

Discovery Series

AP Lateral Questions

Why can't I use the scoliosis mode for the AP of an AP/Lateral pair?

Hologic recommends that you do not use the scoliosis mode for an AP/Lateral pair.

Information from the AP Lumbar Spine DXA is used to calculate the lateral WA-BMD³ (WA – width adjusted). The WA measurement requires the analysis lines to be straight to enable the calculation of the cubed measurement.

If a patient has known scoliosis, should I still attempt to acquire an AP/Lateral pair?

Scan the AP to determine angulations. The tracking line verifies the angle of the center of the vertebral bodies from L2 to L4. If the angle is less than or equal to 5°, you can perform a Lateral exam.

Why can't I move the ROI of the lateral vertically?

The factory setting locks the ROI. It can be unlocked using one of the Utilities functions but not recommended.

It is important for the baseline compensation algorithm that the AP and Lateral bone regions coincide. If the ROI of the Lateral spine is moved vertically, then the total AP and Lateral bone regions will not coincide.

Why do I have to place the sub-region to fit just inside the vertebral body?

The sub-regions within the individual vertebral bodies ensure that the vertebral bodies are identified as bone, despite their lower BMD.

Why is the sub-region placed just in front of the vertebral body?

This eliminates aortic calcification or artifacts that maybe anterior to L2-L4

Why are the lateral results reported in cm³ instead of cm²?

Using both the Ap and Lateral BMD calculations, the length X Width X height can be calculated for a WA-width adjusted measurement WA-BMD(g/cm³).

What is the importance of performing a lateral scan?

Performing a lateral scan produces a true reading of the vertebral bodies without any type of interference from artifacts. Supine Lateral BMD shows highest response to therapy.

Should I use LBMD software if the AP is low? If so, will this affect the Lateral scan?

The Discovery software has an auto-low density algorithm that is applied by the software automatically. The legacy LBMD software is only used when performing a comparison analysis to an older scan that was analyzed using the LBMD software initially.

Comparison Questions

I used to receive the error message "Scan modes must be identical" when doing a compare analysis on a follow-up scan. I no longer receive this message. Why don't I receive this message any longer?

When scanning a patient during a follow-up exam, it is recommended by the ISCD (International Society of Clinical Densitometry) to always use the same scan mode as the baseline scan. For example, if you used the Fast Array mode for the baseline scan, use the Fast Array mode for all follow-up scans. Before scanning, determine which scan mode was used for the baseline scan by restoring the baseline image and viewing the scan identification located in the Scan Drawer.

However QDR operating software versions 12.0 and higher no longer requires identical scan modes to be used for comparison analysis of a follow-up scan.

If I have one or more follow-up scans, which scan should I compare to?

Always compare all follow-up scans to the initial baseline scan. This helps to assure the same positioning over time.

What if the follow-up scan does not match the original?

If the problem is due to poor patient positioning in the follow-up scan, reposition the patient and reacquire the scan. If the problem is with the baseline scan, match the ROIs as closely as possible using the compare feature and complete the analysis.

Why can't I get a rate of change for my comparisons?

This is most likely because you have entered two biographies for the same patient. All scans for the patient must exist under one biography to generate a rate-of-change report.

Can I use the Compare feature to compare a pencil beam scan to a fan beam scan?

Yes, but only for anatomical and positional comparison for example the ROI on a pencil beam scan will be different than a fan beam scan. You can, however, obtain a Rate-of-Change estimate on a scan acquired or analyzed using different modes. These estimates are generated when you select rate of change in the Report window. The list of previous scans for this patient will appear. Then you can select the scans you want to include for the rate of change.

Forearm Questions

How do I position the patient to scan the forearm?

It is very important to position the forearm as straight as possible. To do this, align the forearm with the straight edge of the table pad. For a left forearm, measure 5½" from the first row of carpal bones. This point becomes the starting point of the scan. Place the centering line just inside the ulna, align with the ring finger. For the right forearm, reverse the positioning for the left forearm and start at the first row of carpal bones.

What is the importance of measuring the length of the forearm?

The system uses the forearm measurement to determine the length of the distal portion of the forearm. It calculates this length to determine the height of the ROI.

When should I do a forearm scan?

This decision is facility specific. Some, for example, may include the forearm in the baseline scan study, the patient's weight exceeds the table limit, or when a hip or spine exam cannot be performed. Some facilities may scan a forearm for certain medical conditions such as hyperparathyroidism.

The table weight limit for Discovery units produced after February 2006 is 450lbs. Units built prior to February 2006 had a weight limit of 350lbs.

Why is it important to leave air on the ulna side of the forearm?

The analysis algorithm uses air to help calculate the bone edge during the analysis. If a poor bone map appears during analysis, verify that enough air was included.

What if the forearm is too wide to allow air on the ulna side?

Open the ROI wider on the Radius side to allow the air gap needed for bone edge detection.

If the forearm is too wide to allow air on the ulna side, then allow air on the radius side.

Hip Questions

Why is it important to have the femur straight and internally rotated when positioning for the hip scan?

Proper positioning maintains consistency and reproducibility for the different regions of the hip

If I properly rotate the femur 25° using the foot positioner, will the lesser trochanter be out of profile each time, from patient to patient?

Not necessarily. It depends on the patient's anatomy.

Why is it important to be consistent with the placement of the ROI?

Consistency ensures that the same anatomy is followed scan to scan.

Why shouldn't I move the femoral midline?

Moving the femoral midline also changes the angle of the femoral neck box. This can interfere with the correct placement of the femoral neck thereby changing the bone being sampled.

If the femoral midline is not properly placed, what should I do and why would this happen?

Typically the Midline does not need to be adjusted but sometimes the bone mapping is incomplete around the neck region. The Midline is calculated from the bone map between the narrowest 2 points of the neck region.

If the Midline is manually adjusted the other regions will not match up on comparisons. It is best to correct the bone mapping then allow the computer to recalculate the Midline. After the bone map is corrected, at the neck box step click Auto Position to recalculate midline and other regions. Adjust Neck Box if necessary then click results

The midline is not copied during the "Compare" function on follow up scans but calculated again based on the bone mapping of the new scan. All other regions are copied onto the follow up scan based on their relationship to Midline.

Why can I delete bone from the hip, but not the spine?

The bone edges of the hip are more clearly defined and, therefore, they are easier to consistently reproduce on follow-up scans.

Why do I need to etch along the edge of the femoral neck to the base of the femoral head when I am deleting bone from the hip? Why can't I just delete a piece of the Ischium?

Consistency is very important. This procedure helps you duplicate the same deletion for Follow-Up scans.

Why is it important to "anchor" one corner of the femoral neck box to the notch of the greater trochanter?

Anchoring is used for consistency. If the femoral neck box is anchored in the same fashion on each yearly visit, then the same sample of bone is reported each year. Also, if the corner is placed in the bone of the Greater Trochanter, then that bone is calculated into the femoral neck reading.

Why can't I change the width of the femoral neck box?

Shortening the short axis (width) of the femoral neck box affects the precision of results, the smaller the sampling of bone the poorer the precision..

How should I adjust the femoral neck box when it does not fit in the space?

Although not usually necessary, you can adjust the box up and down along the midline. Anchor the outer upper edge of the box corner to the notch of the greater trochanter. The other three corners of the neck box should remain in soft tissue.

If the neck box encroached onto the femoral head or ishium first try and shorten the long axis of the neck box. If unsuccessful edit or delete the ishium. If the femoral neck is too narrow as a last resort narrow the neck box to exculude the femoral head..

What is the significance of the base of the greater trochanter, and why shouldn't I move this?

It divides the trochanter/intertrochanteric region.

intersection of the femoral midline and the initial position of the bottom edge of the femoral neck box.

I scanned the Right hip using Left hip mode, or vice versa. What should I do?

Delete the incorrect scan. Re-scan the patient using the correct scan mode.

Instant Vertebral Assessment (IVA) Questions

Can I delete DICOM files from the \VPU\DICOM Viewing folder?

When DICOM files are deleted from the folder, the corresponding database entries must also be removed. The best way to do this is by using the Delete Studies function in the Physician's Viewer.

DICOM files placed in the \VPU\DICOM Receiving folder disappear from that folder but do not show up on the Physician's Viewer Study List. Where are they?

Check the \VPU\Invalid Files folder. Files that are not DICOM compliant are moved to that folder.

What are the files in the \VPU\DICOM Invalid folder?

These are files, which appeared in the \VPU\DICOM Receiving folder and were either duplicates of files previously sent or non-compliant DICOM files.

Patient Questions

Why does a patient have to wait seven days from the date of a contrast medium exam before a DXA scan is performed?

If contrast material is still present in the patient's system during the scan, it can add density to the scan, which may produce erroneous results.

What is the maximum weight limit?

The maximum weight limit for the exam table is 350 or 450 lbs. Units built prior to February 2006 had a weight limit of 350lbs. The table weight limit for Discovery units produced after February 2006 is 450lbs.

Can I scan a patient who has a pacemaker?

Yes. The x-rays will not interfere with the operation of a pacemaker. If the pacemaker wires overlap the lumbar spine anatomy the affected lumbar vertebrae will have to be excluded during the analysis before the final results are reported.

Quality Control Questions

Why do I plot the BMD daily but not the BMC and Area?

Area and BMC calculate the BMD (g/cm^2). If BMD results are acceptable, it is assumed that the Area and BMC are acceptable.

Why do the dots on the QC plot fluctuate from day to day?

L1-L4 has a precision of 1% or better. The values fluctuate an average of plus or minus 1% from day to day.

Why does the C-arm move and scan air before it actually scans the Spine Phantom?

This procedure checks the detectors in the C-arm with no material in the x ray beam to verify that they are working properly.

How can I tell if my QC is okay?

The Discovery QC has an automatic pass/fail program and tells you if the QC has passed or failed. QC graphs can be viewed to track performance by clicking the Plot button and viewing QC graphs.

Any obvious drift or plot outside the limit lines should be reported to the Hologic Help Desk. Also, if the rate of change is greater than 2% and the error of the estimate is less than 2%, report the results to the Hologic Help Desk. For more information on QC, refer to Chapter 5 of the User's Guide.

Scan Questions

Where do I enter physician's comments?

In the Report Print window, click Edit physician comment..button. for further instructions please refer to "Edit the Physician Comment" Chapter 15 for procedures to edit any physician's comment to be included on the report.

Can I lose scans in the database?

You can lose a scan if it is deleted without first being archived. You can also lose scans if your archive disk(s) are lost, damaged, or destroyed. This is why Hologic recommends maintaining secondary (backup) archive disks.

Can I view analysis results without reanalyzing the scan?

Yes. To do this, click on the Analyze button in the main window. Select the Analyzed Scans tab and select the scan. Click the Next>> button to proceed through the system to view the analysis results.

Why am I not getting Z-scores for my patient?

When reference data is not available for the patient's age, the system cannot calculate the Z-score. Reference data is available for patient's 3 to 85 years of age.

Why am I not getting T-scores for my patient?

The report configuration is set to give a T-Score for an age older than the patient. For instance, the ISCD report configuration sets the T-Score at 50 years of age and Caucasian ethnicity. If the patient is younger than 50, and not post-menopausal, you will not receive a T-Score.

What does "Motor at Limit" mean?

This message appears when the patient anatomy to be scanned is beyond the active scan field and the C-arm encounters a mechanical stop. Reposition the patient so that the anatomy is within the active scan field and scan again.

Should I do a spine or hip scan on my patient?

Both scan types are useful. The spine may be better for detecting early post menopausal bone loss and for monitoring BMD changes due to therapy or disease. Hip measurements may be indicated in elderly subjects who are at risk for hip fracture or where degenerative changes in the spine may falsely elevate an AP spine BMD measurement. The optimal choice of scan sites depends on the individual clinical situation of the patient. Consult the literature for further information on this topic. For example: "Osteoporosis" Ed. By R. Marcus et al. Published Academic Press 1996; "Bone Densitometry and Osteoporosis" Ed. By H.K. Genant et al. Published by Springer-Verlag 1998; "The Evaluation of Osteoporosis, Second Edition: Dual Energy x-ray absorptiometry in clinical practice" by H.W. Wahner and I. Fogelman, published by Martin Dunitz Ltd. 1994.

Spine Questions

What is the purpose of using the knee positioner for a Lumbar spine scan?

The lumbar spine has a natural curve. The knee positioner raises the legs in order to flatten the back. This helps to level each vertebral body of the Lumbar spine.

Why is it important to have the spine as straight as possible?

By having the spine centered and straight as possible, it will be easier to reproduce the scan during follow-up exams.

If a patient has scoliosis, should I position the patient with their natural curve, or should I try to straighten the spine?

Position the patient with their nature curve for better reproducibility on follow up scans.

Position

Why is it important to maintain the width of the ROI?

All reference value scans are analyzed using a predefined ROI size. The ROI is set at this width because of the various types of soft tissue on each side of the spine.

Why should I delete a vertebral body if it is compressed?

Compressed vertebral bodies reduces the area (cm^2) which produce erroneously higher BMD (g/cm^2) results.

Why can't I alter the bone map for a Lumbar spine?

It is not recommended that you alter the bone edges. If there is a hole in the bone map, try clicking the Fill Holes button. Refer to User's Guide Chapter 8 "Lumbar Spine" for more information. The accuracy of an operator inserting bone cannot be compared with the computer's accuracy. In most cases, the bone map fills with the same consistency on a Follow-Up scan.

If an artifact or piece of metal falls within the ROI, but does not overlay the spine, will it affect the results?

Artifacts or pieces of metal within the ROI may increase the soft tissue background and influence the Bone edge detection. If possible remove the artifact from the scan field.

If the baseline scan is acquired and/or analyzed incorrectly, should I repeat the mistakes?

Before performing a follow-up exam, view the patient's baseline scan. If it was analyzed incorrectly, you need to re-analyze the baseline. If the baseline has extremely poor positioning, correct the positioning during the follow-up exam and use the second scan as the new baseline.

System Questions

Why do I need to use the Exit button on the main menu? What happens if I forget to use this and just shut off the computer?

When you click the Exit button on the main menu, the system performs a series of shutdown procedures. These procedures ensure that the system shuts down properly, and retains all the information from the day's activities. Turning the computer off without using the Exit button bypasses the shutdown procedures and may have adverse affects on the system. Be sure to always use the Exit button to shut the system down safely.

Why do I need to delete the scans from the computer?

When you perform an archive (copying scans from the computer's disk to another disk, such as a 3.5 inch or CD R/W, or PAC you no longer need to retain a copy on the computer's disk, Hologic recommends backing up scans onto more than one disk. Doing this ensures that should something happen to one of the disks the archived scans still exist on another disk. Hologic recommends archiving and maintaining the baseline scans on the computer hard drive for comparison to follow up scans. Follow up scans may be removed, once archived.

Why is it important to perform a system backup once a week?

A copy of your data exists elsewhere in the event of a system crash or other unforeseen circumstances that may corrupt your data.

What is the kV and MA for the x-ray beam?

The kV is 140 for the high-energy x-ray beam, and 100 for the low x-ray beam with a Max of 10MA. The system alternates between high- and low-energy synchronous with line frequency.

Whole Body Questions

Can I use any of the positioning devices for the whole body scan?

Hologic does not recommend using positioning devices when performing a whole body scan because they may interfere with results. The entire tabletop is scanned during a whole body scan. Any material on the tabletop will be in the scan field. If the patients head needs to be supported the sponge should not extend out past the patients head.

Can I use the Velcro strap to keep the feet together?

Velcro may interfere with the results. Hologic recommends using tape to keep the feet together.

Can I measure additional custom chosen areas on the whole body scan?

There are additional sub-regions that may be measured. The software will allow for the measurement of 7 additional sub-regions.

Why do I only get BMD measurements for my whole body scan?

The system must have BCA (Body Composition Analysis) software to allow for measurement of the soft tissue on a whole body scan.

Can we perform a whole body scan on children?

The whole body reference data starts at age 3 for children. The pediatric auto-whole body algorithm will adjust automatically based on the patient's weight. The pediatric weight range is 22 to 88 pounds (10 to 40 kg).