## **Pediatric-Onset MS**



- 2–10% of all patients with MS have clinical onset before 18 years of age<sup>1</sup>
- Median age at presentation of pediatric-onset MS: 13.7 years<sup>3</sup>
  - Onset before puberty relatively uncommon<sup>4</sup>
- >95% of cases follow a relapsing-remitting course<sup>2</sup>
- Brain volume loss occurs early, may accelerate over the first 2 years, and is linked to disease activity<sup>5</sup>

## Pediatric-onset compared with adult-onset MS<sup>5</sup>

- Higher relapses rates
- Relapses may be more severe, but recovery more likely to be complete or near-complete
- Higher volume of brain lesions in first few years<sup>6</sup>
- Slower rate of disability accrual, especially in the initial years
  - However, disability is accrued at a younger age

1. Waldman A et al. *Lancet Neurol.* 2014;13:936-948; 2. Krupp LB et al. *Mult Scler.* 2013;19:1261-1267; 3. Hacohen Y et al. *Mult Scler.* 2020;26:1372-1380; 4. Hacohen Y et al. *Mult Scler.* 2021;27:1970-1976; 5. Waldman A et al. *Neurology.* 2016;87(Suppl 2):S74-S81; 6. Ghassemi R et al. *PLoS One.* 2014;9:e85741.

## **Pediatric-Onset MS: Diagnostic Considerations**

Application of latest (2017) McDonald diagnostic criteria:

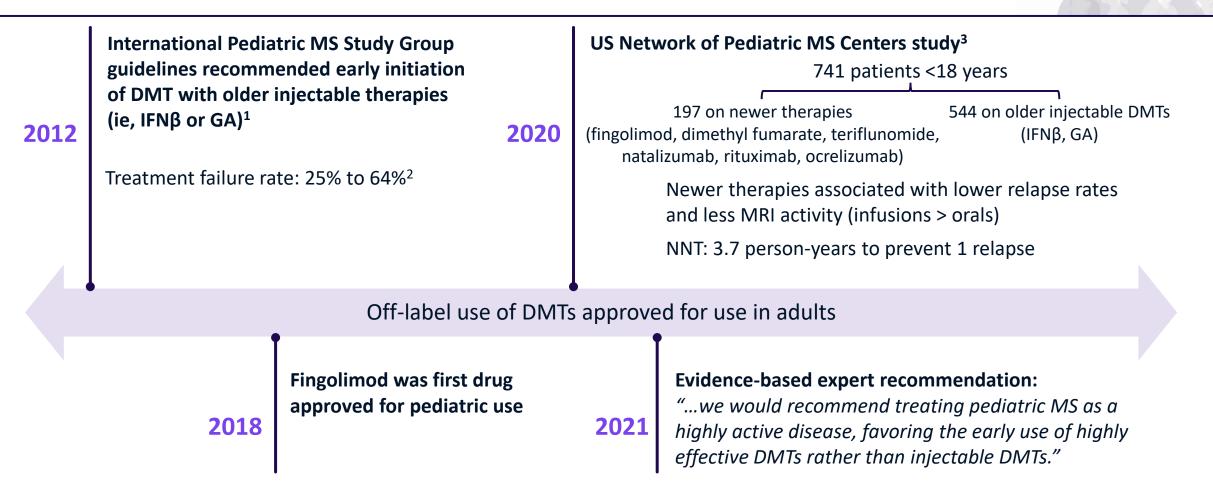
- Large prospective pediatric cohort study showed high reliability when applied at disease onset<sup>1</sup>
- Data from at least 2 cohort studies suggest similar sensitivity and specificity in older (>11 years) and younger (≤11 years) patients, although criteria may be less sensitive in younger patients<sup>1,2</sup>

Other acute demyelinating syndromes to exclude<sup>3</sup>

ADEM <sup>4,5</sup>	NMOSD <sup>3</sup>	MOG antibody-associated disease <sup>5</sup>
<ul> <li>Typically, monophasic but can multiphasic</li> <li>Associated with anti-myelin oligodendrocyte glycoprotein (MOG) antibodies</li> </ul>	<ul> <li>Typically associated with antibodies against aquaporin-4 (AQP4)</li> </ul>	<ul> <li>Present in 30% of children with acquired demyelinating syndromes</li> <li>More frequent in children with ADEM or younger than 11 years</li> <li>Rarely present in children meeting MS diagnostic criteria</li> </ul>

ADEM, acute disseminated encephalomyelitis; NMOSD, neuromyelitis optica spectrum disorder; MOG, myelin oligodendrocyte glycoprotein. 1. Fadda G et al. *Lancet Child Adolesc Health*. 2018;2:191-204; 2. Hacohen Y et al. *Mult Scler*. 2020;26:1372-1380; 3. Hacohen Y et al. *Neurology*. 2017;89:269-278; 4. Pohl D et al. *Neurology*. 2016;87(suppl 2):S38-S45; 5. Waters P et al. *JAMA Neurol*. 2020;77:82-93.

## **Pediatric MS: Treatment Trends and Considerations**



IFN, interferon; GA, glatiramer acetate; NNT, number needed to treat.

1. Krupp LB et al. Mult Scler. 2013;19:1261-1267; 2. Ghezzi A et al. Neurology. 2016;87: S97-S102;

3. Krysko KM et al. Ann Neurol. 2020;88:42-55; 4. Hacohen Y et al. Mult Scler. 2021;27:1970-1976.