

# BONE DENSITOMETER BUYERS GUIDE



- Bone Densitometry Overview
- Exam Procedures and Risks
- Types of Bone Densitometry
  - Economic Consideration
- Tips for Purchasing a Bone Densitometer
  - Site Planning
- Bone Densitometry Radiation

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# The Bone Densitometer Buyers Guidebook



This Bone Densitometer Buyers Guidebook, developed by Amber Diagnostics, is designed to help you understand and address common concerns regarding Bone Densitometer systems before you make a big investment. This document contains all the information you need in regards to costs, parts, types, site planning, maintenance, and more. Our goal is to ensure you have a convenient reference at hand, giving you the knowledge and confidence to go forth in purchasing your Bone Densitometer system.

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## The Principles of Bone Densitometry

Do you know about bone densitometry? Let's first define bone densitometry; the definitions of this test are the following:

- The measurement of bone mass or density; the current methods—single-photon absorptiometry, dual-energy photon absorptiometry, dual-energy X-ray absorptiometry, are based on tissue absorption of photons derived from either a radionuclide or an X-ray tube; the latter are more accurate with shorter scan time.



- Any of several methods of determining bone mass by measuring radiation absorption by the skeleton. Common techniques include single-photon absorptiometry (SPA) of the forearm and heel, dual-photon absorptiometry (DPA) and dual-energy x-ray absorptiometry (DXA) of the spine and hip, quantitative computed tomography (QCT) of the spine and forearm, radiographic absorptiometry (RA) of the hand, and quantitative ultrasound (QU).
- Test that determines bone density according to the radiation absorption rate of the skeletal structure being tested.

Bone densitometry is used to spot whether or not a patient may have a degenerative condition, such as osteoporosis. While these conditions do not have the type of advocacy that breast cancer and heart disease have, they are still very serious. Often times patients tend not to think about bone density. The fact of the matter is that a patient can not only develop osteoporosis and other conditions such as bone cancer.

Some things to note about bone densitometry that patients should know:

- Results are reported in two numbers.
- One number is a Z score.
- Another number is a T score.
- Each number has a specific definition.

A Z score is often times what determines if abnormal bone loss is occurring because of something other than age. Identifying the situation can lead to better treating the condition and actually slowing it down or stopping it. Outside of the Z there is a T score<sup>3</sup> and that particular score is the determination of the above or below average units of bone density according to age. The following are considerations of the T score:

- -1 and above means that bone density is normal
- A score between -1 and -2.5 means that the patient may suffer from osteopenia and that may lead to osteoporosis.
- -2.5 and below means the patient has osteoporosis.

Osteoporosis is not always age related and it can hinder a patient almost completely disabled. The bone density tests that are performed with a bone densitometer are usually on the following bones:

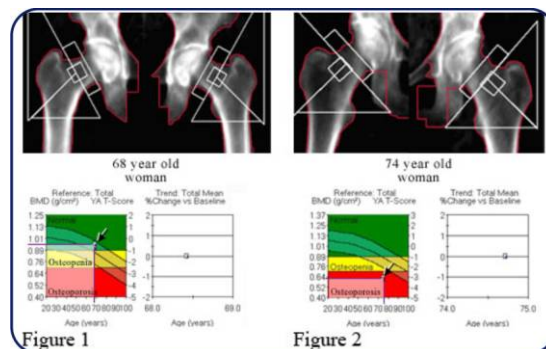
- Lower spine bones.
- Narrow neck of the thigh bone.
- Forearm bones.
- Heels.
- Fingers.



The reason for performing these bone density tests on these bones is because they are the bones most likely to break if there is osteoporosis present. It's always very important to educate the patient on the principles of bone density because they need to understand the importance of the test and the manner in which it is conducted.

Some things to tell the patient are that:

- Age is not always the determining bone loss factor.
- The test itself is a diagnostic imaging procedure.
- The machine can be central in a hospital.
- The machine can be portable.
- The radiation dose is very low and not a major concern.
- The test only takes about ten minutes.



The more that an imaging professional explains the principles, the more the patient is likely to respond positively to the test itself. With diagnostic imaging procedures being so seemingly lengthy sometimes, it's good to help the patient understand that this particular test is not as long or difficult. It's also good to know the equipment simply because patients may have curiosity in so far as what's being used to test them.

## Exam Procedures and Risks



### Educating Patients on Contrast Agents for Bone Densitometry

Diagnostic imaging procedures such as the MRI, CT scan, and others require contrast media. The definition of contrast media is:

- A substance introduced into a part of the body in order to improve the visibility of internal structure during radiography.

When being tested for bone density there is not a contrast media requirement but it's important to know a few things and they are:

- Has the patient had another diagnostic procedure done recently?
- Has the procedure been done within a two week period?
- Was there contrast media used in the procedure?

The reason for asking these questions is simple, contrast agents can actually hinder the accuracy of the results as far as the test is concerned. Some of the following are tests that you need to indicate you may have had:

- CT scan.
- Nuclear medicine scans.
- Barium study.

It's important that you tell the patient the reason why these types of contrast agents are a problem as far as a density scan is concerned. A patient will not develop a condition as a result, but an inaccurate result may signify a need for another test or may actually mean a manner of treatment that's unnecessary and ultimately counter productive. While it's important to be completely certain that a patient is suffering from a condition, it's not always necessary to perform a second test especially when the first one was considered inaccurate in part because of existing contrast media in the body.

If the patient has had contrast media injected then it's important to educate them on why it's vital to wait a good 10 to 14 days for the body to clear out said media. It's a key to success of the test, the practice, and the satisfaction of the patient to make sure that there is no major interference with test results.

### **Bone Density Image**

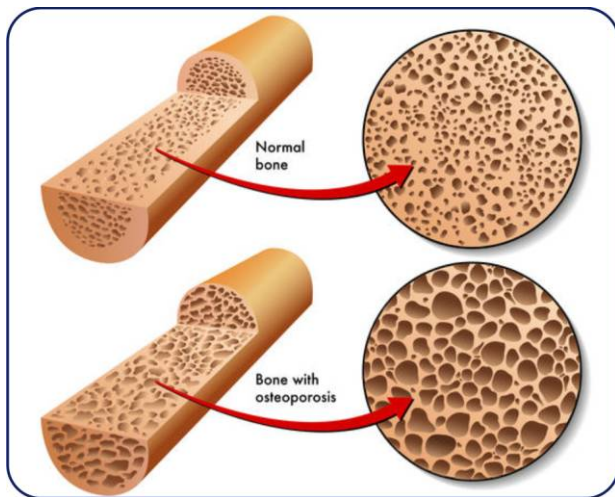
When you are dealing with bone density you don't just give a patient a number and tell them what it means. There is an image that the patient has to look at and the physician has to interpret. Let's assume for a second that the patient has osteoporosis. Here are some of the things that the physician has to explain to the patient:



- The bone matrix will look different, specifically there will be a greater amount of pores and the coloration may be different.
- Certain fractures of specific bones will be a clear sign of osteoporosis.
- If there is a stress fracture in an area like the wrist, that fracture may be a sign of osteoporosis.
- Hip fractures denoted by a split in the bone are a sign of osteoporosis.

The image is usually pretty clear cut and normally it helps the physician understand what the best manner of treatment will be. If the condition is osteoporosis then the treatment will depend on what the physician feels is the best course of action. Often times the physician will prescribe the following:

- A diet plan that's heavy in calcium and vitamin D
- Exercise plan that may include some form of physical therapy.
- Whatever medication is ideal.



If the loss of bone mass is due to another condition then the treatment will be based on that. It all goes back to whatever the image reveals. It's vital to have an image that's unencumbered. Making sure that the patient does not have contrast media remains is one thing that helps. A key issue too is the equipment that's used to perform the test.

The physician has to have a bone densitometer that's effective and provides the right service. Often times the image's accuracy will depend heavily on whether or not the machine is reliable.

A new bone densitometer may have undiscovered flaws that prevent it from providing an accurate image. Often times it's better to have a bone densitometer that's refurbished to like new condition with improvements that it may not have otherwise had as new.

### **Bone Density Test, Patient Preparation**

When a patient is going to submit to any sort of test it's important to know what he or she needs to do prior to the test. It doesn't matter if the test is an MRI, CT scan, or even a run of the mill X-Ray, there is always some sort of preparation that the patient needs to understand well. Bone density testing is the same in terms of a need for preparation. Before the patient meets the bone densitometer there needs to be an understanding of what needs to be done. The following bullets are an example of what preparation for a bone density scan is like:

- Have prior scan reports ready, if you had the test performed before.
- Don't worry about fasting or any sort of food restriction.
- Do not take calcium supplements of any sort 24 hours prior to the test.
- Make sure that you indicate if any procedures using contrast media have been performed. Contrast media can interfere in an accurate result.

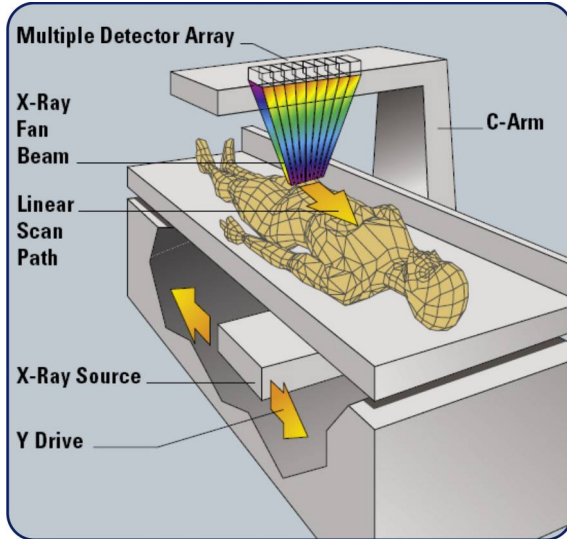
The preparation for the bone density test is extremely easy. It's important to tell the patient that there is nothing out of the ordinary in terms of the preparation for the bone density test. A patient that may not have had the test before may come in feeling like the test is as lengthy or difficult as some other diagnostic imaging procedure. It's important that the patient feel at ease, especially in the preparation phase of the test.

While an easy and smooth preparation process is not a guarantee that everything's going to be okay, it does help to have the patient at ease. Another way to help the patient prepare mentally is explaining what the equipment is like and letting them know that there is not really a concern for discomfort.

If the facility has a good and reliable machine, the patient will feel that much comfortable with the idea of a bone density test. This type of preparation goes a long way with the patient feeling confident about the treating physician and the plans from the treating physician.

## Types of Bone Density Testing

It's important that the physician be able to educate the patient on bone density testing. It's key that the patient know what is and isn't fact about bone density testing. First of all it's vital to tell the patient why testing is important. The following are some reasons why density testing is important:



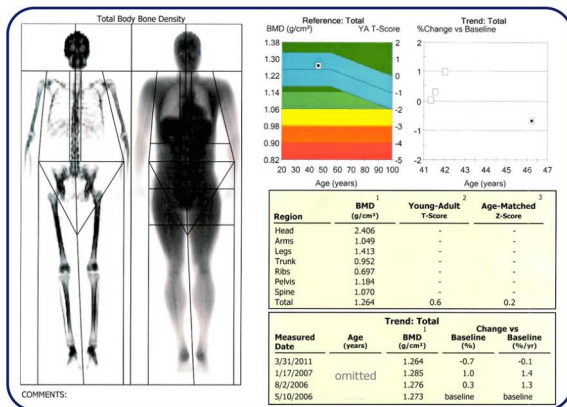
- Bone loss can happen to anyone.
- Unchecked bone loss can lead to osteoporosis.
- Unchecked bone loss can lead to other disorders.
- Osteoporosis means that bone fractures can occur for a minor reason, like a minor fall.

It's important to let your patients understand the seriousness of osteoporosis and how truly negatively it can affect a person. Some facts to note are the following:

- Osteoporosis leads to over 1 million fractures in the US every year.
- 700,000 fractures are of the vertebrae.
- 300,000 fractures are of the hip.
- There are over 200,000 wrist fractures.
- Over 200,000 fractures in other body parts.

A fracture as a result of osteoporosis can disable a patient for an extended period of time. As far as testing is concerned there are three types of test that the patient can get and those tests are:

- Dual energy X-Ray absorptiometry (DXA)
- Quantitative Computerized Tomography
- Ultrasonography



DXA testing is known as the best kind of test and it's the most often recommended by experts. What makes DXA testing the gold standard is the fact that it gives the most accurate readings of bone density with the least amount of radiation. The sites that are tested are the vital ones such as the hip, forearm, and spine. The DXA can be done without having to lie on a table. Other tests that are done are not nearly as effective or as welcomed as the DXA.

The quantitative **CT** scan is far more expensive than the DXA scan and on top of that it employs a greater dosage of radiation. This type of test may well be used as an alternative but the mentioned factors make it a less common practice. The ultrasound can be used to measure the density of the heel. This is a good way to determine fracture risk but without guidelines employing ultrasound measurement to diagnose osteoporosis it's not as good as the DXA.

While the patient may not be receptive to a college lecture on bone densitometry it's good to let them know why the test is being done, how, and what to expect. One vital piece of the puzzle is helping the patient understand the equipment that will be used.

Using the right type of [bone densitometer](#) is very important to helping the patient feel completely at ease. If the patient sees a nicely maintained piece of equipment they are likely to be much more receptive to the test itself.

## The Right Bone Densitometer

You have made the decision to expand your practice to include a [bone densitometer](#). Now that you have that in mind you need to consider a few things such as:

- What brand you want.
- Your space.
- What you are willing to spend.
- Will you buy new or refurbished?
- View reviews for your machine?



Getting the right bone densitometer is going to depend very heavily on whom you purchase it from. First you need to consider the dealer's experience and length of time in the market. An experienced dealer will guide you toward the right brand. Purchasing a system from a manufacturer will not necessarily get you what you want. You need a densitometer that will suit your needs and space availability.

The space you have will determine the type of machine you get. A variation of the Hologic QDR or any GE model will vary in size and that variation may mean a big difference in workflow. What you are willing to spend is also a big deal in getting you the right system.

A brand new system may be extremely cost prohibitive. A refurbished system will function like new, have a warranty on parts and labor, and if you have the right company selling you the system it will be refurbished to like new condition. It's important that the company selling you the machine explain the pros and cons of the machine.

It's vital that you be walked through the reviews of the bone densitometer and find out the following things:

- Reviews by imaging professionals.
- Any safety recalls.
- Negative aspects of the machine.
- Positive aspects of the machine.





Knowing what some professionals in hospitals, imaging centers, and practices have stated is vital to knowing if what you are choosing is right for you. Safety recalls may be a deterrent if the machine is new; if the machine is refurbished chances are that any issues have already been worked out. It's important to know if size, functionality, and workflow effect. If any of these issues are negatives it's important to know, to be able to make the right decision.

## Features to Consider on your Bone Densitometer

Once you make the commitment to purchase a [bone densitometer](#) you have to look at what features are best for you. It's not enough to say "I want a system" and then get one without certain considerations. Not only do you have to have the right staff, certifications and space, but the equipment itself needs to be right. Let's say you have made a decision to purchase a refurbished piece of equipment because it's more financially feasible, you have to make sure it's to standard.



The decision you will make has to be based on the following considerations:

- Clinical utility
- Image quality
- Accuracy
- Dimension
- Footprint
- Room Dimensions

A machine can be beautiful but it doesn't matter how great it looks if it's not very useful. A system may be too large and it may also have issues in so far as providing a quality image with a certain degree of accuracy. Accuracy is vital because it's a good, accurate image that will determine whether or not it's necessary to have a patient put on a specific treatment program. The dimension of the room is vital to the machine itself, in part because you don't want the machine to crowd your room.

Part of the space equation is going to depend heavily on the adaptability of the machine. If the machine can be put into a smaller room, it may mean that the expenditure on space may not have to be as large. The footprint is a major factor as well; the footprint is the physical area that's occupied by the equipment.

An example of a machine with a smaller footprint is the GE Lunar DPX Bravo. A system like that has a small footprint and on top of having a small footprint it's very effective. With any [diagnostic imaging](#) system one concern is the radiation dosage that's put out. With [bone densitometers](#) the radiation is minimal so the concern is not as great as it would be with a [CT](#) scanner or any other type of equipment.

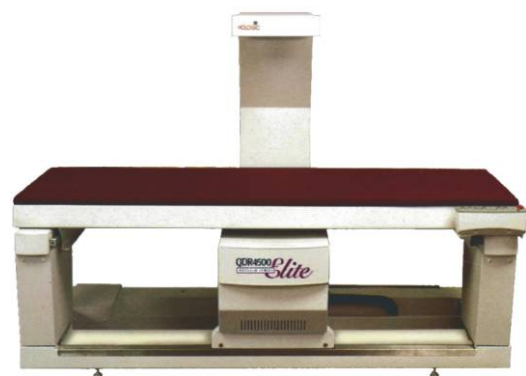
The software is very important in a [bone densitometer](#) as well. The machine should be able to do readings for spine and femur but it should also be able to do a reading for the forearm if it's difficult to do spine and femur as far as the patient's condition is concerned.

## Bone Densitometer Comparison

Your practice will now expand; you have decided to buy the bone densitometer. The [bone densitometer](#) purchase will be guided by an experienced company that will help you make the right choice for your practice. You need to be able to understand the differences between systems, what does it mean when there is a difference in certain factors like; Footprint, Data, Price.

There are questions that need to be asked like “Are there any safety recalls?” and “Will this machine give me a problem in terms of an accurate site image?” A great way to understand differences is by picking two systems and comparing them side by side. Let's assume that you have picked out two [bone densitometers](#) and you have decided that they can't be the same brand. Your two brands are GE and Hologic. You speak to your sales rep and ask what two models may be the best for you. Your rep tells you that GE's Lunar DXP Bravo and Hologic's QDR 4500 Elite are two options. You need to compare features.

Having a chart that helps you compare features side by side is a big way of understanding what's best. When you have something to look at you can sit down with your rep and say “Okay, what's this and how is it good for me and my needs?” Below is a chart that explains just that:



GE Lunar DXP Bravo	Hologic QDR 4500 Elite
<p><b>Applications</b></p> <ul style="list-style-type: none"> <li>• Spine</li> <li>• Femur</li> <li>• Dual Femur</li> <li>• Forearm</li> </ul>	<p><b>Applications</b></p> <ul style="list-style-type: none"> <li>• Lumbar Spine                             <ul style="list-style-type: none"> <li>• Hip</li> </ul> </li> <li>• Forearm</li> <li>• Whole Body</li> </ul>
<p><b>Scanning Method</b></p> <ul style="list-style-type: none"> <li>• No scout scan required</li> <li>• No magnification for the best precision</li> <li>• Best Scan Parameter according to patient corpulence</li> </ul>	<p><b>Scanning Method</b></p> <ul style="list-style-type: none"> <li>• X Ray Fan Beam</li> <li>• Utilizes C- Arm</li> <li>• Utilizes motorized table</li> </ul>
<p><b>Environmental Requirements</b></p> <ul style="list-style-type: none"> <li>• Requirements are based on destination</li> </ul>	<p><b>Environmental Requirements</b></p> <ul style="list-style-type: none"> <li>• Requirements are based on destination</li> </ul>

The chart is an example of some of the vital questions you need to ask and compare before you settle on a system. Other very important factors such as dimension of the machine and temperature requirements will be a part of the discussion with your sales rep. The footprint may make the ultimate decision because it's a component that decides whether or not you will be able to store that particular bone densitometer and use it correctly and comfortably.

If you have the right company guiding you through the process you won't have to worry about any questions being left unanswered. We here at Amber Diagnostics pride ourselves in helping our clients through the purchase of [diagnostic imaging](#) equipment. We will help you with everything from finding the right system to comparing it with other systems to see which one suits you and your patients the best. If you have any questions please feel free to give us a call. Our team of dedicated experts looks forward to answering any questions you may have.

## Economic Consideration

### Considering Bone Densitometer Costs

As with any major business related purchases there has to be a consideration given to costs. Purchasing a [bone densitometer](#) is not really any different. First you have to consider what the cost will be in terms of just the system itself. Let's say that you have a space and it's accommodating to any system. You will have to understand what the price comparisons are between systems and what's better between new and refurbished.

The cost of any new [diagnostic imaging](#) system can be absolutely astounding. Having a new system can leave you at a financial deficit for a long time. A new bone densitometer can cost anywhere in the 100,000 region and above. The cost associated includes a warranty, software, any upgrades, possible shipping, and assembly. These systems are expensive because they serve a vital purpose and are equipped with state of the art software and hardware.

The prices for a re-furbished [bone densitometer](#) are lower by comparison and a re-furbished system is likely to give you more effective use. A re-furbished system is likely to cost between 20,000 and 50,000 and the issues associated with a newer system are less likely to be there. The cost difference is not indicative of anything other than a better financial decision that will give you what you want and not cripple you.

By spending between 50,000 and 60,000 less on a refurbished system you are also allowing yourself to look at a couple of possibilities:

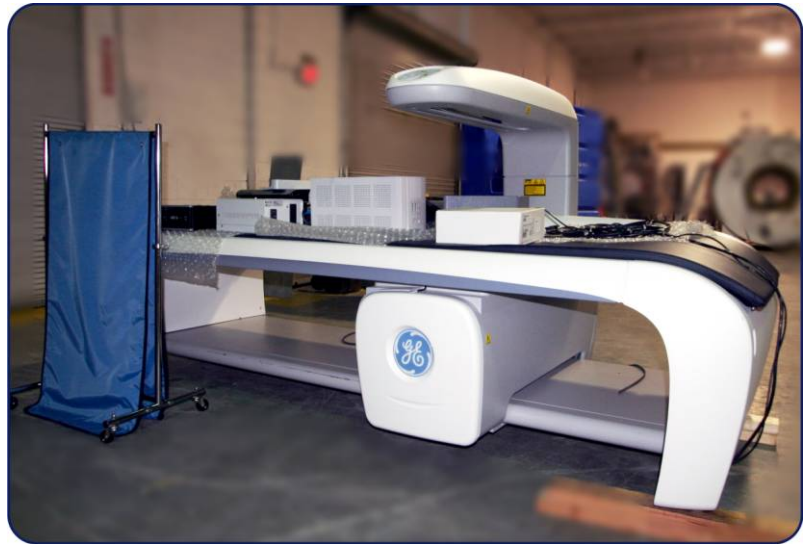
- Using some money to expand space.
- Using some of the budget to upgrade your machine.
- Acquiring some new staff members.

While these are things you may not be able to do in buying a new [bone densitometer](#), you can do them buying a re-furbished bone densitometer. The cost consideration is of vital importance but as long as you are with an experienced company looking out for your interests you will not have to worry about the cost issue.

## Purchasing Refurbished

Once you have committed to purchasing a [bone densitometer](#) or any [diagnostic imaging](#) modality you have decide how you want to approach your purchase.

Often times it's much better and easier to purchase a refurbished system as opposed to a new system. Yes a new system will be fresh out of the factory but you may have to concern yourself with recalls and possible hidden issues.



A refurbished system means that any issues such as recalls and bugs have already been worked out, provided that you are purchasing the system from a provider with a reputation for quality. You also need to understand that there is a difference between used and refurbished. Let's look at some of the qualities denoted by used:

- A used system is likely to have some noticeable physical ware.
- A used system is likely to not have certain things worked out.
- A used system will not be in like-new condition.

A refurbished system is a system that's been fixed to OEM specifications, painted, thoroughly inspected and will carry whatever necessary paperwork there is in order to ensure that the machine meets all standards, including inspection standards. A refurbished system will also have improvements that will make the equipment work as effectively as and sometimes better than a new machine.



A big advantage of purchasing a refurbished system is the fact that it's not nearly as cost prohibitive by comparison. A new system may cost you twice as much as a refurbished one. A refurbished system needs to come from a place with a reputation for providing quality equipment and service. A key to our success as a provider is our refurbishing process which includes the following steps:

- Selecting the best equipment for the refurbishing process.
- Mechanical inspection, refurbishment, reassembly.
- Electrical inspection and refurbishment
- Cosmetic reconditioning
- Testing to ensure full function

The kind of detail oriented process we engage upon is a guarantee that your system will be in prime working condition. These are the kinds of considerations that need to be had when purchasing a refurbished system.



## Bone Densitometry Reimbursements

Anytime you are going to purchase a system for [diagnostic imaging](#) you need to think about reimbursements. Part of the reason why you need to keep that consideration in mind is because the investment needs to make sense and pay off. If you don't have that many patients needing a bone density study, it doesn't make sense to make the investment. If you decide you want a system and you'll test everyone, you are not really thinking in the interest of the patient.



Once you have studied your patient profiles and you make the decision that bone density studies are necessary it's vital to understand the reimbursement process for said studies. Given the high number of patients that face the probability of some sort of osteoporosis related injury there are a lot of patients that will need the study. The reimbursements rates have dropped pretty in terms of Medicare have dropped down to \$62. At one point the rates were at \$139 for a whole body scan in 2006.

Currently the reimbursement rate stands around \$98 which is an improvement of nearly \$38 dollars over the previous years. If you have patients that meet the demographic it makes sense to acquire a [bone densitometer](#). The cost of a flatbed brand new system will be too much but a refurbished quality system will make sense to invest in because the reimbursement will be enough to ensure that your investment pays off.

A primary care physician that provides bone density studies will likely have an increase in patients based on statistics such as the following:

- 50% of women over the age of 50 will suffer an osteoporosis related fracture.
- 25% of men over 50 will suffer osteoporosis related fractures.
- 24% of men over 50 with hip fractures die within a year of the fracture.

In certain areas there are areas that are higher in concentration of men and women above 50 years of age. While this particular test is not one that's performed every day it's very important to help a patient understand if the test is necessary, why it's necessary and the possible advantages of having it done at the right time.

## Tips for Purchasing a Bone Densitometer

### Considerations for Purchasing Your Bone Densitometer

The purchase of a [bone densitometer](#) is like the purchase of any other [diagnostic imaging](#) system. If you purchase a system, any system, you have to make a lot of considerations prior to your purchase and they start at your site.

Some of the site considerations are:

- Do you have the space?
- Do you know the dimensions of the machine you want?
- What are the functions that you most need to focus on according to your patient profile?

It's important to know if you have enough space in order to perform the bone density test. A bone densitometer with a compact footprint takes up less space and can fit into a smaller area requiring less, if any structural work. One consideration is the dimension of the machine itself. Let's assume for a second that you have what you consider the right amount of room, is the machine bigger than what you expected?

Bone densitometers can be used to take certain measurements like the spine and the femur. Do you want the densitometer to be able to take a reading of the forearm as well? Not every single bone densitometer has the same functions although they all serve the same purpose.

Other considerations include:

- Price.
- Manufacturer.
- Look.
- Warranty included.
- Method of delivery.
- Installation.



What you spend will determine a lot, like how much extra you will have for new staff, how much you will have for updates if they are necessary. The more expensive a machine is the more prohibitive it becomes in terms of allocating your budget in order to meet whatever your needs are.

The manufacturer and look are factors to consider because as time passes machines become more effective and far less bulky. A machine can have an extremely compact footprint and at the same time it can have great features. On the reverse side a machine can have a lot of functionality and look highly unappealing, there are multiple ways that look and functionality can go.

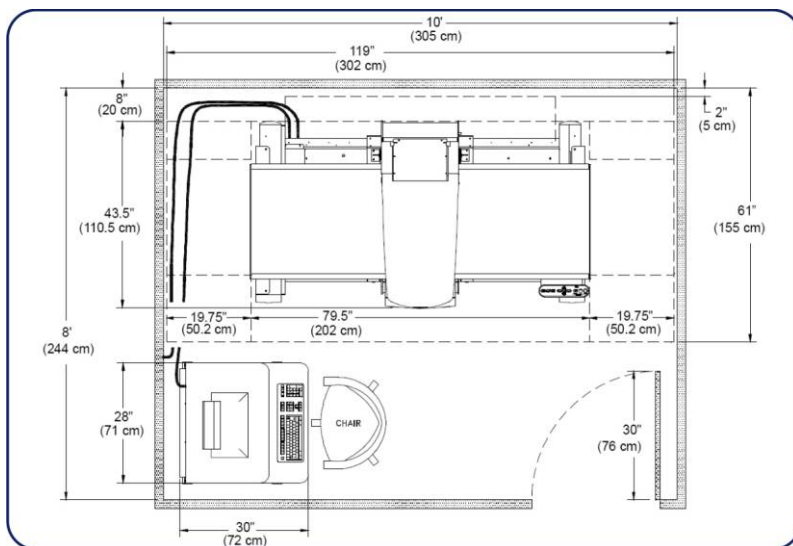
The warranty that comes with the equipment is extremely important. New or refurbished you don't want a densitometer that's going to break apart and cost you an arm and leg to fix because the warranty may have some obscure probation that will only fix certain things and not cover the whole machine.

The way the equipment is shipped and delivered is extremely important. It doesn't matter how it gets to you, it matters that it's handled with the utmost care and attention too detail. If your machine has been damaged in transit but it's not immediately clear, the problems you will encounter become very serious, because you are looking at repairs, trying to figure out if something is a manufacturer defect, in short you have to know how it's being shipped and through whom. One major consideration is the installation.

The installation is very important because if it's not done correctly it will be an issue for you to deal with. We are talking about possibly inaccurate results, software not functioning correctly, hardware not functioning correctly. There will be a greater expense if the installation is not done correctly. You have to make sure that the person installing it is properly certified and hopefully someone that works for the company that sold you the machine in the first place.

The last big thing that you need to consider is whom you will purchase your equipment from. If you purchase the equipment from a company with a long track record for quality service from the sales, to installation, to support process, then you are okay. The reliability of the equipment is only part of the equation. If you have a piece of equipment that's damaged but can be fixed by a proper and reliable field technician that answers to someone other than him/herself then you are backed by the accountability of the company you bought the equipment from. We here at Amber Diagnostics pride ourselves in being that kind of company with a sterling reputation for providing the best service every step of the way from acquisition to installation.

## Site Planning



### Planning Your Site

When you acquire a bone densitometry system you have to plan exactly how much room you are going to devote to it, and if that room is enough to house the system properly. The way you are going to plan your site is going to depend on what model you get and how you and the patient feel most comfortable. Let's say you buy the system and have it installed, you go to open the door but you can't do so all the way because the bed is too long.

**So how do you plan your site?** You start with a comparison of your site's measurements to the measurements of the machine. As an example, let's take the measurements of the GE Bravo DXP:

- That machine is known for having a compact footprint.
- The dimensions are LxWxH and weight.
- Length of the machine is approximately 74" .
- The width is approximately 34" .
- The height of the machine is 51" .
- The machine is about 445 lbs.
- The table height is about 25" inches from the base.



### **The minimum dimension of the room for a machine with those dimensions is 8' by 7.5.'**

The machine needs to be placed against a solid wall giving the door ample room and factoring for a chair in the room. That's a simple way to know if your site is ample enough to house the machine. The Hologic 4500 may require greater space since the footprint is larger by comparison.

A larger system is not more cumbersome to use than a smaller one, it simply means that it will require a larger and more accommodating space. One key factor will also be the structural soundness of your building. It's very important to know what the correct place is as far as your building is concerned in which to put in a larger machine or even a small one.

Ultimately creating site versus making the site useful is going to be an independent decision that's going to be up to you, and based on your needs, and the needs of your patients.

### **Site Planning Considerations**

When you consider your system acquisition you need to worry about not just the space on your site but also the environmental considerations attached.

Any system from a [bone densitometer](#) to a [CT scanner](#) employs a dosage of radiation. Some dosages are higher than others and also there is a consideration to be had in terms shielding, if necessary and your particular state's radiation laws.



When it comes to a [bone densitometer](#) the rules and regulations are not as complicated because most systems are fairly simple and straight forward. A system like the GE Lunar DPX Bravo has no requirements for shielding but like any other machine it has requirements for temperature, and power which are:

- Ambient temperature is 18-27 C
- Humidity is 20%to 80% non-condensing
- Power requirements are: 230/240 VAC + 10%, 600 VA, 50/60 Hz

As far as radiation is concerned it's very important to understand that any particular radiation restriction or regulation is going to depend on your geographic location. If your location is California, the rule may be different than a state like Michigan or Florida. It's very important to know what the regulations are even with [diagnostic imaging](#) equipment that employs minimal radiation dosage.

One key factor in installing and successfully running your bone densitometer is ensuring that for the power requirements your space has proper wiring. If you have any sort of undetected short in your wiring you are more than likely to have problems with the machine's functions. When you are planning your site you need to make sure that you consult with the right kind of company. A company that understands the equipment that they are selling you is the kind of company that also understands if the space you have is the right kind of space.



## State Radiology Regulations

It's very important to know and understand what a state's radiology regulations are when dealing with [diagnostic imaging](#) equipment as a whole. If you are dealing with a [bone densitometer](#) there is no difference in what the radiation regulations are going to be. It's good to know what your state's regulations are and what some resources are in order to better understand them. Some states have varying fees that may well be greater than others. There fees are primarily for licensing, a state like a Arizona has the following licensing fees as an example:

### License Fee Schedule

Category	Type	Annual Fee	Reciprocity Fees
A1	Broad Academic Class A	\$ 5,800	50%
A2	Broad Academic Class B	\$ 5,800	50%
A3	Broad Academic Class C	\$ 5,800	50%
A4	Limited Academic	\$ 1,000	50%
B1	Broad Medical	\$ 11,000	50%
B2	Med Materials Class A	\$ 1,900	50%
B3	Med Materials Class B	\$ 1,900	50%
B4	Med Materials Class C	\$ 1,900	50%
B5	Medical Teletherapy	\$ 5,200	50%
B6	General Medical	\$ 250	50%
C1	Broad Ind. Class A	\$ 11,400	50%
C2	Broad Ind. Class B	\$ 11,400	50%
C3	Broad Ind. Class C	\$ 3,200	50%
C4	Limited Industrial	\$ 700	50%
C5	Portable Gauge	\$ 1,000	50%
C6	Fixed Gauge Class A	\$ 1,000	50%
C7	Fixed Gauge Class B	\$ 1,000	50%
C8	Leak Detector	\$ 1,330	50%
C9	Gas Chromatograph	\$ 1,000	50%
C10	General Industrial	NO FEES	NO FEES
C11	Ind. Rad. Class A	\$ 5,500	50%
C12	Ind. Rad. Class B	\$ 5,500	50%
C13	Open Field Irradiator	\$ 3,000	FULL COST
C14	Self-Shielded Irradiator	\$ 1,500	50%
C15	Well Logging	\$ 2,000	50%
C16	Research and Develop	\$ 2,100	50%

These fees and this type of schedule will vary from state to state and year to year. Often times the schedules and fees are put in place for the purpose of ensuring compliance among other important reasons.

Compliance revolves around safety and making sure that the radiation emitted does not represent a hazard to the environment.

While the table above represents only one schedule for one state, it's very important to make sure that you know where to go in order to get all the vital information such as:

- Rules.
- Fees.
- Penalties.
- FAQs
- What's considered acceptable.
- What's unacceptable according to the state's rules.

The best type of source for information is your state's government website. Normally the state's government site will be a site like <http://az.gov>. Every site will have a link to some sort of radiation regulation site.

Once you are fully aware of your regulations it's key to go ahead and make sure that you follow them through every step from acquisition to installation.

The expertise of the company that you purchase your equipment from is going to be a major factor in ensuring that you do things correctly.

## Bone Densitometry Radiation



### Bone Densitometry Radiation Exposure

[Bone densitometry](#) is a procedure that requires far less usage of radiation than other procedures. Procedures such as the [CT scan](#), [MRI](#), and [X-Ray](#) require higher dosages than the bone density scan. The big worry that patients often have comes from the fact that a consistent and often required procedure with high dosages can put the patient at risk.

Radiation exposure on a consistent basis is more of a concern when the condition is far more complex. Complex conditions such as Cancer will always be a far bigger concern than a condition like osteoporosis. Osteoporosis is something to be concerned about; a fall and injury as a result of Osteoporosis could literally kill a person.

The bone density test is not as involved and the level of radiation used on the patient is absolutely minimal. A patient can have a bone density test and have the test repeated without being worried about possible future side effects. Where there could be a major issue is if the patient cannot in any way be exposed to radiation.

Yes the test requires certain preparation but in the end the preparation does not employ contrast agents, require fasting or some sort of other incredibly specific deal. A bone densitometry test can be performed in a primary care physician's office in the space of ten to fifteen minutes.

The concern is not one that should be great unless the installation of the system itself is questionable. Depending on whom you purchase your system from and who installs it, you will have an easy time meeting regulations and pleasing patients with accurate test results.



## What We Will Do for You

We understand what pricing of a diagnostic imaging modality can be extremely prohibitive. The purchase you make will also include an installation, delivery, inspections, proper placement. If you buy a new system you are likely to be highly limited in terms of budget because you are spending a significant amount of money in a system that may give you a lot of problems from a budget perspective.



We here at [Amber Diagnostics](#) pride ourselves in giving patients the greatest attention possible. We will sit with you and assess your needs, locate the right system, ensure that is refurbished to like new condition and install it with the greatest attention to care and detail. We also pride ourselves in providing you with the best support for your equipment.

We have some of the most qualified field technicians in the industry ready to service your [diagnostic imaging](#) modality at a moment's notice. It's because we understand your needs and the needs of the patient that we ensure that you get the very best in equipment and installation as well as support. We will provide you with the right [bone densitometer](#) once you have decided which one is right for you.

Our team of experts ensures that you are given an opportunity to understand the differences between models, functional and cosmetic differences. We will help you make your decision based on what's right not just for your facility but also for your patients.



With over 20 years of experience in providing our customers both national and international with the very best equipment, we feel that we are the very best choice to help you find the right modality for you.

If you have any questions please feel free to give us a call. Our team of dedicated experts is standing by ready to answer all your questions. From acquisition to installation, we will make sure that you are provided with nothing but the very best service.



## Still Have Questions?

Though this guide book is intended to inform you on the foundations of buying and safely utilizing a Bone Densitometer system, we're sure it must have raised some questions along the way.

Our knowledgeable and attentive team at Amber Diagnostics is here to help you find the perfect Bone Densitometer system for your business. We will be happy to address all your questions and concerns.

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Be sure to subscribe to our [Amber Blog](#) as well for tips and trends in the imaging industry.

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**Refurbished Radiology Equipment & Service, Since 1994.**



## **BONE DENSITOMETER BUYERS GUIDE**

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