

# Multifocal Motor Neuropathy (MMN)



## What is multifocal motor neuropathy?

Multifocal motor neuropathy, or MMN, is a rare, treatable immune-mediated disorder, which causes muscle weakness that worsens over time.<sup>2</sup> MMN commonly begins in the finger, thumb, wrist or lower leg.<sup>3</sup> It affects the strength in the lower parts of the arms and hands more than the legs, usually without affecting the touch sensation.<sup>2</sup>

It is thought that with MMN, the immune system abnormalities affect a protective layer around nerve cells that control muscle function. The protective layer (myelin sheath) normally allows messages to be sent properly and quickly along the nervous system. When the protective layer breaks down, nerve damage can occur. When messages are interrupted, muscle weakness can occur.<sup>1,4</sup>

## Why is MMN sometimes misdiagnosed?

MMN is a rare nerve disorder with symptoms that are somewhat similar to those of other conditions.<sup>1,5</sup>

Muscle weakness, spasms, and cramping often associated with MMN also are seen in individuals with amyotrophic lateral sclerosis (ALS). Unlike ALS, people with MMN can be treated.<sup>1,5</sup>

In other people, MMN may be confused with nerve compression conditions, including carpal tunnel syndrome.<sup>6</sup>

Diagnosis of MMN is important so that it can be treated appropriately.

## How is MMN diagnosed?

The diagnosis of MMN often is based on a physical exam, evaluation of symptoms, a

electromyography (EMG) test, nerve conduction study, laboratory tests, MRI, and medical history.<sup>1,6</sup>

Your healthcare provider also may request a blood sample or order other tests to fully understand your health status.<sup>1,6</sup>

## How is it treated?

For adults with MMN, the only FDA-approved treatment is GAMMAGARD LIQUID intravenous immunoglobulin (IVIg) therapy.<sup>1</sup>

IVIg is made from human blood that is donated by healthy people.<sup>2</sup> It may contain infectious agents that can cause disease e.g., viruses, the variant Creutzfeldt-Jakob disease (vCJD), and theoretically, the Creutzfeldt-Jakob disease agent.

GAMMAGARD LIQUID (IVIg) is a maintenance treatment for MMN in adults.<sup>2</sup> In the clinical study, GAMMAGARD LIQUID was shown to improve muscle strength and reduce disability in patients.<sup>2</sup>

## Selected Important Risk Information

**Stop the infusion immediately and contact your healthcare provider or call emergency services if you have any of the following:**

**Symptoms of thrombosis (blood clots) that may include: pain and/or swelling of an arm or leg with warmth over the affected area, discoloration (redness) or lump in an arm or leg, unexplained shortness of breath, chest pain or discomfort that worsens on deep breathing, unexplained rapid pulse, numbness or weakness on one side of the body.**

### MMN:

- Rare, treatable, but incurable disorder<sup>1</sup>
- Symptoms include muscle weakness, cramps, spasms<sup>1</sup>
- Possibly due to motor nerve system disorder<sup>1</sup>
- Muscle strength has been shown to improve with treatment<sup>2</sup>

**Symptoms of a kidney problem that may include: reduced urination, sudden weight gain or swelling in your legs.**

## Will I regain muscle strength?

Every person with MMN is different, so treatment effect will vary to some degree.<sup>1</sup>

For adults with MMN, treatment with GAMMAGARD LIQUID has been shown to improve muscle strength and reduce disability.<sup>2</sup>

Your healthcare provider will monitor your health, including muscle strength and function, and may recommend changes in the amount or frequency of your treatment.<sup>1,2</sup>

## What will treatment involve?

Treatment schedules for MMN can vary, depending on individual health and treatment response.<sup>1,2</sup>

Some people with MMN may receive IVIg treatment every 2 to 4 weeks.<sup>1,2</sup> Changes in muscle strength and function will be evaluated during medical visits.<sup>1</sup>

It's important to communicate with your healthcare provider about your health and symptoms and about the treatment that is right for you.

**GAMMAGARD LIQUID**

[Immune Globulin Infusion (Human)] 10%

Please see Indication and Detailed Important Risk Information on reverse side and the accompanying full Prescribing Information, including Boxed Warning.

To learn more, go to

[www.gammagard.com/  
MMN/patients-and-families](http://www.gammagard.com/MMN/patients-and-families)

or call **1-855-250-5111**.

**Baxter**

## Indication

GAMMAGARD LIQUID is also used to treat adult patients with Multifocal Motor Neuropathy (MMN), a rare disease that causes muscle weakness that worsens over time.

## Detailed Important Risk Information

**Stop the infusion immediately and contact your healthcare provider or call emergency services if you have any of the following:**

**Symptoms of thrombosis (blood clots) that may include: pain and/or swelling of an arm or leg with warmth over the affected area, discoloration (redness) or lump in an arm or leg, unexplained shortness of breath, chest pain or discomfort that worsens on deep breathing, unexplained rapid pulse, numbness or weakness on one side of the body.**

**Symptoms of a kidney problem that may include: reduced urination, sudden weight gain or swelling in your legs.**

Symptoms of a serious allergic reaction that may include: hives, skin rash, itching, swelling in the mouth or throat, trouble breathing, wheezing, fainting or dizziness.

Other serious symptoms including: bad headache with nausea, vomiting, stiff neck, drowsiness, fever, sensitivity to light, painful eye movements; blurred vision; brown or red urine, fast heart rate, yellow skin or eyes; trouble breathing, blue lips or extremities; fever over 100°F.

**Tell your healthcare provider if you have a history of thrombosis (blood clots), thrombotic events, poor kidney function or kidney failure.**

Do not use GAMMAGARD LIQUID if you have a known history of a severe allergic reaction to immune globulin or other blood products. If you have such a history, discuss this with your healthcare provider to determine if GAMMAGARD LIQUID can be given to you. Tell your healthcare provider if you have a condition called selective (or severe) immunoglobulin A deficiency.

GAMMAGARD LIQUID is made from human blood. It may contain infectious agents that can cause disease e.g., viruses, the variant Creutzfeldt-Jakob disease (vCJD), and theoretically, the Creutzfeldt-Jakob disease agent. Patients should report any symptoms that concern them which might be caused by virus infections.

GAMMAGARD LIQUID can make vaccines (e.g., measles, mumps, rubella, or chicken pox vaccines) not work as well. It may also affect your blood test results. Before you get any vaccines or have your blood tested, tell your healthcare provider that you take GAMMAGARD LIQUID.

The following is a list of common side effects seen in clinical trials of GAMMAGARD LIQUID:

**MMN (IV administration):** Headache, chest discomfort, muscle spasms, muscular weakness, nausea, sore throat, ear pain, and pain in extremity.

Although it is possible to receive IV infusions at home, they are more often given in a hospital or infusion center by a nurse. Whenever giving yourself treatments at home, you should have another responsible person present to help treat side effects or get help should a serious adverse reaction occur. Ask your healthcare provider whether you should have rescue medications, such as antihistamines or epinephrine.

**Please see the accompanying full Prescribing Information, including Boxed Warning.**

You may report side effects to the FDA at 1-800-FDA-1088 or [www.fda.gov/medwatch](http://www.fda.gov/medwatch).

### References:

1. Vlam L, Van der Pol WL, Cats EA, et al. Multifocal motor neuropathy: diagnosis, pathogenesis and treatment strategies. *Nat Rev Neurol*. 2012;8:48-58.
2. GAMMAGARD LIQUID [Immune Globulin Infusion (Human)] 10% [package insert]. Westlake Village, CA: Baxter Healthcare Corp.
3. Slee M, Selvan A, Donaghy M. Multifocal motor neuropathy: the diagnostic spectrum and response to treatment. *Neurology*. 2007;69(17):1680-1687.
4. Piepers S, Jansen MD, Cats EA, van Sorge NM, van den Berg LH, van der Pol WL. IVIg inhibits classical pathway activity and anti-GM1 IgM-mediated complement deposition in MMN. *J Neuroimmunol*. 2010;229(1-2):256-262.
5. Kaji R. Pathophysiology of multifocal motor neuropathy. *Schweiz Arch Neural Psychiatr*. 2007;158:69-77.
6. Meuth SG, Kleinschnitz C. Multifocal motor neuropathy: update on clinical characteristics, pathophysiological concepts and therapeutic options. *Eur Neurol*. 2010;63:193-204.