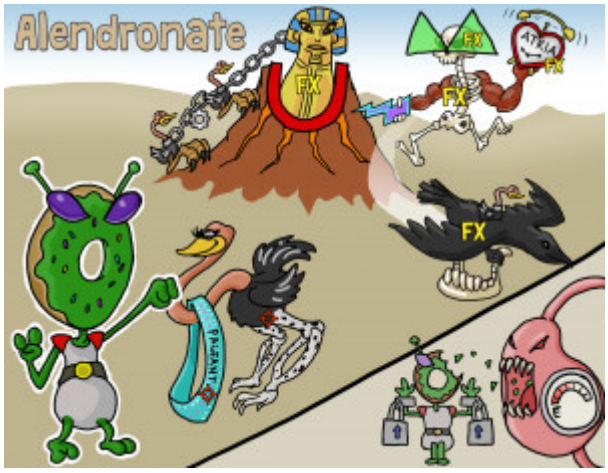
Alendronate (Fosamax)

Alendronate (Fosamax) is a bisphosphonate that suppresses bone resorption, and inhibits bone breakdown in individuals with Paget's disease, or those experiencing post-menopausal or corticosteroid-induced osteoporosis. Side effects may include esophageal ulcers, musculoskeletal pain, and changes in vision, such as blurry vision. Atrial fibrillation, and osteonecrosis of the jaw may occur with intravenous administration of zolendronate. Alendronate should be taken on an empty stomach, and the patient must remain upright for 30 minutes after taking the medication to prevent inflammation or irritation of the throat.



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Mechanism

Inhibits Osteoclasts
Inhibiting-chains on Ostrich-claws
Osteoclasts are responsible for bone breakdown. Alendronate, a bisphosphonate, works by becoming incorporated into the bone thus inhibiting bone resorption, which decreases the activity of osteoclasts.

Indications

Osteoporosis
Ostrich with Porous-bones
The female hormone, estrogen, helps to regulate bone mass by inhibiting osteoclast activity in the body. During menopause, when levels of estrogen begin to decrease, osteoclast activity increases, making postmenopausal women more likely to develop osteoporosis. Glucocorticoids can lead to increased risk of bone loss. In men, alendronate works to increase bone mineral density, prevent fractures, and reduce loss of height related to osteoporosis.

Paget's Disease
Pageant-sash
This disease is caused by excessive bone breakdown and abnormal remodeling of the bone. Drug therapy with bisphosphonates prevents further bone breakdown. Patients should be given a calcium supplement while taking this medication in order to prevent secondary hyperparathyroidism caused by decreased levels of blood calcium related to the inhibition of bone resorption. Calcitonin may be prescribed for the relief of pain that occurs with Paget’s disease.

Side Effects

Esophageal Ulcers
Esophagus-sarcophagus in Ulcer-volcano
Inflammation, irritation, or ulceration of the throat can occur while taking this medication. Development of esophageal ulcers has been associated with taking alendronate with little to no water, or taking the pill while lying down. To decrease the risk of developing esophageal ulcers, the patient should take this medication with a full glass of water, and remain upright for at least 30 minutes.

Musculoskeletal Pain
Muscle-skeleton with Pain-bolt
Severe and sometimes debilitating musculoskeletal pain can develop days, weeks, or months after starting alendronate. Patients should be instructed to contact their healthcare provider, if they develop new or worsening pain.

Vision Changes
Delta Eyes
Conjunctivitis, scleritis, and blurry vision can develop when taking alendronate. Blurry vision is likely attributed to the release of inflammatory cytokines in the eye. Patients should report any changes in vision or pain in the eye(s).

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Atrial Fibrillation

Atria-heart Alarm-clock

Cardiac arrhythmias, specifically atrial fibrillation, have been associated with intravenous administration of zolendronate (Reclast). Patients taking alendronate or zoledronate should notify their provider if they faint, develop chest pain, or notice an unusual fluttering in their chest.

Osteonecrosis of the Jaw

Ostrich-necrosis-crow with Jaw

This is a condition in which the jaw bone (mandible) is no longer covered by the gums. Though it can occur as the result of other treatments/conditions, Bisphosphonate-Related Osteonecrosis of the Jaw (BRONJ) is associated with intravenous infusion of zoledronate. The exact cause of this condition is unknown, but it has been linked to a decrease in blood vessel formation and a decreased ability of the bone to repair itself.

Considerations

Take on Empty Stomach

Eaten by Empty Stomach

Alendronate has low oral bioavailability and should always be taken on an empty stomach to maximize its therapeutic effect. When taken with food, this medication has nearly no medicinal effect. Patients must wait 30 minutes before eating any food, including orange juice and coffee.

Remain Upright

Locked Upright

The patient must be upright (sitting or standing) for at least 30 minutes following oral administration of the medication to prevent the development of negative side effects, such as esophagitis.

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