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Osteoporosis and You

SPEAKER NOTES

Slide 1

Welcome to Osteoporosis and You--A slide presentation intended to help you limit your chances for thinning or broken bones. I am glad that you are here to learn about osteoporosis.

My name is _____ and it is my hope that by the end of this presentation, you will have a better understanding of osteoporosis.

The key to limiting your chances of osteoporosis is prevention and early intervention. This presentation will teach you how to identify your risks for osteoporosis and learn the important steps to follow to help you prevent osteoporosis.

During this presentation, you will learn about normal bone growth and how this compares to bone growth in osteoporosis, symptoms of osteoporosis, risk factors for osteoporosis, bone density testing, preventive measures, and a brief review of medications used to prevent or treat osteoporosis.

Let's get started.

Slide 2

What is osteoporosis?

Osteoporosis is a silent disease much like high blood pressure or high cholesterol. You can not feel the bones becoming weaker. Many people do not know they have osteoporosis until they break a bone—then it is necessary to treat aggressively.

Osteoporosis occurs when the break down of bone occurs faster than bone formation making these bones easy to break or fracture. The osteoporosis bone change is a slow process and occurs over years.

There are many things that can be done to help prevent or treat osteoporosis as will be discussed throughout this slide show. The earlier these changes are made, the better the chances of preventing or limiting the effects of osteoporosis especially fractures.

Once a person has been diagnosed with osteoporosis, drug therapy should be started to reduce the chances of fractures or recurrent fractures.

Slide 3

While osteoporosis is usually considered a disease of older (post-menopausal) women, it is important to note that osteoporosis can affect anyone; including men.

Your health habits can have a major impact on the health of your bones. It is important that you take care of yourself through diet and lifestyle (no smoking or excessive alcohol, adequate physical exercise, and consume a healthy diet.)

Even your health habits in the early teen years can impact your bone health as approximately 40-60% of bone structure forms and hardens during puberty years (9-14 years old).

It is never too early or too late to consider any of the upcoming issues about osteoporosis.

This program was created and produced by Creative Educational Concepts, Inc. and was sponsored by an unrestricted educational grant from Procter & Gamble Healthcare.

Slide 4 **Let us take a brief look at the bone growth process.**

Bone growth is a continual process of formation of new bone at the same time old bone is lost. Up until early adulthood (20-30 yrs), new bone growth is greater than old bone loss. Usually we get our maximum amount of bone (also called bone density) by mid 20's to 30. After this, old bone loss is greater than new bone formation.

It is normal for bone loss to occur as we age and the amount of loss varies from person to person.

The most rapid loss occurs at menopause, around 50 years of age. This loss slows soon after menopause and continues at this rate until about 80 yrs old. Minimal bone loss tends to occur in women after the age of 80.

Men start losing bone at around 50 years of age at a much slower pace than women. Some men have a large bone loss starting around 70 years of age.

Osteoporosis is different from normal bone loss due to aging. Not everyone will develop osteoporosis when they age. The risk of osteoporosis occurs when bone loss is much, much greater and faster than bone formation causing bones to thin and weaken. Lifestyle and other issues can increase the chance that the bones will thin and weaken, increasing the chance of osteoporosis. The location of the bone loss also increases the risk of osteoporosis.

Slide 5 **This slide compares normal bone on the right to osteoporotic bone on the left.**

The skeleton is made up of a thick outer shell of bone covering an internal mesh-work of bone. Calcium and other minerals help these different bone structures harden and grow strong.

The outer portion of normal bone is much thicker and denser. We would expect this bone to be stronger and less likely to break.

The inside of the bone looks different, also. The inside of bone is a meshwork of bone (kind of like a honeycomb or mesh fencing) as shown in these pictures. Normal bone picture shows the areas of more meshwork indicating stronger bone.

The osteoporosis bone picture shows the thinning (see yellow arrow) and perforation (see white arrow) of this meshwork that can occur with osteoporosis. It is obvious that this bone is much easier to break. This thinned meshwork can be strengthened but the perforated meshwork cannot be. Our aim is to identify patients prior to perforation of the meshwork and strengthening this meshwork to prevent perforations from occurring.

Slide 6 **There are actually two phases of bone thinning:**

The first phase is *osteopenia* or thinning of the bone. In this phase, bone is becoming thin and fragile. Think of this as an early stage leading to osteoporosis. If left untreated and unchecked, osteopenia will eventually lead to osteoporosis.

- This is why we begin preventive treatment at this stage, which usually consists of increasing calcium in diet, weight bearing exercise, and sometimes medication.
- Treatment and monitoring at this stage can stop and/or slow down the progression into osteoporosis

The second phase of bone thinning is actual *osteoporosis*. In osteoporosis, the bone has thinned in both the outer layer and the meshwork of the bone. This makes the bone weak enough that it can break very easily. It is necessary to treat this with both healthy lifestyle changes and medications.

Slide 7 As stated earlier, osteoporosis is a silent bone condition so most people do not even know that they are at risk of or actually have osteoporosis. There are, however, some signs that can indicate that a person has osteoporosis.

By the time a person has these signs, it is usually when they have had significant bone loss and most likely have already had a fracture. These signs include: broken bones, stooped and/or rounding of shoulders, hump on upper back. Several of these signs are frequently associated with spinal or vertebral fractures including back pain and loss of more than 1-1.5 inches of height. The woman on this slide exhibits all of the typical signs of osteoporosis. Note the rounded shoulders, hump on upper back and broken ankle. You can almost see the 1-2 inch loss of height.

It is important to determine your risk for osteoporosis before these signs occur. Prevention is much easier to accomplish than waiting for these symptoms and then trying to treat.

Slide 8 Osteoporosis and osteopenia together affects greater than 25 million people and as the population ages, a greater number of the population will be affected by osteoporosis. 4/5th of the people with osteoporosis are white or Asian females. However, not all people with osteoporosis are women. 20% of men will develop osteoporosis after the age of 50. And while risk of osteoporosis and associated fracture is highest for white and Asian women, there is still a significant risk for all people especially in those with other risk factors, ¼ of men > 60 years old will experience an osteoporotic fracture.

Although not everyone with osteoporosis also have broken bones, statistics show that almost half of all white women will have a fracture due to osteoporosis sometime in their lifetime.

Many times, the largest consequences of osteoporosis come from the complications and problems that stem from these broken bones. Many elderly people have chronic pain and disability due to these fractures and men have the greatest risk for having complications due to broken bones. Between 10-30% of all persons die due to complications that occur from issues associated with fractures (As elderly people break bones, they take longer to heal, which increases risks for infection and bed sores as patients are bedridden for longer periods of time.)

25% of elderly who have a hip fracture end up in a nursing home for prolonged periods of time and as many as 75% of these people never regain their complete pre-fracture functional status.

Slide 9 There are some factors that we can modify or change in order to decrease our risk for getting osteoporosis and breaking bones while we can not do anything about the others.

Factors that we can not change are:

- Family History: History of first degree family member (mother or father) of hip, wrist, or spine fracture when the parent was 50 years of age or older.
- Race: Affects white and asian people more frequently, as stated earlier.
- Gender: Women are 4 times as likely as men to develop osteoporosis.
- Personal history of broken bones: Having one broken bone greatly increases the chance that you actually have osteoporosis and will break another bone. If left untreated, a second fracture is most likely to occur with one year of first fracture.
- Age: In general, the longer you live, the greater the chance of developing osteoporosis.
- Small body frame: In general the smaller your body frame, the greater the chance for osteoporosis.
- Early menopause is defined as < 45 yrs old (can also be surgically induced). Natural estrogen helps a woman maintain strong bones.

Slide 10 **Some factors can be changed to help decrease the chance of developing osteoporosis**. These changes include:

- Low bone density: This is one of the strongest risk factors for developing osteoporosis. It is best measured by bone mineral density (BMD) testing (also called bone density testing), which will be talked about later. Many changes made below can also help increase bone density.
- Increase exercise (important to be physically active throughout life—prolonged inactivity or immobilization can increase risk of osteoporosis.
- Do not smoke (or stop smoking) and not abuse alcohol; limit alcohol intake.
- Eat right (Consume enough calcium and vitamin D, should start early in life)
- Increase body weight to greater than 127 lbs.; avoid malnutrition/starvation dieting (eating disorders) as these will stop the production of estrogen
- Take hormone supplements, if necessary
- Minimize the use of medicines that can cause or worsen osteoporosis (next slide)

Slide 11 Several medications can cause or worsen osteoporosis. These medications include:

Excessive thyroid medication, long-term heparin use, lithium, loop diuretics, and anticonvulsants (phenobarbital, phenytoin, carbamazepine)

Taking these medications for a long time can increase your risk of osteoporosis especially if you have other risk factors. It is necessary to avoid or limit the use of these medications if you have osteoporosis.

It is very important that you talk to your doctor or pharmacist about your risk of osteoporosis if you are taking any of these medications long term.

Medication-induced osteoporosis can affect **all** people alike and it not limited to the elderly or postmenopausal females. It is important to monitor the bone-loss effect of these medicines whenever anyone is taking one of these medications for a long time, especially Prednisone-like steroids.

Slide 12 **Again, steroid-induced osteoporosis affects anyone, young or old, male or female**

Prednisone and other glucocorticoid steroids *(prednisolone, methylprednisolone, betamethasone, dexamethasone, and triamcinolone)* are the most likely medications to cause osteoporosis. This type of medication is used by many to help reduce inflammation in conditions such as asthma, and severe arthritis.

Persons taking these steroids can lose up to 30% of there bone strength within 6-12 months.

Up to 50% of persons taking these steroids will have bone loss--especially vertebral breaks (back bones)

It is the long term oral steroid use that is the most concerning with bone loss. Long-term use is defined as greater than 90 days, and high dose is defined as greater than 5.0 mg of prednisone (or the equivalent dose for the other agents).

Studies currently indicate that intranasal and inhaled use may have less affect on bone health than oral, but newer studies are showing that these routes can still have an affect and this affect may be greater than once thought.

Anyone taking steroids should check with your doctor or pharmacist if you feel that you are at risk. Early preventive screening is necessary--Obtain bone density testing anytime you are going to be or have been on prednisone-like steroid therapy for greater than 3-6 months.

The overall affect of bone loss is due to the total amount of Prednisone-like steroid that is taken. However, it appears that the fastest and largest bone loss occurs at the start of the taking these medicines. A slow, continuous bone loss occurs with on-going medicine use. Early and on-going preventive measures including healthy lifestyle changes and sometimes drug therapy is necessary to help limit the bone thinning effect of these steroids.

Slide 13 **If you take prednisone-like medications you need to be aware of the following:**

While it is many times difficult to recognize when you might will be on long-term Prednisone-like steroid use, preventive measures must be started either at the beginning of a long-term steroid therapy or as soon as it is realized that you will be taking these steroids longer than 90 days (3 months).

Sometimes this is only realized after you have been on the steroid for that length of time. Many of these measures can be started on your own. These will be talked about later in slide show but these preventive measures include:

- Increased physical activity/exercise
- Get enough calcium and vitamin D
- Change lifestyle to reduce bone loss
- Reduce chance of falling

Many times it is up to you and your pharmacist to recognize that the medicine has been continued for 3 months and that it is important to contact your doctor about monitoring your risk of osteoporosis. You need to also work with your doctor to make sure they are using the lowest possible steroid dose.

You should also obtain a bone density test (BMD) to help assess osteoporosis risk.

Slide 14 Early diagnosis is important in the care of osteoporosis

Screening and monitoring of osteoporosis is best done by measuring Bone Mineral Density (BMD) testing. BMD testing is currently the best test available to predict the risk of breaking a bone and diagnosing osteoporosis or the risk of osteoporosis. This test is also used to help distinguish osteopenia from osteoporosis.

BMD testing is easy to do, only takes 15 minutes or less, does not require any type of blood testing or shots, and can be done without removing any clothing.

Osteoporosis screening and monitoring includes many different devices. Different devices provide a "snapshot" of various skeletal locations either centrally (spine, hip), peripherally (wrist, hand, heel), or entire body:

DXA (dual energy X-ray absorptiometry), the best test for diagnosing and monitoring osteoporosis, measures spine, hip or total body; this works by using small amount of radiation (much less than with a standard x-ray).

SXA (single-energy X-ray absorptiometry) or pDXA (peripheral DXA): same technique as regular DXA, just used on forearm, finger, and heel.

Ultrasometry (as shown in picture): Uses ultrasound or sound wave technology to measure density of the heel, shinbone, and kneecap. Ultrasometry is not as accurate as DXA and should not be used to monitor therapy but can be used to help screen people to determine osteoporosis. This is type of device that is used in pharmacies and physician's office.

Results of BMD test is reported as T-score as defined in next slide.

Slide 15 A BMD test compares your own bone density to that of a normal young healthy person's BMD and the comparisons are reported as T-scores.

The resulting T-score then helps place you into one of three categories:

T-Score	Category
0 to -1	Normal
-1 to -2.5	Low bone mass (Osteopenia)
-2.5 or lower	Osteoporosis
-2.5 or lower and fracture	Severe or established osteoporosis

In general, the lower your BMD or T-score, the greater your chances of breaking a bone.

Slide 16 Most devices can be used for screening. Many pharmacies and physician offices have a Ultrasometry bone density testing devices that they can use for screening. These devices measure bone density at non-central sites (wrist, heel, finger, shinbone, and kneecap).

Bone density devices that measure bone density at central locations (spine, hip, or total body) are the only devices that should be used for diagnosis and long-term monitoring of response to therapy

BMD testing can be repeated every 1-2 years to help assess response to therapy. It is very important that the same type of device and the same skeletal location for the bone density (hip, spine) be used for repeat testing. If possible the exact same machine should be used.

Slide 17 Not everyone needs a bone density test. A bone density test provides you with specific information about your personal risk of osteoporosis. The decision to have a bone density test is based on your risk of osteoporosis and the need to have more information in order to decide if you want to follow therapy or not. In general, a bone density test should be done whenever the results will help you decide about beginning treatment. Recommendations from the National Osteoporosis Foundation (NOF) and other osteoporosis organizations have been made to help decide who may require bone density testing. These recommendations are mostly for women and they include:

- Postmenopausal women who are greater than 65 years of age and have one or more risk factors; and/or those with new fracture (to help determine severity of disease)
- Any woman 65 years of age or older (no matter the number of risk factors)
- Anytime the results will help the woman decide about osteoporosis therapy
- Anytime the woman has been on long term hormone therapy

Slide 18 The majority of the recommendations regarding when to obtain a bone density test are based on studies done on post-menopausal women. However, there are other situations that require bone density testing.

These include **anyone**, man or woman, who:

- Is beginning or already on long-term prednisone-like steroids
- Have other conditions that can affect bone health such as hyperthyroidism, Cushing's syndrome, or persons on long-term use of other medications known to affect bone health (as listed earlier).
- Is on osteoporosis therapy to allow the doctor to monitor the person's response to therapy.

Slide 19 The key to limiting osteoporosis is to follow preventive measures that help reduce the risk of bone loss. These preventive measures can help maintain good bone health and can prevent or limit the chances that osteoporosis will occur.

These preventive measures include:

- Consuming enough calcium and vitamin D (from diet or supplements)
- Exercising regularly
- Make healthy lifestyle changes
- Learn to prevent falls and injuries
- Take osteoporosis medications if necessary

It is never too early to follow these measures. This prevention can start in children and teens. And these measures can be followed by everyone for good bone health, not just those at risk for osteoporosis.

The next slides discuss these preventive measures in much greater detail**. Let's get started.**

Slide 20 It is necessary to obtain adequate amounts of calcium throughout life. We should start at a early age and continue. When not enough calcium is obtained to maintain an appropriate level of calcium in the blood -the body takes calcium from the bone to replace the loss in the blood. Dietary calcium is the best way to obtain calcium--- however, most people only get about 400 mg of calcium per day via food.

Children need at 800-1200 mg of calcium per day; best achieved by drinking at least 3 full glasses of milk a day.

Adults require 1000-1500 mg of calcium per day.

Men *Recommended calcium per day*

25-65 yrs = 1000 mg

>65 yrs = 1500 mg

Women *Recommended calcium per day*

25-50 yrs= 1000 mg

50-65 yrs= 1000 mg (with estrogen)

50-65 yrs and older = 1500 mg (without estrogen)

Adequate levels of vitamin D are required to absorb calcium. We normally have no trouble getting enough vitamin D because we get it in foods and sunlight

- 15 minutes without sunscreen gives us an adequate daily amount of vitamin D
- Supplementation is necessary when patient does not receive minimum sun exposure or a deficiency as determined by doctor. The dose is 1-2 capsules per day if approved by doctor.

Slide 21 Many foods are high in calcium as listed on the slide.

The primary source of calcium is from the diet as it is absorbed better and easiest for the bone to use

These primary food sources include:

- Dairy products
- Fish (canned with bones)
- Vegetables

Also, many processed foods now have calcium added to them (calcium fortified). Foods such as orange juice or cereals.

Slide 22 We normally have no trouble getting enough vitamin D from foods and sunlight

- 15 minutes without sunscreen gives us an adequate daily amount of vitamin D

Foods containing vitamin D include:

- fortified dairy products
- fortified cereals
- eggs
- liver
- fish

Supplementation is necessary when patient does not receive minimum sun exposure or a deficiency as determined by doctor

Slide 23 Calcium supplementation is available in many forms such as tablets, caplets, powders, chewables, and many salts such as carbonate, citrate, citrate malate, phosphate, gluconate, and lactate.

Elemental calcium is the part of the calcium product that is usable by the body. The dosage recommendation for calcium is actually elemental calcium amounts not total calcium. Labeling of calcium products may be confusing as some labels may state the total amount of calcium available per dose and not the amount of elemental calcium. It is important to read the label closely to determine amount of elemental calcium per dose.

Calcium carbonate and calcium phosphate (insoluble salts) have the highest amount of elemental calcium.

Calcium citrate malate, found in several orange juice drinks and tablet supplement, is absorbed 35-55% greater than calcium carbonate and provides more absorbable calcium gram for gram than milk.

Slide 24 This slide shows how many tablets you would have to take to get 1000 mg of elemental calcium.

For example: If you wish to get 1200 mg of elemental calcium per day taking Tums EX, you would have to take 4 tablets to meet this requirement. Tums EX comes in 750 mg tablet, but it only contains 300 mg of elemental calcium. Therefore, to get 1200 mg a day would require that you chewing 4 tablets throughout the day. (1200 mg / 300mg per tab = 4 tablets)

Slide 25 **Now let us review a couple of helpful hints when taking calcium supplementation:**

Calcium is absorbed better when taking 500 mg of calcium or less at one time. Split up doses higher than 500 mg into multiple doses per day. Using the example from the previous slide: you need to take 4 Tums EX daily to receive > 1000mg of calcium—it would be best to divide these tablets up to take 4 times a day. Since Tums EX contain 300 mg of calcium per tablet, taking more than one at a time would give you greater than 500 mg of calcium per dose.

Different products and different salts have different issues associated with them—

- Persons with low stomach acid may not absorb calcium carbonate products very well. They should probably take calcium citrate products instead. Persons with low stomach acid include:
    - Persons taking acid suppressing medicines such as those taking H2 antagonists, or proton pump inhibitors) or
    - Elderly people as they tend to produce less stomach acid
- Common side effects include constipation and gas. If side effects occur, increase fluid intake, eat more fiber and if necessary, try a different product. Everyone responds differently to the various formulations.

Slide 26 Choosing the right calcium product may be difficult. Consult your pharmacist or doctor if you have any questions regarding the correct amount of calcium or the best calcium product for you.

Slide 27 There are many changes that can be made to your lifestyle to help reduce your risk of osteoporosis. These include:

Maintaining proper body weight

- Starvation diets and excessive exercising can cause a decrease in estrogen production and over time can increase the chance of osteoporosis
  - Starvation diets can also lead to improper nutrition (not enough calcium).
  - Low body weight (< 127 lbs) is a risk factor for osteoporosis.

Cigarette smoking is a direct risk for osteoporosis. It has been found in studies to be associated with low BMD, possibly due to changes in estrogen metabolism. About 10-20% of hip fractures are attributed to cigarette smoking. It also tends to cause less body weight, poorer overall health, and decreased exercise. Women who smoke tend to go through menopause sooner. If you are a current smoker, it is recommended that you stop smoking.

Limiting alcohol intake: Excessive alcohol intake increases the risk of bone loss. It can also increase the risk of fractures due to bad nutrition and increased risk of falling.

Goal of exercise: There are two forms of exercise (weight-bearing and muscle strengthening) that are used to:

- Build up bone and prevent further bone loss
- Strengthen muscles and improve balance
- Improve posture—it is important to practice good posture also.

Slide 28 The major form of exercise that you need to start with is weight bearing exercises.

Weight bearing exercises (exercises that forces your body to support your full weight) work to increase skeletal muscle mass

- Weight bearing exercise is most preventive when started early in life (in adolescence). However, starting this exercise at any time during life can still have a beneficial effect

This type of exercise includes walking, jogging, dancing, climbing stairs or playing tennis, is easily obtained, and you only need to do these 20-30 minutes 3 times weekly.

Persons with osteoporosis should have their doctor's approval before starting any exercise program and they need to avoid exercises that involve spinal flexion.

Slide 29 The second type of exercise that you need is exercise that helps you strengthen your muscles and helps with your balance.

This type of exercise has not been proven to have any direct affect on muscle mass. The goal of this type of exercise is to decrease the risk of falling by:

- Strengthening muscles
- Improving posture
- Improving balance

This type of exercise includes swimming, bike riding, and rowing, is easily obtained and you only need to do these 20-30 minutes 3 times weekly.

Weight lifting is another example of this type of exercise—however, is not to be done if you have osteoporosis unless under very strict supervision and approval by your physician.

Slide 30 If you are at risk for osteoporosis, you are at greater risk for breaking a bone, especially if a fall occurs. It is, therefore, very important that falls be prevented. You can learn ways to help prevent these falls. The majority of these issues have to do with rearranging household objects and making sure that the things in the house will not increase the chance that you will fall. This slide reviews only some of the things that you can do to help prevent a fall including maintaining good lighting, removing clutter from floors and stairs, getting rid of loose rugs, and wearing non-slip or skid soled shoes with low heels.

Other issues include keeping things in locations where they are easily accessible and don't require you to have to move around the house a lot to use them. This includes keeping the phone close-by, and eye-glasses kept around neck or on a close-by sturdy side table.

You can work with your pharmacist or doctor to try an minimize medications *(sedatives, hypnotics, anticholinergics)* that can increase the chance of a fall.

Slide 31 Some people require medications in addition to the healthy lifestyle changes and calcium with vitamin D to prevent or treat osteoporosis.

These medications may be added to the therapies used to prevent osteoporosis or they are used to help treat patients with osteoporosis.

No matter when they are used, they never are a substitute for the other osteoporosis therapies.

- They are to be used along with these preventive therapies.

The goals of drug therapy include:

- Stopping bone loss and, if possible, stimulating bone formation
- Reducing and ultimately preventing broken bones
- Maintaining or, if possible, improving ability to perform daily functions. This would include ability to move about and perform everyday functions.

Slide 32 Calcium and vitamin D are the backbone of therapy and you should always be receiving appropriate amounts of these even if you are also on other osteoporosis therapies.

Osteoporosis medications are not a "cure" for osteoporosis, they just help reduce the amount of osteoporosis or limit the occurrence of osteoporosis and fractures.

Many different medications are available—

These medications include bisphosphonates such as Actonel and Fosamax; estrogen products such as Premarin®; selective estrogen receptor modulators or SERMs such as Evista®; and calcitonin products such as Miacalcin®.

- Choice of agent used is very individualized
    - Based on patient characteristics, potential side effects, risk or occurrence of fracture, and location of fracture
- Variety of combinations can be used

The next couple of slides will provide you with a brief understanding of these various medications.

Note: these slides can be skipped if the persons you are presenting to are not receiving osteoporosis medications or you can review only those slides discussing the medication that person is receiving.

Slide 33 Bisphosphonates (Actonel® and Fosamax®) are used in both the prevention and treatment of osteoporosis. They are used in both postmenopausal and (prednisone-like) steroid-induced osteoporosis.

These agents work to reduce bone loss and are the best agents currently available for building up bone density. These agents have been shown in studies to increase bone strength quickly. Fosamax has been shown to work within 1-3 years and Actonel works within 6 months to 3 years.

Directions for use:

- Take on a empty stomach in the morning with a full glass of plain water
- Wait 30 minutes before eating, drinking, or taking any other medications
- Do not lie down for 30 minutes after taking this medication
- These medications can irritate the stomach, therefore, following these directions help to prevent or limit this irritation, especially if you have stomach problems already.

Slide 34 **Hormone therapy (estrogen) replaces the estrogen loss that occurs at menopause**. Choices of products include estrogen alone or estrogen plus progesterone (to protect the uterus from endometrial cancer and usually is the choice if the woman has an intact uterus).

Estrogen's protective effects on the bone works best if started at menopause, however, studies show that it is never too late to start taking estrogen and the preventive effects can still occur even if started later.

It is important to continue estrogen to obtain the ongoing preventive issues on bone loss. Studies indicate that the bone saving benefits decrease and may reverse when estrogen therapy is stopped.

As with most medication, there are pro's and con's associated with them. It is important to consider these prior to taking them.

Pros, along with bone effects, include:

> Estrogen works to relieve menopausal symptoms (hot flashes), and may have a beneficial effect on cholesterol, and possibly an improvement in dementia. More studies need to be done on the cardiovascular effects of estrogen.

Cons include:

> Increased risk of breast cancer, estrogen's use alone increased risk of endometrial cancer, and increased chance of blood clots (especially if woman smokes).

Estrogen should not be used in women with history of unexplained vaginal bleeding, active liver disease, breast cancer or history of blood clots.

Slide 35 Evista® is currently the only Selective Estrogen Receptor Modifier or SERM indicated for osteoporosis.

Evista® works like estrogen in the body at some sites (bone) but is blocked from estrogen effects at other sites (uterus and breast). So it has some of the good estrogen effects including those on the bone without some of the unwanted effects. However, Evista® does not have as much bone saving effects as estrogen so should be used only as an alternative in women unable to take estrogen products. Again, you need to consider the pro's and con's.

Pro's, along with bone affects, include:

- May reduce the risk of developing breast cancer

Con's:

- Increases risk of blood clots
- May worsen menopausal symptoms—should not be used during menopause

Slide 36 Calcitonin containing products such as Miacalcin are usually reserved only to treat persons with osteoporosis who are unable to take bisphosphonates or those experiencing bone pain as a symptom. It is not to be used as a preventive medicine.

This is usually given as a nasal spray and it is important that persons using this medication follow directions closely. This medication is usually taken once a day and it is important that you alternate nostrils each day.

Do not use this product if you have an allergy to salmon or other fish as it is made from salmon.

Now, let us take a few minutes to review some important points of the presentation.

Slide 37 What can and should you do to limit your chances of osteoporosis?

Remember: There are many things that you can do on your own to help limit your chances and they aren't that difficult to do.

To start with, you can assess your individual risk for osteoporosis as we will review in the next slide.

Learn your personal and family history regarding bone health. Is osteoporosis a disease that runs in your family? A family history of this can increase your chances of osteoporosis and indicate that you need to follow preventive measures.

You can start the preventive measures on your own. You do not need to have your doctor's approval to start on these and these measures should be followed by everyone whether or not they have osteoporosis or at risk for osteoporosis.

Remember to talk to any healthcare worker (doctor, pharmacist, nurse) if you have any questions or concerns regarding osteoporosis. It is recommended that anyone 50 years old or older should see their doctor for a review of their bone health.

Slide 38 **What is your individual risk for osteoporosis?**

Use this slide as a check off list to help you determine your own risk.

Persons with many risk factors need to really follow preventive measures and should follow-up with their doctor to determine appropriate care.

*Family History: History of first degree family member (mother or father) of hip, wrist, or spine fracture when the parent was 50 years of age or older.

Slide 39 Prevention and early detection are key to limiting your chances of osteoporosis. It is important that you make the necessary changes in your life to improve or maintain the health of your bones.

Lifestyle changes are the primary focus. Remember these include:

- Eating a healthy diet to maintain an appropriate body weight and to get enough calcium and vitamin D
- Getting regular exercise; at least 3 times a week
- Avoiding some of the issues that can harm bone health including smoking, excessive alcohol, or falling
- Obtaining adequate amounts of calcium and vitamin D though diet or supplementation

Your doctor may add drug treatment if additional prevention or if actual treatment of osteoporosis is needed. Work with your pharmacist and doctor to make sure you are taking these appropriately.

Slide 40 By making changes now and following the rules to prevent or treat osteoporosis you can make a big impact on your life and the health of your bones. These changes are not hard to do and the little things that you do now will help you tremendously later.

Start now—don't wait. Your bones will thank you for it.

Slide 41 **Do you have any questions?**

Thank you for your time and interest in this presentation on osteoporosis.

Slide 42