

About Health TV with Jeanne Blake
Osteoporosis
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JEANNE BLAKE: Welcome to *About Health TV*. I'm Jeanne Blake. The bone weakening disorder osteoporosis affects about 10 million Americans and leads to about one and one-half million fractures every year. Despite the prevalence of osteoporosis, many remain confused about what causes it and how it can be prevented. On this edition of *About Health TV*, we'll learn about osteoporosis with the help of Dr. Rosen. Dr. Rosen is the director of the osteoporosis prevention and treatment center and the bone density testing center at Boston's Beth Israel Deaconess Medical Center. Dr. Rosen, thanks for coming in to talk about this important topic.

DR. ROSEN: Thanks for having me.

JEANNE BLAKE: So what happens in the body when it starts to lose its mass and it can result in osteoporosis? I guess the question is why?

DR. ROSEN: Well, there are two main processes that cause bone loss. One of them is in people who don't get enough calcium and vitamin D. The body sort of borrows calcium from this immense store of calcium in the bones in order to keep up the calcium levels in the blood. With that process, you gradually deplete your calcium in your bones and it can cause bone loss over time. That process can be arrested by taking enough calcium and vitamin D. A lot of people think, "Oh, I'm going to take calcium and I'm going to build my bones." It's not that. When you take calcium, what you do is, you remove any reason for your body to withdraw the calcium from your bones. But unfortunately, that's not the whole story. Unfortunately, even if you take calcium and vitamins all your life, unfortunately, after menopause there's a real dramatic increase in the rate of bone loss in most women.

JEANNE BLAKE: But it's interesting. You bring up an important issue, that it's not just somebody that's over maybe 50 or 55 that's entering into menopause that needs to be thinking about it. We do need to start thinking about how much calcium we're taking to prevent things and be in the best possible shape for the second kind that you've described.

DR. ROSEN: Absolutely. Absolutely. There are those who would argue that osteoporosis is a pediatric disease.

JEANNE BLAKE: Really? I've never heard that theory.

DR. ROSEN: In other words, the seeds that you sow in your youth and your young adulthood are what builds up your bone density. And some of how high you build your bone density depends on genetics, but the rest depends on physical activity and enough calcium and vitamin D. No question that if you have a kid that's active and gets enough calcium and vitamin D that kid will build a stronger skeleton by the time they're adults than the kid who is not active and is not getting enough calcium and vitamin D.

JEANNE BLAKE: You know, I'm working on a project right now called Body Image, and I've been having conversations with parents and with teachers and actually with some doctors about the problems of anorexia in young girls, and it's epidemic. I think what you're mentioning certainly correlates to that, that girls in particular who are in those critical teenage years who aren't getting enough calcium because they're not eating are really putting themselves at risk.

DR. ROSEN: Absolutely. Absolutely. Anorexia, as you know, is a devastating illness in the entire body, but especially in the bones, in the sense that even an anorexic will take calcium supplements and have plenty of calcium and D, still just the nutritional drain prevents them from building up their bones the way a normal teenager would and can put them at real risk for having a low bone mass to start with once they go through menopause.

JEANNE BLAKE: Have you seen patients – I mean, I'm sure that you have, because you see hundreds of patients every year – but have you seen someone that's come in that had anorexia during their teenage years and they're now 40 or 50 years old?

DR. ROSEN: Yes, and their bone densities are much lower than that of their compatriot patients. When I find somebody that has osteoporosis to an unusual extent, it's my job to figure out why is your bone density worse than most. One of the questions I will ask is what age did they start having periods, did they have regular periods at all times, and did their periods stop for any reason, including anorexia. And unfortunately, sometimes you'll hear that somebody has recovered from anorexia but they had it at a critical time, between age 14 and 18, at a time when they were developing their skeleton. And

instead of developing a nice strong skeleton like most of their age-match compatriots, they developed a much lower bone density and therefore they have much less reserve when they get older.

JEANNE BLAKE: That's another big red flag to remind parents and young people, if they can even think that far ahead what that would be like to live with that. Okay, back to the post-menopausal ... what happens in women who are 50 and over as the body starts to lose estrogen?

DR. ROSEN: After 50, when most women go through menopause, the process of bone loss goes up. The reason this happens is, there is a normal process all through life called the bone turnover. That's where the bone is gradually resorbed or chewed up and patched over. That continually happens so that your bone is continually being repaired so your bones are nice and new. My bones are not 43 years old the way the rest of me is. Indeed, it's a process that's very good for you, but evolution put it there for a reason. After menopause for some reason, bone resorption and formation go hog wild. Basically, the resorption or the chewing up of the bone outstretch the body so it doesn't need to patch it up and you get a net loss of the density and the strength of bone over time. That gradually, at 50, 55, 60, 65, over years there's a loss of a density of bone, the strength of the bone, and a gradual increase in fragility.

JEANNE BLAKE: Okay, so that brings up a couple of points. Is it fair to ask why? It might get us to a real scientific place, but I always want to know why. I'm like a 4-year-old that way.

DR. ROSEN: I don't have a good logical reason. I can't explain to you that kind of, like, God put it there reason.

JEANNE BLAKE: I kind of meant like the estrogen – what's the role of the estrogen, or do we know it's just the loss of estrogen?

DR. ROSEN: The loss of estrogen promotes the production of certain chemicals in the body, sort of signals in the body. They go up and they stimulate this process of formation, if the bone resorbs, if the bone has been chewed up, to a much greater extent than the formation.

JEANNE BLAKE: Okay. So as we talk about the role of estrogen, the natural question is what about men?

DR. ROSEN: Well, that's a good question. And men also get osteoporosis, but women shoulder the burden of osteoporosis to a disproportionate extent. About 40% of all white women will eventually have an osteoporotic fracture and about 13%, or about one-third as many men will have an osteoporotic fracture.

JEANNE BLAKE: I'll have to really embarrass myself now. Do men have estrogen in their body?

DR. ROSEN: Well, men do have estrogen, but their main sex hormone is testosterone.

JEANNE BLAKE: Right, that part I know. So is the role of estrogen in their bodies being decreased after whatever, male menopause? Another show topic.

DR. ROSEN: Probably not, probably not. But that's a complicated issue.

JEANNE BLAKE: Do we know?

DR. ROSEN: Why men lose bone is probably because they also often don't get enough calcium and vitamin D, and men, with age, do lose their ability to make testosterone gradually over time. And there is some question, some open question, about whether this gradual reduction in testosterone with age seems to have something to do with that and, importantly, whether replacing the testosterone does anything to prevent bone loss.

JEANNE BLAKE: We've described the potential for like 4,000 clinical trials already in this program.

DR. ROSEN: I do want to say that if men have bona fide deficiency of testosterone, they're really deficient in testosterone, that definitely does cause bone loss in the way a menopausal woman does. So for instance, men who have undergone treatment for prostate cancer that involves putting the testicles to sleep do develop rapid bone loss and can develop osteoporosis.

JEANNE BLAKE: So the question I'm following is, if it's just plain old going to happen, and you haven't necessarily started out with that foundation and built it through your teen years and your 20s and your 30s, is there something that you can do when you start to hit menopause and go through menopause that can counter it?

DR. ROSEN: Absolutely.

JEANNE BLAKE: Enough? Or is there just going to be some bone loss that you can't eat enough or take enough calcium to counter?

DR. ROSEN: If you combine diet, exercise, and a drug where it's indicated, you can prevent bone loss.

JEANNE BLAKE: Let's keep the drug out of it for a minute. So you're telling anybody who is my age that I need to be particularly cautious about the calcium intake and about the exercise specifically because of the potential for osteoporosis?

DR. ROSEN: Absolutely. But if a woman at age 50, after menopause, takes calcium and vitamin D and exercises religiously, she will attenuate but not eliminate the bone loss that happens in menopause.

JEANNE BLAKE: So everybody is going to lose some bone?

DR. ROSEN: Right, and that's where the drug comes in.

JEANNE BLAKE: So those who started out with not a great enough ...

DR. ROSEN: For those who have osteoporosis already, or for those who have a bone density that's close enough that over time they could reach osteoporosis. The word we use is osteopenia, and what osteopenia means is a woman who doesn't have osteoporosis, but it's close enough that in 10 or 20 years she could develop osteoporosis.

JEANNE BLAKE: Here's what I want to do. There are risk factors. Some women can be at greater risk, and do I include men in this, too, when we talk about the risk factors?

DR. ROSEN: There are risk factors for men to lose bone as well, yes.

JEANNE BLAKE: And are they the same? Because I don't want to confuse people with that.

DR. ROSEN: There is a great deal of overlap.

JEANNE BLAKE: Okay. Well, if you want good bones as you get older, let's take a look at the risk factors and just talk us through these a bit, Doctor, and tell us the impact that each one of these can have on the health of your bones. Smoking. If you smoke, you're putting yourself at greater risk.

DR. ROSEN: Absolutely. Of course.

JEANNE BLAKE: Because?

DR. ROSEN: Well, one of the mechanisms for smoking to increase the risk of bone loss and osteoporosis is, it seems to accelerate the body's ability to get rid of estrogen. Even the little bit of estrogen that you have after menopause, the body seems to chew it up more rapidly and more regularly, so it lowers the already low levels of estrogen.

JEANNE BLAKE: Does the same hold true for alcohol abuse?

DR. ROSEN: No, the role of alcohol in causing bone loss is not well understood. But it is definitely a risk factor.

JEANNE BLAKE: The third one on the list is limited exercise. What is the role of exercise? I mean, this is pretty widely known that exercise really does help you build strong bones.

DR. ROSEN: Well, remember that your skeleton will rise to the occasion based on the stresses it's presented with. If you have somebody who is bouncing up and down all day, well, the skeleton has to sort of evolve to accommodate that. And the skeleton will remodel to accommodate for the stresses you put on it. To that end, even extremes of exercise such as gymnasts seem to build bone density more than in runners. So runners have a good bone density, runners have a better bone density than most, but gymnasts have a better bone density and lose less bone. The theory being that when you're a gymnast, you put tremendous forces on your skeleton and your skeleton basically has to rise to the occasion and develop enough strength to accommodate those stresses. On the other hand, if you're very sedentary and you don't put a lot of stress on your skeleton, your skeleton will lose the ability to respond in that way. Now, having said that, that's not to say that I'm telling people to go out and do gymnastics, or I'd have a bunch of patients that are crippled, but the point is that, within reason, what I try to tell people is to do weight-bearing exercise, aerobics if possible, because I think that's good for them.

JEANNE BLAKE: What is weight-bearing exercise?

DR. ROSEN: Well, not swimming. Not that there's anything wrong with swimming, except that swimming probably does little for your skeleton.

JEANNE BLAKE: That was going to be my next question, because that's one of my concerns.

DR. ROSEN: And so as a practical recommendation, I tell people that you've got to do what you like, because if I come up with this great regimen and it's just killing you, you'll do it this week, you'll do it the next week, the next week, but it's just going to sit in the drawer. So the best regimen sitting in the drawer is not going to be as much good as just kind of walking around if that's what you'll do. The other thing is, you've got to do stuff that's not going to hurt.

JEANNE BLAKE: Right.

DR. ROSEN: Because you know what? It's like the old joke when somebody comes to a doctor and says that it hurts when I do this. Well, then don't do this. I found, for instance, running, I used to run and I used to get shin splints, and eventually I started wearing on my cartilage. I do Nordic Track now and it's wonderful. I put it in front of the television, I watch "Law and Order" and I'm thrilled. You know what I'm saying? You've got to do things, number one, that don't hurt, things that you like and that will interest you and things that are weight-bearing.

JEANNE BLAKE: Okay, great. And let's look at the risks and just run through them. I think the rest are almost self-evident. Limited dairy intake, calcium, poor nutrition, you have probably the same issue. Family history, let's talk about that.

DR. ROSEN: Well, there's no question that there are genetic determinants in bone density. There's not a whole lot you could do about it, I'm afraid, but there's no question that if you take two people with a different genetic background and you subject them to the same calcium intake and the same age at menopause, you could have a dramatically different bone density. As with most conditions, it's best to have good genes.

JEANNE BLAKE: My mom, who is 88, falls a lot and she's never broken a bone. I keep saying that she's going to break a bone, but I think that that speaks to this. That's a good thing, right?

DR. ROSEN: I'll bet that that's a good thing. I mean, I'm not happy she's falling, obviously, but if she falls and doesn't fracture, it would suggest that the bone density is probably pretty good.

JEANNE BLAKE: And we found out this week that my bone density is terrific. We took a test. I took my first bone density test. We're going to look at the video of that, and I just want you to describe, Dr. Rosen, what happens when you go in for this incredibly simple test. Maybe for some women who aren't taking advantage of it ... Before we look at it, I want to ask that question. Do you happen to know what percentage of women that should be getting a bone density test actually are?

DR. ROSEN: I can't give you an exact number, but it's a small number.

JEANNE BLAKE: Really?

DR. ROSEN: It's a small number. We recommend that all women after menopause should have a bone density in order to help decide whether they need a drug. If they have a pretty high bone density, then we might just have them take enough calcium and exercise and tell them that they should be fine. But if their bone density shows osteoporosis or even close to osteoporosis, I would usually recommend a drug.

JEANNE BLAKE: But I just want to underscore the importance of getting the test, which is so simple, and that it can be a reminder that if you're starting to lose some bone mass then you can try to beef up your diet and exercise. It seems a really obvious thing, but these kinds of tests always seem obvious until you have to pick up the phone and make an appointment and get there.

DR. ROSEN: That's right.

JEANNE BLAKE: Okay, now describe what this test is and what you do if you're measuring someone's bone density.

DR. ROSEN: So, you get undressed or you take off the metal from your body and get on the table. Then the technician would position you just so and position the scanner so that you're in the right position. Then you would hear this sound, which is the machine beginning to scan you. Then it acquires an x-ray picture, but it's nice, it's not like an x-ray, a chest x-ray, which you just take a quick picture and then you're done. It basically acquires over 30 slices of your bone and then integrates them

into a whole picture. So what you hear when the machine goes under, the sound when it starts to scan, then you'll hear this low rumble where the machine is going from position to position very slowly, and you probably wouldn't be able to see how the arm goes slowly from your feet towards your head. It moves very slowly and very subtly. And then, after about 30 seconds, the machine is done acquiring the image, we do a little bit of analysis, and then we have our result.

JEANNE BLAKE: You mentioned getting on the table. Women may or may not care about this, but I'm just wondering the reasons that women don't go. I mean, you don't even have to take your clothes off.

DR. ROSEN: Correct, correct. The radiation exposure is minimal. If you've ever had an x-ray, you'll see where they put you in front of this x-ray machine and they tell you it's okay, don't worry about it, and the technician runs like heck and they get out of there and they hide behind lead, right? Here, as you remember, the technician is only six feet away.

JEANNE BLAKE: Yes, they were right there, right.

DR. ROSEN: And this is consistent with recommendations and guidelines and such, because the radiation exposure is so trivial.

JEANNE BLAKE: And I want to mention, just because I don't want to be confusing people, but I had the jonny on because I had jeans on and there was a lot of metal on the jeans.

DR. ROSEN: That's right.

JEANNE BLAKE: I was able to leave my very sexy black socks on. At the risk of looking really goofy, I left them on. And then the results usually aren't given to you that day.

DR. ROSEN: Correct.

JEANNE BLAKE: Okay. They'll be sent to your doctor. But we did take a look at my results.

DR. ROSEN: Yes, we did.

JEANNE BLAKE: Yay!

DR. ROSEN: And they were fantastic. I mean, you had a bone density that was way up high at the high end, a little bit higher than normal for your age. It was great.

JEANNE BLAKE: C'mon. You said it was 99.999%. Let's give credit where credit is due.

DR. ROSEN: I said it was about 99% accurate.

JEANNE BLAKE: Thank you. I just wanted to be acknowledged. If someone isn't blessed with good bones, the risk of fracture is relatively high as you get older, correct?

DR. ROSEN: Correct.

JEANNE BLAKE: Help us understand. I've always heard the stories of a woman who got up and walked across the room and her hip broke. Frankly, that frightened me to think about that happening. Is that really what happens when you have this, as you call, an osteoporotic fracture?

DR. ROSEN: No, no, not exactly. The common osteoporotic fractures are those of the hip, the wrist, and the spine. The hip and the wrist very seldom fracture without some trauma. It doesn't need to be big trauma, but even falling from a standing height or less, an osteoporotic patient can break their hip or break their wrist.

JEANNE BLAKE: So that's a myth?

DR. ROSEN: It is unusual to just walk down the room and then all of a sudden hear a pop or hear a crack and have terrible pain and fall and fracture. That is unusual. It happens, but it is unusual. What you can fracture without really any trauma whatsoever is the spine. The spine sometimes just spontaneously, or sometimes just with bending down to tie one shoe or lifting up a flower pot, can give you a fracture.

JEANNE BLAKE: But why is that different? Why is the spine different than a hip bone or a wrist?

DR. ROSEN: It probably has to do with the weight-bearing properties of the spine and the way the weight is aligned on the spine at all times.

JEANNE BLAKE: Okay.

DR. ROSEN: But, in fact, the spine can fracture spontaneously, over a sneeze, over a cough, in somebody with severe osteoporosis, and what they would get then instead is ... these are the bones of the spine. As you see them, they are kind of nice and tall and robust looking, but when one fractures one, it can wedge down and this nice bone over here can become shortened and wedge-shaped even like this little triangle here, and that would cause pain and it would also cause height loss.

JEANNE BLAKE: And then what happens?

DR. ROSEN: Well, the nice thing about these is that these kind of fractures don't need to be casted or operated on. They basically do heal on their own and most people, if they take pain medicines and rest for a little while, this thing will heal and stop hurting.

JEANNE BLAKE: Okay. But I did hear about a new technique where they can shoot cement in there?

DR. ROSEN: You did hear correctly. In a small percentage of patients that get this kind of fracture, it's what's called a vertebral compression fracture, it will be just terribly painful or the pain will last a long time and it won't get better after a day, a week, a month. And in those circumstances, what the doctors can do is put a needle in through the back and avoid – remember all these yellow things are all spinal cord and nerves so you don't want to hit those – you can go through the bone and kind of tunnel through the bone into this area and inject some cement. Not Home Depot cement, methylmetacrylate.

JEANNE BLAKE: I was just thinking about fixing a table with fake wood. Is that a dangerous procedure?

DR. ROSEN: It is a fairly safe procedure. The plaster has an over 90% success rate in the sense that patients will feel better almost immediately. There are a few complications where the cement leaks out and starts pressing on a nerve or gets into a vein and becomes an embolism of the lungs, but those are rare.

JEANNE BLAKE: But those potential side effects sound dangerous. I mean, if it presses on a nerve ...

DR. ROSEN: Well, then you'd have to have surgery to go in and take it out.

JEANNE BLAKE: And that's not dangerous, cutting on the nerves that close to the spine?

DR. ROSEN: Sure. I mean, any kind of spine surgery is risky. That's why you would only do this sort of thing for someone who is really miserable.

JEANNE BLAKE: Okay. That was going to be my question, who is that indicated for.

DR. ROSEN: Most of us who do this plaster to people, again if the pain is just unbearable even with lots of medicine and they're really miserable, or if the pain lasts more than a week or two.

JEANNE BLAKE: Let's just talk very briefly before we have to wrap up about medicines. You mentioned it before. Is it just a sure-fire, I mean, you take the medicine and you're not going to have to worry anymore?

DR. ROSEN: Well, if nothing else goes wrong and a person doesn't have to take steroids or any of these other things that are toxic to the bone. By and large, if a person takes calcium, vitamin D, exercises, and a drug at menopause, it's unlikely that their bone density will get much worse. Not to say that they can't fracture, right? I mean, anybody can fracture. But you can arrest the processes of bone loss with enough calcium, enough vitamin D, and exercise.

JEANNE BLAKE: But what are the side effects of the drugs that are available right now?

DR. ROSEN: Well, the drugs that are actually approved for osteoporosis now include estrogen, Fosamax, and Actonel, which are very similar to one another. And in a nutshell, estrogen is an outstanding drug for preventing osteoporosis. The problem is that it causes breast cancer over time, so it's hard to recommend estrogen, and estrogen isn't really a first choice for osteoporosis. Fosamax and Actonel are very similar drugs. They're given once a week and they seem to be very specific to

bone. They don't cause a lot of other problems. They don't cause strokes, they don't cause heart attacks. On the other hand, they don't prevent anything except for osteoporosis and bone loss.

JEANNE BLAKE: So there's really no downside to taking one of those drugs?

DR. ROSEN: Well, those drugs, as near as we can tell, are very safe. A small number of people have some stomach upset with them, but usually that becomes obviously pretty quickly.

JEANNE BLAKE: Dr. Rosen, thanks. This was a good primer in osteoporosis.

DR. ROSEN: Thank you.

JEANNE BLAKE: I'll be eating my calcium and I'll be exercising and all that good stuff.

DR. ROSEN: Well, thank you for having me.

JEANNE BLAKE: We want to thank you for joining us on this edition of *About Health TV*. I'll see you next time. I'm Jeanne Blake.

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