



## Osteonecrosis of the Jaw (ONJ)

Osteonecrosis of the jaw, commonly called ONJ, occurs when the jaw bone is exposed and begins to starve from a lack of blood. As the name indicates (*osteo* meaning bone and *necrosis* meaning death), the bone begins to weaken and die, which usually, but not always, causes pain. ONJ is associated with cancer treatments (including radiation), infection, steroid use, or potent antiresorptive therapies that help prevent the loss of bone mass. Examples of potent antiresorptive therapies include bisphosphonates such as alendronate (*Fosamax*); risedronate (*Actonel* and *Atelvia*); ibandronate (*Boniva*); and denosumab (*Prolia*). While ONJ is associated with these conditions, it also can occur without any identifiable risk factors.

### Fast facts

- ONJ may occur in patients taking strong antiresorptive therapies such as bisphosphonates or RANKL inhibitors. ONJ has not been reported with other antiresorptive therapies such as SERMs or calcitonin. SERMs include therapies like raloxifene (*Evista*).
- The risk of ONJ in patients taking bisphosphonates may depend on the dose of medication, the length of time it is taken and the medical condition for which the bisphosphonate is prescribed. As a result, cancer patients taking higher doses of bisphosphonates, particularly by IV, are at higher risk.



- The number of ONJ cases in patients taking bisphosphonates by mouth is estimated to be between 1 in 1,000 and 1 in 100,000 for each year of exposure to the medication.
- Most patients with ONJ who are taking antiresorptive therapy for osteoporosis can be healed with conservative treatment and often do not require surgery.
- Most cases of ONJ happen after a dental extraction.
- Good oral hygiene and regular dental care is the best way to lower the risk of ONJ.

### What is ONJ?

ONJ is a condition in which an area of jawbone is not covered by the gums. The condition must last for more than eight weeks to be called ONJ. ONJ has occurred in patients with herpes zoster virus infections, in those who are undergoing radiation therapy of the head and neck (radiation osteonecrosis), osteomyelitis (bone infection) and in persons taking steroid therapy chronically. Patients taking antiresorptive therapy to reduce fracture risk also may experience ONJ. In this latter case, ONJ most often develops after an invasive (surgical) dental procedure such as dental extraction. ONJ also may occur spontaneously over bony growths in the roof or inner parts of the mouth.

### What causes ONJ?

Why some patients taking antiresorptive therapy get ONJ is unknown. It may be due to: 1) a decrease in the bone's ability to repair itself; 2) a decrease in blood vessel formation; or 3) possible effects of infection.

### Who gets ONJ?

ONJ associated with bisphosphonate use, also referred to as BON, may develop in patients after taking the medication for as little as 12 months. The risk increases the longer bisphosphonates are taken. Most cases occur after prolonged therapy (more than five years).

For osteoporosis patients who do not have cancer and who are treated with osteoporosis medications, the risk of ONJ is low. Study results vary from less than 1 in 100,000 getting ONJ from bisphosphonate therapy to 1 patient in 263,158. One recent study suggested no increased incidence of ONJ with osteoporosis medication. However, the risk of ONJ in patients on bisphosphonates who have invasive dental work such as dental extraction may be higher. The risk of ONJ in patients taking denosumab (*Prolia*) is less well studied.

Cancer patients are at particular risk for ONJ. The doses of IV bisphosphonates used to treat cancer can be 10 times higher or more than the doses used for [osteoporosis](#). Furthermore, cancer patients receive IV bisphosphonates as often as every 3-4 weeks, while osteoporosis patients receive only a single IV dose yearly. As a result, the risk of ONJ in cancer patients varies, but it is higher. Even with many risk factors, the incidence of ONJ in some European countries for cancer patients receiving IV bisphosphonates and other cancer treatments may be as high as 1 in 10 patients. ONJ has been most commonly observed in cancer patients with multiple myeloma and breast cancer.

Besides cancer, other risk factors include advanced age, steroid use, diabetes, gum disease and smoking.



### How is ONJ diagnosed?

There is no diagnostic test to determine if an individual patient is at increased risk for ONJ. The condition itself is diagnosed only by the presence of exposed bone, lasting more than 8 weeks. Patients typically complain of pain, which is often related to infection, soft tissue swelling, drainage and exposed bone.

### How is ONJ treated?

Most patients with osteoporosis who develop ONJ are treated conservatively with rinses, antibiotics and oral analgesics. In the IV trial in osteoporosis mentioned above, both cases resolved within months on such conservative treatment.

### Prevention

A health program of oral hygiene and regular dental care is the optimal approach for lowering ONJ risk. Patients should inform their dentists that they are taking potent antiresorptive therapy. Dentists should consider conservative invasive dental care in patients taking potent antiresorptive therapies.

For instance, endodontic (root canal) treatment is preferred to dental extraction if the tooth can be saved. If dental extraction is needed, full mouth dental extractions or periodontal surgery should be avoided. (It may be better to assess healing by doing individual extractions.)

Patients with periodontal disease should consider non-surgical therapy before agreeing to surgical treatment. Many patients taking bisphosphonates may undergo dental implants without problems. Although some dentists recommend the use of blood tests to decide who is at risk, this practice is controversial due to a very limited evidence base and should not be used at this time.

Those on oral bisphosphonates are at low risk for BON. However, they are not without risk. Any problems developing in the mouth should signal the need for dental review. There is no data to suggest that bisphosphonates should be stopped prior to a dental procedure. However, patients about to start bisphosphonate therapy should consider waiting until any immediate invasive dental surgery is completed.

### Points to remember

- Up to 1 out of every 2 women over 50 will break a bone (such as wrist, spine or hip) due to osteoporosis in their lifetime. Each year, about 250,000 will break a hip due to osteoporosis. Of these, up to 24% will die, and less than 25% regain full function. Vertebral (spine) fractures, which occur twice as often as hip fractures, also cause back pain and increased mortality.
- Up to 1 out of 4 men over 50 will break a bone due to osteoporosis in their lifetime. Each year, about 80,000 men will break a hip.
- Oral or IV bisphosphonates have been shown to prevent 50-70% of vertebral fractures in postmenopausal women and 40-50% of hip fractures in [clinical trials](#). Denosumab (*Prolia*) has been shown to reduce vertebral fractures in 70% of postmenopausal women and 40% of hip fractures.
- Given the risk of osteoporotic fracture, and the low risk of ONJ associated with potent antiresorptive therapy use, the benefit of preventing osteoporotic fracture clearly far exceeds the risk of ONJ.



### **The role of the rheumatologist**

Rheumatologists are specialists in musculoskeletal disorders including osteoporosis and, therefore, are best qualified to review the risks and benefits of antiresorptive therapy for osteoporosis. They can also advise patients about the best treatment options available.

### **To find a rheumatologist**

For more information about rheumatologists, [click here](#).

For a listing of rheumatologists in your area, [click here](#).

### **For more information**

The American Academy of Oral Medicine  
[www.aaom.com](http://www.aaom.com)

The American Society of Bone and Mineral Research  
[www.asbmr.org](http://www.asbmr.org)

### **Created June 2008, reviewed July 2011**

Written by Stuart Silverman MD, and reviewed by the American College of Rheumatology Communications and Marketing Committee.

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