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## Bisphosphonates and Jaw Osteonecrosis

[LINDA A. RUSSELL, M.D.](#)

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### Article Outline

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*DR. RUSSELL is an attending physician of rheumatology at the Hospital for Special Surgery in New York. She also is assistant professor of medicine at Weill Cornell Medical College.*

Over the past decade, bisphosphonates have revolutionized the treatment of osteoporosis. The synthetic pyrophosphate analogues reduce bone loss, increase bone mineral density, and reduce the risk of fracture of the spine and hip in many patients. Additionally, bisphosphonates are commonly used to suppress abnormal bone mineral density loss in a range of other nonmalignant and malignant bone conditions.

With the exception of gastrointestinal complications in some patients, bisphosphonates have been thought to be generally well tolerated by patients. Recent reports, however, have linked these drugs to osteonecrosis of the jaw.

According to the findings of a recent meta-analysis, this outcome has been seen mainly in patients receiving high-dose intravenous bisphosphonate therapy for the treatment of bone malignancies; however, a small percentage of reported cases has occurred in patients receiving oral bisphosphonates for osteoporosis and Paget's disease (*Ann. Intern. Med.* 2006;144:753-61).

Although the risk of jaw osteonecrosis appears to be relatively low among patients receiving oral bisphosphonates, the possibility of this outcome should be discussed with osteoporosis patients, according to rheumatologist Dr. Linda A. Russell. In this month's column, she discusses the link between jaw osteonecrosis and bisphosphonates, including information on prevention and treatment.

**Rheumatology News:** What is the presumed mechanism by which bisphosphonates make the jaw vulnerable to osteonecrosis?

**Dr. Russell:** Bisphosphonates are toxic to osteoclasts and work by preventing the resorption of old bone. The reduction in bone turnover may be more critical in the jaw. A vulnerable patient may have a low-grade infection in his or her mouth, often as a result of dental extraction or other dental surgery. Because the bisphosphonate impedes bone turnover, healing in these patients is slowed, potentially leading to osteonecrosis.

**RN:** What are some of the factors that increase an individual's risk of developing jaw osteonecrosis?

**Dr. Russell:** Patients who have cancer usually receive significantly higher dosages of bisphosphonates than do patients taking the drugs for osteoporosis, and most investigators feel the increased risk of jaw osteonecrosis is due primarily to the increased dose. Additionally, patients with metastatic cancer may pay less attention to dental hygiene than would other patients, as a consequence of their priorities, and thus may be more prone to infection. Also, patients with poor oral health are more likely than are those with fastidious dental hygiene to have chronic mouth infections that in turn make them more vulnerable to jaw necrosis.

**RN:** How is the condition diagnosed?

**Dr. Russell:** Dentists or oral surgeons are usually the first to identify osteonecrosis in the jaw. Unfortunately, the condition is newly recognized and not all dentists are comfortable with this diagnosis.

**RN:** What are the clinical signs and symptoms that rheumatologists should be aware of?

**Dr. Russell:** Rheumatologists should be alerted to any patient on a bisphosphonate who complains of jaw or mouth pain, a nonhealing sore in the mouth, or a need for dental work.

**RN:** Can the process of jaw osteonecrosis be stopped once it has started?

**Dr. Russell:** Once osteonecrosis is recognized, the bisphosphonate should be stopped and the treating dentist or oral surgeon can prescribe an antibiotic mouthwash. In a number of cases, the process can be halted. Some patients, however, will have continued pain and poor healing.

**RN:** What should physicians who treat osteoporosis be telling their patients, particularly with respect to prevention?

**Dr. Russell:** Physicians should discuss this potential side effect with their patients who are on bisphosphonates. All patients should see their dentists regularly for cleaning and evaluation. Although this risk factor is not yet definitive, patients with very low bone turnover may be at increased risk for developing jaw osteonecrosis. For this reason, the urine NTX (*N*-telopeptide) should be monitored regularly to be sure its level stays above 10 nM BCE/mM creatinine.

*By Diana Mahoney, New England Bureau*