

Guidelines for bisphosphonate-associated osteonecrosis of the jaw

Khan AA, Sándor GK, Dore E, et al.

Canadian consensus practice guidelines for bisphosphonate associated osteonecrosis of the jaw. J Rheumatol 2008; 35:1391–1397

Scope and purpose This guideline aimed to provide recommendations for the diagnosis of bisphosphonate-associated osteonecrosis of the jaw in both the oncology and osteoporosis patient populations, for dental and medical practitioners including dentists, oral surgeons, oral pathologists, general practitioners and internal medicine specialists. The recommendations are intended to address both prevention and treatment strategies.

Methods A consensus-based guideline was developed by a multidisciplinary task force including representatives from national and international societies representing the disciplines of oral surgery, dentistry, oral pathology, oral medicine, endocrinology, rheumatology and oncology. The task force reviewed data collected for a systematic review and prepared discus-

sion papers. The systematic review included searches of Medline, Embase and a manual search of the bibliographies of published articles. A draft guideline was circulated to all members of the task force as well as external experts, and their feedback incorporated into the final document.

Recommendations The main recommendations are summarised in Table 1. The task force also recommended that a registry be maintained for all identified cases.

Commentary

Bisphosphonates are mainly used for the treatment of osteoporosis, but they are also used in the treatment of cancer. Cancer patients often take them in higher doses than are used for noncancer treatments, and often do so intravenously. Bisphosphonate-associated osteonecrosis is a rare clinical entity that is poorly understood: estimates of its incidence in patients on oral bisphosphonate therapy range between 1:10 000 and 1:100 000, rising to 1:10–1:100 in cancer patients taking high-dose intravenous bisphosphonates.¹ The number of cases is increasing, however: this may be caused by improving recognition of the condition, the use of more potent bisphosphonates, or the increased use of this group of drugs. Osteonecrosis of the jaw (ONJ) is diagnosed clinically as the presence of exposed bone in the maxillofacial region for more than 8 weeks in the absence of radiotherapy to the jaw.²

As well as more cases, the number of publications related to ONJ has also gone up. A simple search of Medline (search terms: bisphosphonates and osteonecrosis) identifies over 750 papers with about 140 reviews. As found in the review upon which the guideline is based, the amount of high-quality information on this topic is currently limited, however.

The recommendations from the Canadian task group are in line with those from other groups.^{3,4} Reading other guidance documents reveals two main areas of disagreement: the use of prophylactic antibiotics prior to minor surgical procedures when people are taking bisphosphonates, and the discontinuation of bisphosphonate treatment (should the patient's clinical situation allow) for the treatment of ONJ.

Table 1. Summary of main recommendations of the Canadian consensus practice guidelines for bisphosphonate-associated ONJ

Patient group	Recommended action by dental practitioner
All patients taking bisphosphonates	Stopping smoking, limiting alcohol intake, and maintaining good oral hygiene should be emphasised
All oncology patients taking bisphosphonates	A thorough dental examination including radiographs should be completed prior to the initiation of intravenous bisphosphonate therapy
	Any invasive dental procedure ideally to be completed prior to initiation of high-dose bisphosphonate therapy
	Nonurgent procedures preferably to be delayed for 3–6 months following interruption of bisphosphonate therapy
Osteoporosis patients taking oral/ intravenous bisphosphonates	Dental examination not required prior to initiating therapy if there is appropriate dental care and good oral hygiene
Individuals with established ONJ	Best managed with supportive care including pain control, treatment of secondary infection, removal of necrotic debris, and mobile sequestrate
	Aggressive debridement is contraindicated.

ONJ, Osteonecrosis of the jaw.

Table 2. Stages of ONJ

Stage	Presentation
Stage 1	Exposed/ necrotic bone in people who are asymptomatic and have no evidence of infection
Stage 2	Exposed/ necrotic bone in people who experience pain and have clinical evidence of infection, such as erythema in the region of the exposed bone, with/ without purulent drainage
Stage 3	Exposed/ necrotic bone in people who have pain, infection and one or more of the following: pathological fracture, extra-oral fistula, or osteolysis extending to the inferior border

ONJ, Osteonecrosis of the jaw.

Address for correspondence: A.A. Khan, Professor of Clinical Medicine, Divisions of Endocrinology and Geriatrics, McMaster University, Hamilton, Ontario, Canada

Regarding prophylactic antibiotics, the American Dental Association (ADA) expert panel³ found no evidence that their use was effective in preventing ONJ and recommended that, "Prophylactic antibiotics after a surgical procedure should be based on the risk of an infection and NOT because the patient is taking a bisphosphonate." The British Dental Association (BDA) factfile on bisphosphonates⁴ takes a similar position.

The interruption of bisphosphonate therapy for 3–6 months is recommended in this Canadian guideline for nonemergency invasive dental treatment, but the half-life of bisphosphonates in the skeleton is high and there is only anecdotal evidence to support this approach. The guideline does highlight that cessation of bisphosphonate therapy for several months does not seem to have a detrimental effect on osteoporosis management.⁵ In view of the lack of robust evidence, the BDA factfile's recommendation, to assess the clinical situation and discuss it with the patient's physician or oncologist before stopping the bisphosphonates, seems the more realistic approach.

The guidance identifies three stages of ONJ (see Table 2) and a range of treatments for each stage. No prospective studies assessing the effectiveness of these treatments were identified, so it is recommended that conservative approaches are the most effective. This remains a relatively rare condition despite the increasing numbers, but is one of which dentists should be aware. These broad consensus guidelines provide useful advice to practitioners. The ADA and BDA recommendations (Table 3 and see www.bda.org) provide additional specific advice for dentists.

The available evidence-base for ONJ is limited at present as this is a relatively new clinical entity, with the first cases being reported in 2003.⁶ There are knowledge gaps, therefore, as highlighted in this guideline. These include a lack of understanding of the pathogenesis and true incidence of ONJ, and the prospective data needed to stratify risk factors and develop prevention and management recommendations. These well-developed multidisciplinary guidelines are a useful step to raising awareness of the profession's role in prevention and management of this condition.

Derek Richards

Centre for Evidence-based Dentistry, Oxford, UK

1. Arrain Y, Masud T. Recent recommendations on bisphosphonate associated osteonecrosis of the jaw. *Dental Update* 2008; 35: 238-242
2. Barker K, Rogers S. Bisphosphate associated osteonecrosis of the jaws: a guide for the general practitioner. *Dental Update* 2006; 33:270–275.
3. American Dental Association. Dental Management of Patients Receiving Oral Bisphosphonate Therapy. Expert Panel Recommendations Report of the Council on Scientific Affairs. Chicago: American Dental Association; 2008.
4. British Dental Association. Bisphosphonates. Fact File. London: British Dental Association; 2008.
5. Black DM, Schwartz AV, Ensrud KE, et al. Effects of continuing or stopping alendronate after 5 years of treatment: the Fracture Intervention Trial Long-term Extension (FLEX): a randomized trial. *J Am Med Assoc* 2006; 296:2927–2938.
6. Marx RE. Pamidronate (Aredia) and zoledronate (Zometa) induced avascular necrosis of the jaws: a growing epidemic. *J Oral Maxillofac Surg* 2003; 61:1115–1117.

Evidence-Based Dentistry (2008) **9**, 101-102. doi:10.1038/sj.ebd.6400608

Table 3. British Dental Association factfile summary of current recommendations for patients taking bisphosphonates based on Arrain and Masud¹

Dental procedure	People with osteoporosis or other nonmalignant disease who have taken bisphosphonates >3 years	Patients with malignancy, starting or already receiving bisphosphonates
Dental regime	Regular dental visits, oral health maintenance	Regular dental visits, oral health maintenance: 6–12-monthly dental exams or as clinical/ dental status demands
Dental exam pre-bisphosphonate therapy	No. Risk of ONJ is low so no additional dental examination is needed nor change to routine dental care. However where there has been a lack of previous, routine, dental care, a dental checkup should be undertaken, with any dental treatment, especially acute treatment, being addressed before patients begin a bisphosphonates prescription	Yes. Before starting intravenous bisphosphonates for bone metastasis. Invasive dental procedures, if needed, should be carried out and healing completed before starting bisphosphonates if the patient's clinical treatment allows. Liaise with physicians/ oncologists. If not possible, need careful followup of surgical sites.
Extractions	Extractions are not contra-indicated as risk of ONJ low. Root treatment is preferable. If coronally unrestorable amputate to root level after root treatment and seal. If tooth extracted, best to carry out atraumatic extractions and careful socket followup: refer if chronic exposed bone	Avoid extractions wherever possible as increased risk of ONJ. Root treatment preferable and if coronally unrestorable can amputate to root level after root treatment and seal. For periodontally affected teeth, only extract if excessive mobility and aspiration risk. Symptomatic teeth in an area of bone that is already exposed and necrotic can be extracted as established necrotic process will not be exacerbated by this. If unsavable, eg, vertical root fracture and extraction needed, very careful followup of surgical site is important
Periodontal disease	Periodontal surgery is appropriate if it reduces or eliminates bone disease. Can carry out modest bone contouring	Periodontal surgery is not recommended. Nonsurgical periodontal treatment only
Dentures	Need good-fitting dentures	Good-fitting dentures possibly with soft lining to prevent trauma
Endodontics	Avoid apical surgery. Conventional orthograde endodontics recommended rather than extraction where possible. Good coronal seal maintenance important	Avoid apical surgery. Conventional orthograde endodontics recommended rather than extraction where possible. Good coronal seal maintenance important
Implants	Currently not contra-indicated if taking bisphosphonates but prudent to gain informed consent which should be documented (risk assessment)	Not recommended and avoid elective surgery such as tori removal

ONJ, Osteonecrosis of the jaw.