



Understanding Augmentation and RLS

A Guide To Help You Control and Manage Your RLS

As many individuals with restless legs syndrome (RLS) can attest, augmentation is one of the most common but least understood problems encountered in RLS treatment.

This information has been compiled from data gathered by the RLS Foundation. The content of this document is offered for informational purposes only. It is very important to share any augmentation concerns with your healthcare provider.

What is augmentation?

Augmentation is defined as a worsening of RLS symptoms that occur after starting a medication to treat RLS. Particularly with dosage increases, RLS symptoms may occur earlier in the day, spread to body parts other than the legs, be more intense, and begin after a shorter period of rest or inactivity than before treatment. In addition, jerking of the limbs, either while awake or asleep, can intensify. It is as if the medication were having the opposite effect than it did initially.

Do all RLS medications cause augmentation?

Augmentation is typically a side effect of medications that increase dopamine, although possible augmentation has been reported in a few cases due to tramadol (Ultram). The cause of augmentation is unknown at this time, but it is thought that dopamine medication may over stimulate brain or spinal dopamine receptors in some individuals. This results in a need for more of the drug to achieve relief from symptoms. Augmentation appears to occur most frequently with levodopa/carbidopa (Sinemet); studies have shown that between 27 to 82 percent of people taking this medication experience augmentation. Symptoms of augmentation have also been experienced with pramipexole (Mirapex) or ropinirole (Requip).

What are predisposing factors for augmentation?

Higher dosage of dopaminergic medications and low body iron stores (as measured by a ferritin testⁱ) are two factors that have been shown to increase the chance of

augmentation. For RLS a “low normal” ferritin level is not enough. Studies have shown that the serum ferritin level should be above 50 mcg/L for the best results – a “mid-normal” level.

How quickly does augmentation develop?

Augmentation most often occurs within six months after beginning a course of dopaminergic treatment or after an increase in dosage. It can occur as early as the first week of therapy.

How do healthcare providers know whether you have augmentation or purely a worsening of RLS symptoms?

Your healthcare provider should conduct a careful medical history and physical exam to rule out other possible causes for your symptoms. The diagnosis of augmentation requires that you demonstrated at least some positive response to the prescribed dopaminergic medication, that other possible causes for a worsening of symptoms have been ruled out, and that there has been a consistent change in your symptoms. RLS symptoms can vary in severity from day to day as well as over time, so just a couple of days of worsening symptoms are not sufficient to diagnose augmentation.

What other conditions are confused with augmentation?

Other factors that can temporarily worsen RLS symptoms must be ruled out by you and your healthcare provider before the diagnosis of augmentation is confirmed. Before verifying your RLS symptoms are worsening due to augmentation, the following should be ruled out:

- Using medications that worsen RLS symptoms such as sedating antihistamines or antinausea medications. Examples include many cold remedies and sleep aides such as Tylenol PMⁱⁱ.
- Caffeine and alcohol should be reduced or discontinued, as they can be RLS symptom triggers.
- Lack of exercise and inadequate hours of sleep are aggravating factors that can be addressed.
- Serum iron levels (ferritin) should be tested and, if

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monitored by a healthcare provider, should also be treated if levels are low.

- Confirmation your increased symptoms are not the natural worsening of RLS, which tends to occur slowly with advancing age.

Other medication reactions can be confused with augmentation.

When an individual experiences worsening RLS symptoms, two other less common problems can be confused with augmentation. These reactions are **rebound** and **tolerance**.

Rebound is the flare-up of RLS symptoms as a medication dose is wearing off, worse than expected if no medication had been given. “End-of-dose rebound” typically occurs in the early morning. This is in contrast to augmentation where symptoms are worse than before treatment began AND occur earlier in the evening or in the late afternoon. Rebound in RLS appears to occur most often with the use of shorter acting medications such as the short-acting form of levodopa/carbidopa (Sinemet), rather than longer-acting dopamine agonists such pramipexole (Mirapex) or ropinirole (Requip). Rebound usually is mild and usually does not require a change in treatment.

Tolerance is defined as a decreased response to a drug over time. An increased need for a prescribed dopaminergic medication can be the result of drug tolerance, but the natural progression of RLS with age must be ruled out as a cause for the increased need. Tolerance can be distinguished from augmentation in the following ways:

- RLS symptoms are not worse than pre-treatment levels (which is always true in augmentation).
- RLS symptoms do not progress to other body parts.

- An increase in medication dosage will **decrease** symptoms when the problem is tolerance but will make symptoms **worse** with augmentation, especially at other times of the day.

What to do if augmentation develops.

If you suspect augmentation, do NOT discontinue the use of your dopaminergic medication on your own. Visit your healthcare provider and share your concerns about your worsening RLS symptoms. There is no specific test for augmentation, so your physician will need to take a careful history of the progress of your RLS symptoms as well as a list of all of your medications including over-the-counter therapies. After ruling out other possible causes of a worsening of your symptoms, your healthcare provider will then need to confirm augmentation is the most likely cause. If your symptoms are significant and your quality of life is diminished, your doctor may suggest you reduce the dose or stop taking the problematic dopaminergic medication. This will resolve the augmentation but may take some time. Nonpharmacologic treatments should be maximized, such as good sleep habits and moderate exercise. Your doctor can prescribe other, non-dopaminergic medication for RLS if your symptoms become severe during this withdrawal period. Once the augmentation has resolved, you can also try a different dopaminergic medication, but there is controversy whether developing augmentation with one dopaminergic increases the chance of it with another.

ⁱ Ferritin is a protein found inside cells that stores iron so your body can use it later. A ferritin test indirectly measures the amount of iron in your blood. The amount of ferritin in your blood (serum ferritin level) is directly related to the amount of iron stored in your body.

ⁱⁱ A more complete list of RLS triggers is available on www.rls.org or by contacting the RLS Foundation.



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The Restless Legs Syndrome Foundation is dedicated to improving the lives of the men, women, and children who live with this often devastating disease. The organization's goals are to increase awareness of restless legs syndrome (RLS), to improve treatments, and, through research, to find a cure.