

## ***Pamidronate and Zoledronic Acid Infusions: A Guide For Families***

### **What are Pamidronate and Zoledronic Acid?**

Pamidronate and zoledronic acid are medications that belong to a class of drugs known as “bisphosphonates”.

### **Why are these medications prescribed?**

These medications are prescribed for children who have fragile bones and multiple bone fractures. At the level of bone cells, new bone is being formed and older bone is breaking down (bone resorption). In some children, bone breakdown occurs faster than normal leading to fragile bones and multiple bone fractures.

Bone mineral density measured by a DEXA scan provides an estimate of bone fragility. In other words, low bone mineral density may be found in children with increased bone fragility. Two common reasons for children to have fragile bones and multiple bone fractures include osteogenesis imperfecta (OI) and chronic medical conditions that require long-term treatment such as high dose steroids that can cause bone loss.

Bisphosphonate medications move from your child’s bloodstream onto the bone surface and help prevent fractures by decreasing bone breakdown (resorption). These medications increase bone mineral density, improve bone strength, and enhance mobility. Pamidronate and zoledronic acid are bisphosphonates that are commonly prescribed in children with bone fragility.

### **What is the procedure like?**

If your doctor prescribes the medication, it will be administered as an intravenous infusion usually in the infusion center of the hospital. The first time your child gets the infusion, your child may be admitted to the hospital and given half the dose. It is important for your

child to have normal levels of calcium, phosphorus, and vitamin D before starting these medications.

Make sure that your child drinks plenty of fluids the day before as well as the day of infusion.

On the day of the infusion, the nurse will insert an intravenous catheter into one of your child’s veins. A cream may be applied to the skin to numb it before the catheter is placed. Labs will be drawn before the infusion is started and may be repeated after the infusion. Your child can eat and drink normally before, during, and after the infusion.

Pamidronate is given over 4 hours and zoledronic acid is given over less than an hour. Infusions are repeated over an interval of several months, with the duration between infusions being based on your child’s age and bone health.

### **What are the side effects?**

The most common side effects are:

1. Flu-like symptoms: These include fever, chills, headache, muscle or joint aches and nausea. These symptoms may begin during the first 3 days after the infusion but are usually limited and relieved by acetaminophen or ibuprofen. These symptoms are commonly seen with the first infusion. Subsequent infusions are better tolerated and should proceed as planned.
2. Low calcium levels (hypocalcemia): This is more likely to occur if your child has vitamin D deficiency and tends to have low calcium levels. Your doctor will usually check your child’s vitamin D and calcium levels before the infusion and may prescribe vitamin D or calcium supplements as necessary before bringing your child in for the infusion or starting the infusion. Symptoms of hypocalcemia (low calcium) include muscle spasms or twitching, muscle cramping, or tingling of lips and fingers. Your doctor may also recommend taking vitamin D and calcium supplementation after the infusion.
3. Low phosphorus levels: This may occur following infusions, particularly if your child has vitamin D deficiency and/or tends to have low phosphorus levels.

3. Rare side effects: These include allergic reactions like hives, and shortness of breath. Bisphosphonates have rarely been reported to cause damage to the jaw bone and unusual hip fractures in adults, but these side effects are extremely rare in children or adolescents. Talk to your doctor before your child needs to have any dental treatments while on bisphosphonate medication.

#### **How often will my child receive this treatment?**

The duration of treatment will be decided based on the cause of fragile bones and the clinical response. In most patients who have genetic brittle bone or medical conditions that persistently cause bone loss, it is recommended that treatment be continued until growth in stature is complete.

#### **What will be monitored during treatment?**

Apart from calcium and vitamin D, other labs such as bone turnover markers may be checked before the

infusion. A DEXA scan may also be used to monitor bone density. Make sure your child has good dental hygiene and goes to the dentist every 6 months for teeth cleaning and a check-up.

Most research shows that pamidronate and zoledronic acid are safe drugs and are helpful in preventing fractures. However, long-term side effects in children (if any) are still unclear. Your child's medical team will regularly monitor your child's bone health status and review the treatment plan with your child and you.

*Pediatric Endocrine Society*

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