

# February 2020 Newsletter



## How is MS Treated in Children?

MS in children and teenagers is uncommon and can be difficult to diagnose for several reasons. Because the disease is relatively rare, doctors may not be looking for it. Other conditions, such as Lyme Disease or migraines can have similar symptoms and are often hard to differentiate.

Diagnostic tests for MS in children often don't show the changes typically seen in adults with the disease. In addition, there may not be much evidence of MS if the evaluation is done when a child is in remission.



In order to determine a diagnosis of MS, a child must experience at least two separate and distinct MS flares (just like an adult). These attacks must occur at least one month apart and be in different parts of the central nervous system. A doctor uses information from a child's history (including the type and frequency of symptoms), neurological exam, and the same diagnostic tests as in adults. An MRI is used to see if there are lesions or inflammation in any parts of the central nervous system. A doctor may perform a spinal tap, in which a sample of the fluid around the brain and spinal cord is taken and evaluated for signs of MS. A pediatric MS evaluation may also include evoked potentials. This test

measures how fast signals are transmitted across nerves (demyelinated nerves are typically slower).



More than a dozen [disease modifying therapies](#) (DMTs) are approved by the U.S. Food and Drug Administration (FDA) to treat adults with relapsing remitting MS (RRMS). In May 2018, the FDA [approved](#) the use of an oral medication, [Gilenya](#) (fingolimod), for the treatment of children and adolescents 10 years of age or older with RRMS. Even though the remaining DMTs are not FDA approved to treat pediatric MS, they are still used in children, but at lower doses. Researchers are evaluating their effectiveness, tolerability and safety in this population.

Other oral therapies for MS, including [Tecfidera](#) (dimethyl fumarate) and [Aubagio](#) (teriflunomide), are being studied in clinical trials as potential treatments for pediatric MS. The [FOCUS study](#) looked at dimethyl fumarate treatment in subjects with RRMS age 10 to 17. Subjects taking this medication had less disease activity on MRI. Data suggest the side effects and safety profile are the same in children and adults. There were no serious adverse events associated with dimethyl fumarate. The [TERIKIDS study](#) is underway to evaluate the safety and efficacy of teriflunomide in this same demographic.

[Canadian researchers](#) evaluated [Betaseron](#) treatment (interferon beta-1b) in a cohort of 43 children and adolescents with MS. Data suggest Betaseron is safe and well tolerated, however further study is necessary to determine its long-term effects in organ systems that have not reached maturity. [Investigators](#) at UCSF looked at the tolerability of [Avonex](#) (interferon beta-1a), in children with RRMS. Data from 9 children were collected via a standardized questionnaire, completed by their treating neurologist. While none of the subjects stopped Avonex because of adverse effects (suggesting it was tolerable), the number of subjects in the study was very small and data were collected retrospectively by chart review (which may not be the most accurate account of what each subject experienced). [Austrian researchers](#) followed 7 pediatric MS subjects treated with [Copaxone](#) (glatiramer acetate) for 24 months and found this treatment to also be safe and well tolerated. However, as above, larger studies are necessary to confirm these results.



A recent [study](#) found [Tysabri](#) (natalizumab) to be safe, well tolerated and effective in children with MS where first-line therapies have failed. There was a significant reduction in EDSS scores (a standardized method of quantifying disability in MS) and the number of relapses during treatment with Tysabri and no evidence of disease activity in over half (58%) of subjects. [Rituxan](#) (rituximab), which is used off-label to treat MS, has been evaluated in one small [pediatric trial](#). While results show it is safe and effective it's important to keep in mind that data was collected from only one subject. However, there is [evidence](#) that Rituxan has been widely used in other pediatric autoimmune disorders and has a favorable safety profile.

[Steroids](#) can reduce inflammation and lessen the length and severity of flares in children. [Plasma exchange](#) can be used to treat a flare if steroids don't work or aren't tolerated. Specific symptoms can be treated with [other medications](#) to improve quality of life. Physical, occupational, and speech therapy can also be helpful for children with MS.



Adherence to MS therapy can pose a problem for children and adolescents. In a [2009 study](#), 17 adolescents with RRMS on DMT were interviewed to explore their experiences with MS and the impact of peer relationships on adherence to treatment. Investigators found discontinuation rates were high (47%) and side effects common (which may at least partially explain why so many stopped). Results suggest peer support plays a significant role in helping teenagers adjust to living with the disease. In addition, data indicate many struggle with having to take injections on a regular basis. A [2014 study](#) found the most common reason for non-adherence among adolescents with MS is forgetting to take their medication.

MS is an unpredictable, chronic and progressive disease no matter how old a person is when it starts. The disease usually progresses more slowly in children and teens, however because the disease starts at a younger age, they typically experience significant disability about 10 years earlier in life than those with adult-onset MS. Children tend to have more frequent flares than adults during the first few years after diagnosis. But they also recover from them and go into remission more quickly than those diagnosed as adults. Pediatric MS can't be cured or prevented, but by treating the symptoms, addressing emotional and

social challenges, and maintaining a healthy lifestyle, young individuals with MS can still have an excellent quality of life.

