and making noise that creates a disturbance for other candidates is prohibited during the exam or assessment.
5.	The Test Administrator will monitor you continuously while you complete your exam or assessment. The session may be videotaped or otherwise recorded for security or other purposes.
6.	If you experience problems that affect your ability to complete your exam or assessment, notify the Test Administrator immediately by raising your hand. The Test Administrator cannot answer questions related to exam or assessment content and performance.
7.	To request an unscheduled break, you must raise your hand to get the Test Administrator's attention. The exam or assessment timer will not stop while you are on an unscheduled break. The Test Administrator will sign you out after you leave the testing room. Before returning to your seat, the Test Administrator will sign you in; after being signed in, you may resume your exam or assessment.
8.	You should not remove any items from your secure locker. If you must access a personal item, such as an item needed to take to the restroom, this is allowed after notifying the Test Administrator. However, if you access any other prohibited item from the secure locker (cell phone, books, notes, etc.), your score will be canceled, your testing fees will not be refunded, and it will count as an attempt in your three-attempt, three-year time period. Note: During scheduled breaks, Registered Radiology Assistant (RA) and Sonography (SON) candidates may access their locker in order to retrieve snacks. You may not access any electronic devices during your scheduled break.
9.	You may not leave the building for any reason (unless directed to leave by the Test Administrator); this includes all scheduled and unscheduled breaks. If you leave the building you will not be allowed to resume your exam or assessment, you will forfeit your exam or assessment fee, and your score will be canceled. The exam will count as an attempt in your three-attempt, three-year period. For SSA participants, you will be assigned the full prescription for your discipline.
10.	Do not remove copies of exam or assessment questions and answers from the testing room (including by writing on your person or clothing). Do not share exam or assessment questions and answers with anyone. Reproduction of exam or assessment questions and answers, in whole or part, constitutes a breach of your agreement, and you can/will be prosecuted in federal or state court. Depending upon your candidate or participant status, this will also result in score cancellation, future certification and registration ineligibility, and/or discontinuation of your certification and registration.
11.	After completing your exam or assessment, raise your hand. The Test Administrator will come to your workstation to ensure your exam or assessment has ended properly and will escort you from the testing room.
12.	If you do not follow the rules, are suspected of cheating or tampering with the computer, and/or demonstrate irregular behavior the issue will be reported to Pearson VUE, the ARRT, and your state licensing agency (if applicable). Your exam or assessment may be invalidated, the ARRT may take other action such as canceling your score, and you will not be refunded your exam or assessment fee.

Candidate/Participant Statement: *By providing a digital signature, I give Pearson VUE my explicit consent to retain and transmit my personal data and test responses to the Pearson VUE corporate office and the ARRT (either of which may be outside of the country in which I am testing). I understand the information provided above and agree to abide by the ARRT Rules Agreement. In addition, I understand that if I am found to be in violation of any rule listed above, this will constitute grounds for the ARRT to take appropriate punitive action up to and including terminating my participation in the exam or assessment, invalidating the results of this exam or assessment and any prior exam or assessment, and permanently barring me from all future exams or assessments. In addition, I understand I may be subject to an ARRT ethics investigation or even a federal court lawsuit for copyright infringement and/or breach of contract. Any information collected by an ARRT investigation may be forwarded to my state licensing agency for review of state ethics violations.*

BDEO Examination Handbook Checklist

When you receive your Candidate Status Report (CSR) from ARRT...and before scheduling your exam you will want to check...

- Does your name on your CSR match the name appearing on your two forms of required ID?
 - If your names do not match, do not schedule an appointment. Contact your state licensing agency to make the necessary changes and have them notify ARRT so we can mail you a new CSR with your updated info. Updates will also appear on your online CSR.
 - Once you verify the changes to your CSR are correct, go ahead and schedule your exam.
- Name or address change after you receive your information from ARRT?
 - All changes must be made via your state licensing office.
- Be sure to note the dates of your 90-day exam window.
 - You must schedule your exam for a time within the 90-day exam window appearing on your CSR.
- If you can't take your exam within your 90-day exam window, you are allowed up to 3 extensions – but they must be approved by your state licensing agency.
 - Cancel any existing appointment.
 - Contact your state licensing agency directly to request a window extension.
 - A new CSR will be mailed to you once ARRT has been notified and processed the request.
 - Updates will also appear on your online CSR at **www.state.rrt.org**.
- Required IDs at the test center.
 - Make sure your IDs meet ARRT's requirements listed in the handbook to prevent being turned away from the test center and losing your fee.
 - If you are unsure, cancel your appointment and reschedule when you are certain your IDs will be acceptable.
- Questions on exam results?
 - ARRT processes results each week and provides your score information to your state licensing agency.
 - Your state licensing agency determines your pass/fail status, not ARRT.
 - Please allow up to 45 days for your state licensing agency to notify you of your results.
 - Contact information for your state licensing agency is in the upper right-hand side on the front of your CSR.

Important Notice: State Licensing is Not ARRT Credentialing

The American Registry of Radiologic Technologists® does not certify and register individuals based upon the results of the Bone Densitometry Equipment Operator Examination. ARRT administers this examination program solely for use by state agencies. If you are interested in national certification and registration in bone densitometry or other disciplines, consult the www.arrt.org website or phone ARRT at (651) 687-0048.