



MASSACHUSETTS
GENERAL HOSPITAL

NEUROLOGY



HARVARD
MEDICAL SCHOOL

MOG-AD Breakout Session

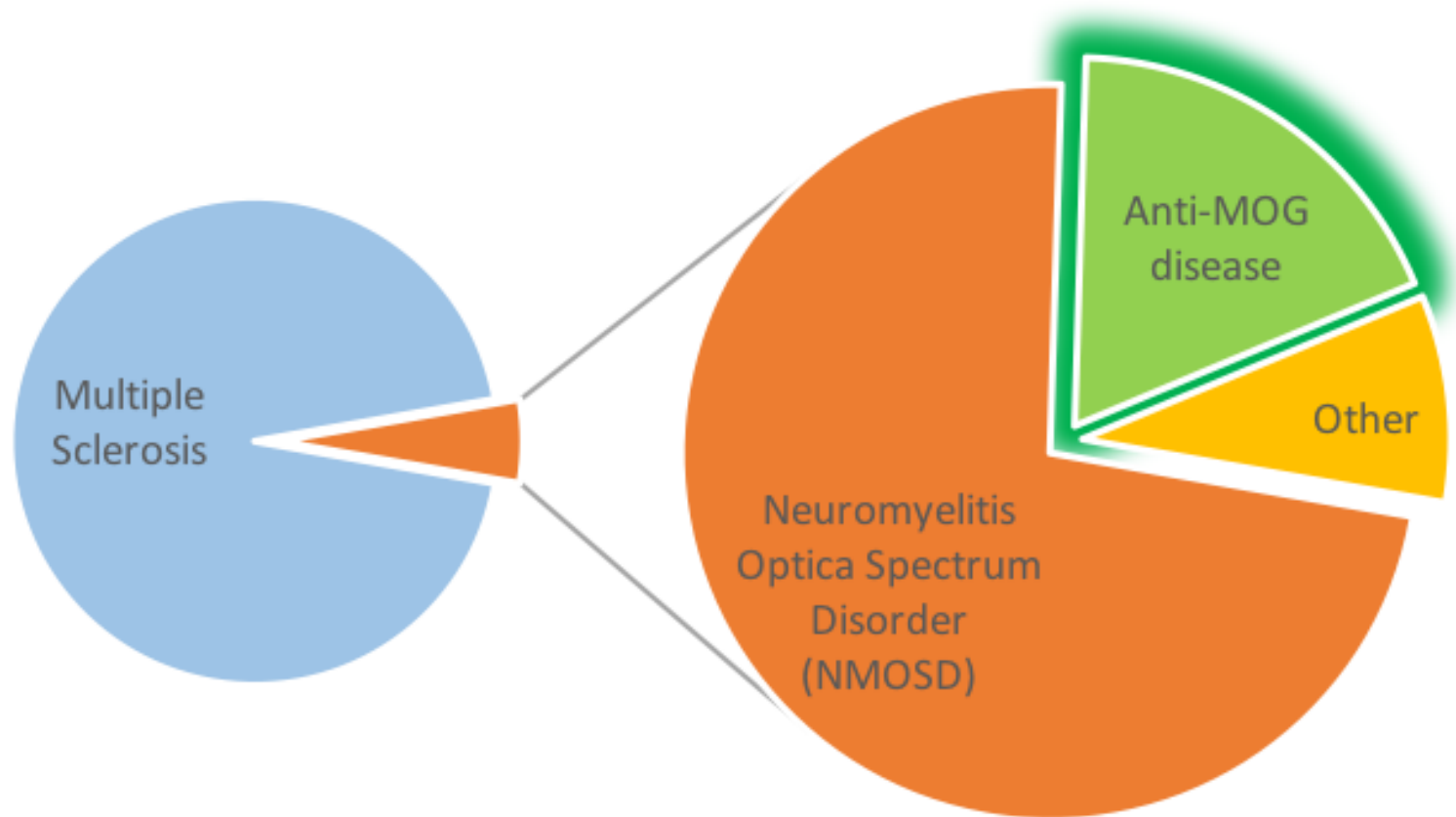
Michael Levy, MD, PhD

Associate Professor, Harvard Medical School

**Research Director, Division of Neuroimmunology,
Massachusetts General Hospital**

MAT-GLB-2103835 v1.0 Approval date 09/2021

What is MOG Antibody disease?



What's in a Name?

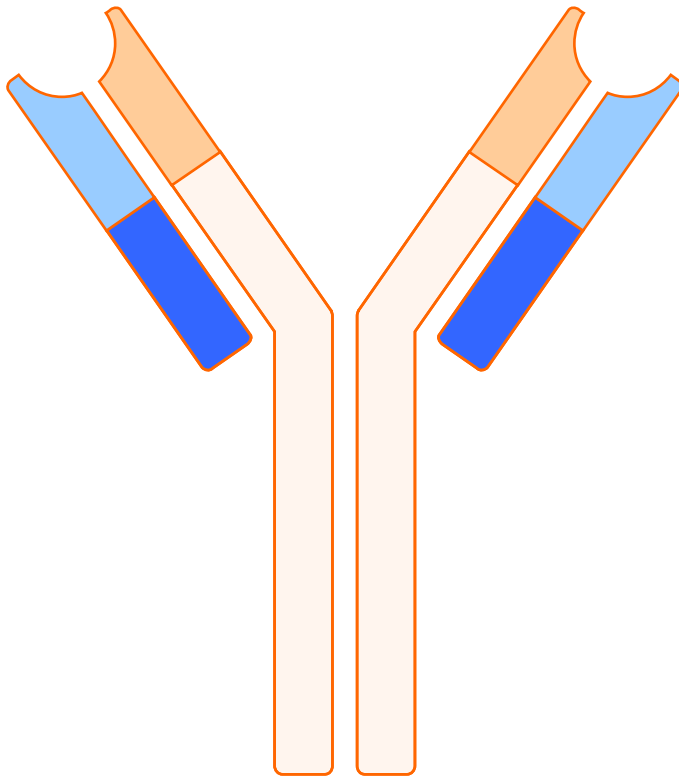


Eugene Devic (1858-1930)

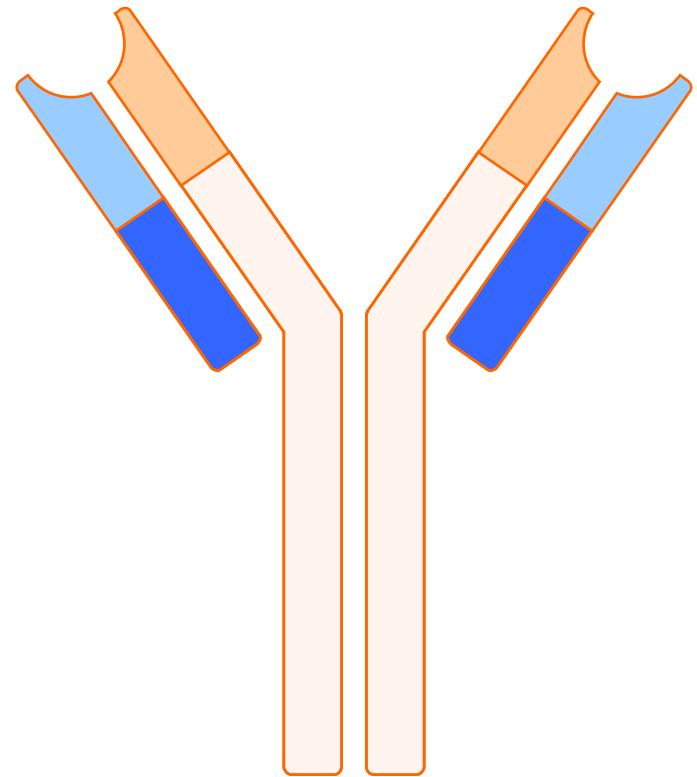


The common laboratory mouse

Two Different Antibodies

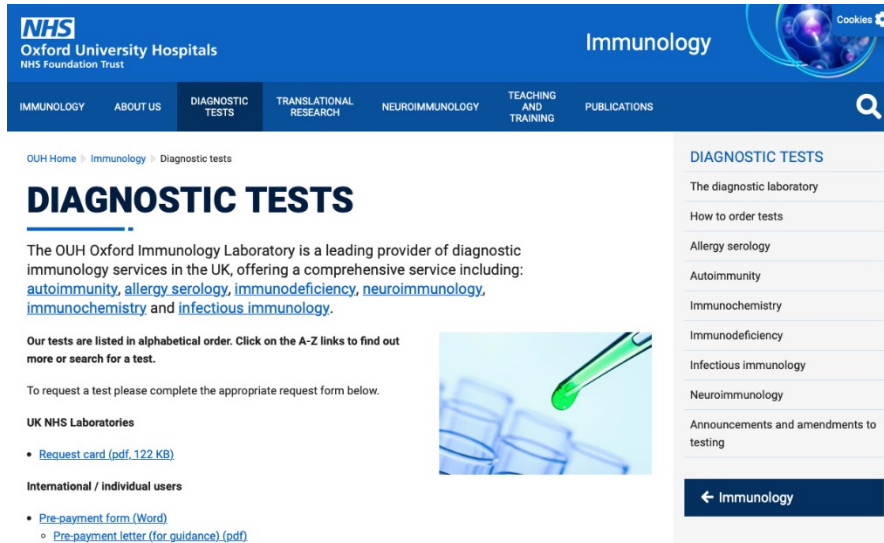


Aquaporin-4 IgG



MOG IgG

AQP4/MOG Blood Tests

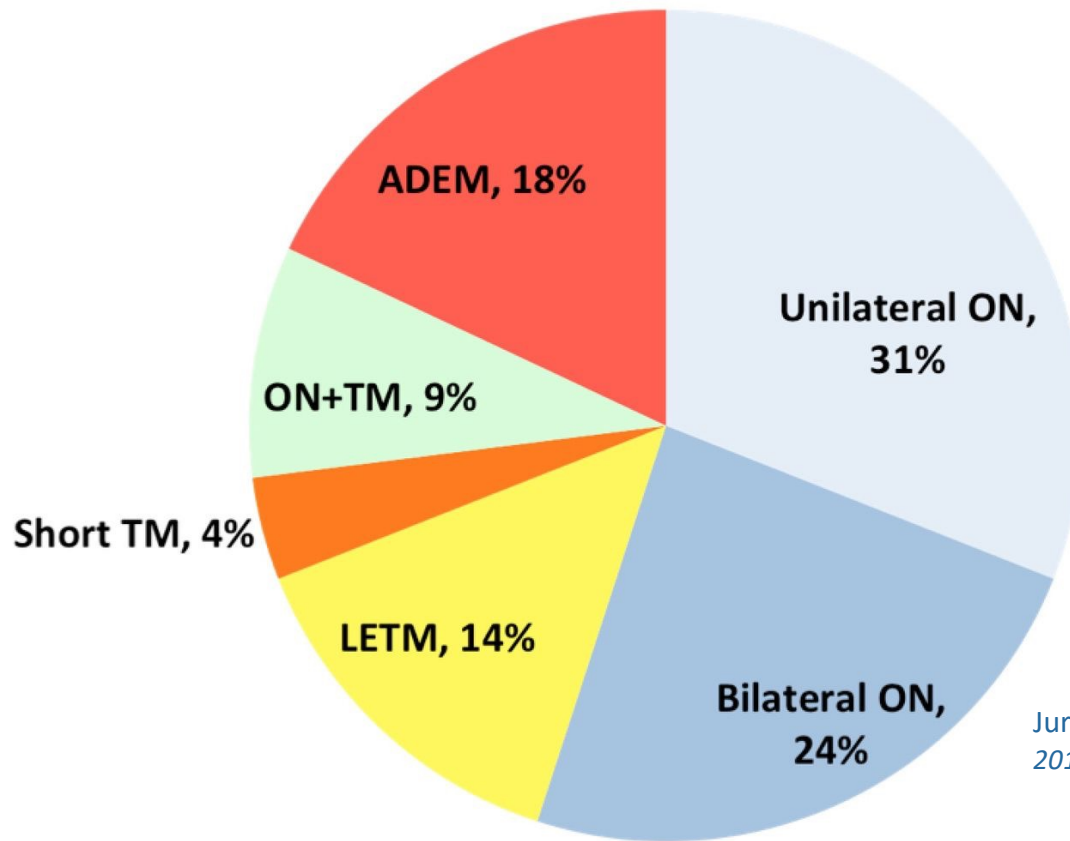


The screenshot shows the NHS Oxford University Hospitals Immunology Diagnostic Tests page. The header includes the NHS logo, Oxford University Hospitals, and NHS Foundation Trust. The main navigation bar lists Immunology, About Us, Diagnostic Tests, Translational Research, Neuroimmunology, Teaching and Training, and Publications. The page title is "DIAGNOSTIC TESTS". The main content area states: "The OUH Oxford Immunology Laboratory is a leading provider of diagnostic immunology services in the UK, offering a comprehensive service including: [autoimmunity](#), [allergy serology](#), [immunodeficiency](#), [neuroimmunology](#), [immunochemistry](#) and [infectious immunology](#)." It also mentions that tests are listed in alphabetical order and provides a link to the request card. A sidebar on the right lists "DIAGNOSTIC TESTS" with links to "The diagnostic laboratory", "How to order tests", "Allergy serology", "Autoimmunity", "Immunochemistry", "Immunodeficiency", "Infectious immunology", "Neuroimmunology", and "Announcements and amendments to testing". A blue button at the bottom of the sidebar says "← Immunology".



MOG presentation

MOG-antibody disease at onset



Juryńczyk M. *Practical Neurology*
2019 Jun;19(3):187-195

MOG criteria



Demographics

- Bi-modal age:
 - Children with ADEM
 - Adults with optic neuritis
- Race:
 - Predominantly Caucasian
- Sex:
 - Male = Female

Hor et al., *Front Neurol.* 2020; 11: 501.

Classic MOG antibody MRI

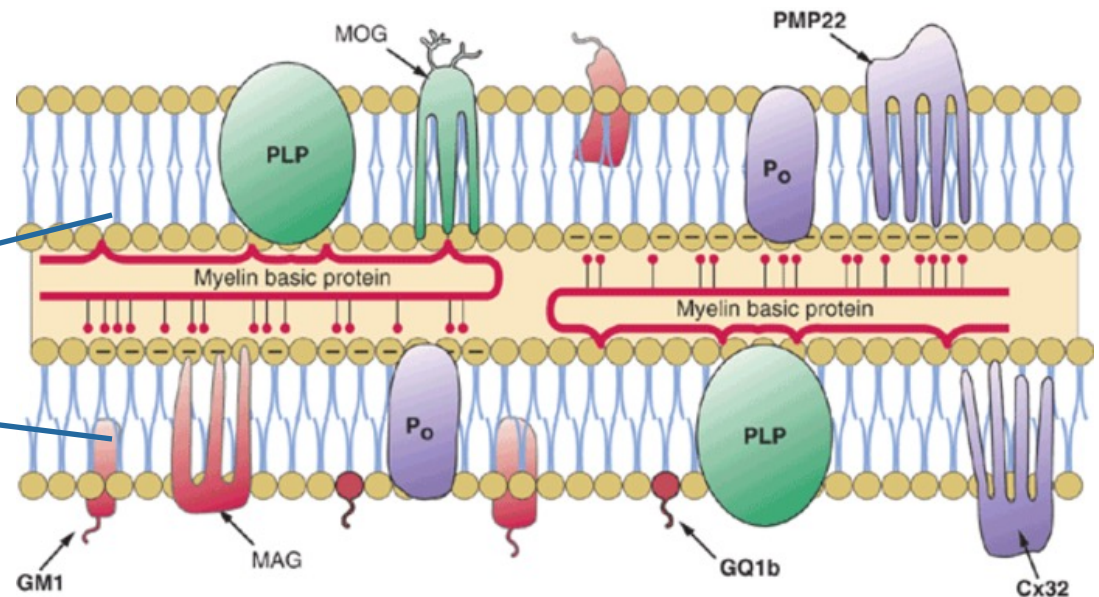


Clinical: AQP4 vs. MOG

	MOG +	AQP4 +
Age	30s	40s
Gender	F>M	F>>>M
Other autoimmune conditions	+	+++
Severity of Attacks	+++	+++
Visual outcomes	Much better	Usually poor
Brain MRI	More ADEM like	Not ADEM like

Narayan R et al. *Mult Scler Relat Disord*. 2018 Oct;25:66-72

We know the target: MOG on CNS myelin



Hauser SL et al. *Harrison's Neurology in Clinical Medicine, 3rd Edition*
CHAPTER 25. MECHANISMS OF NEUROLOGIC DISEASES. Fig 25-1.

Treatment: Acute vs. Preventive



Acute



Preventive

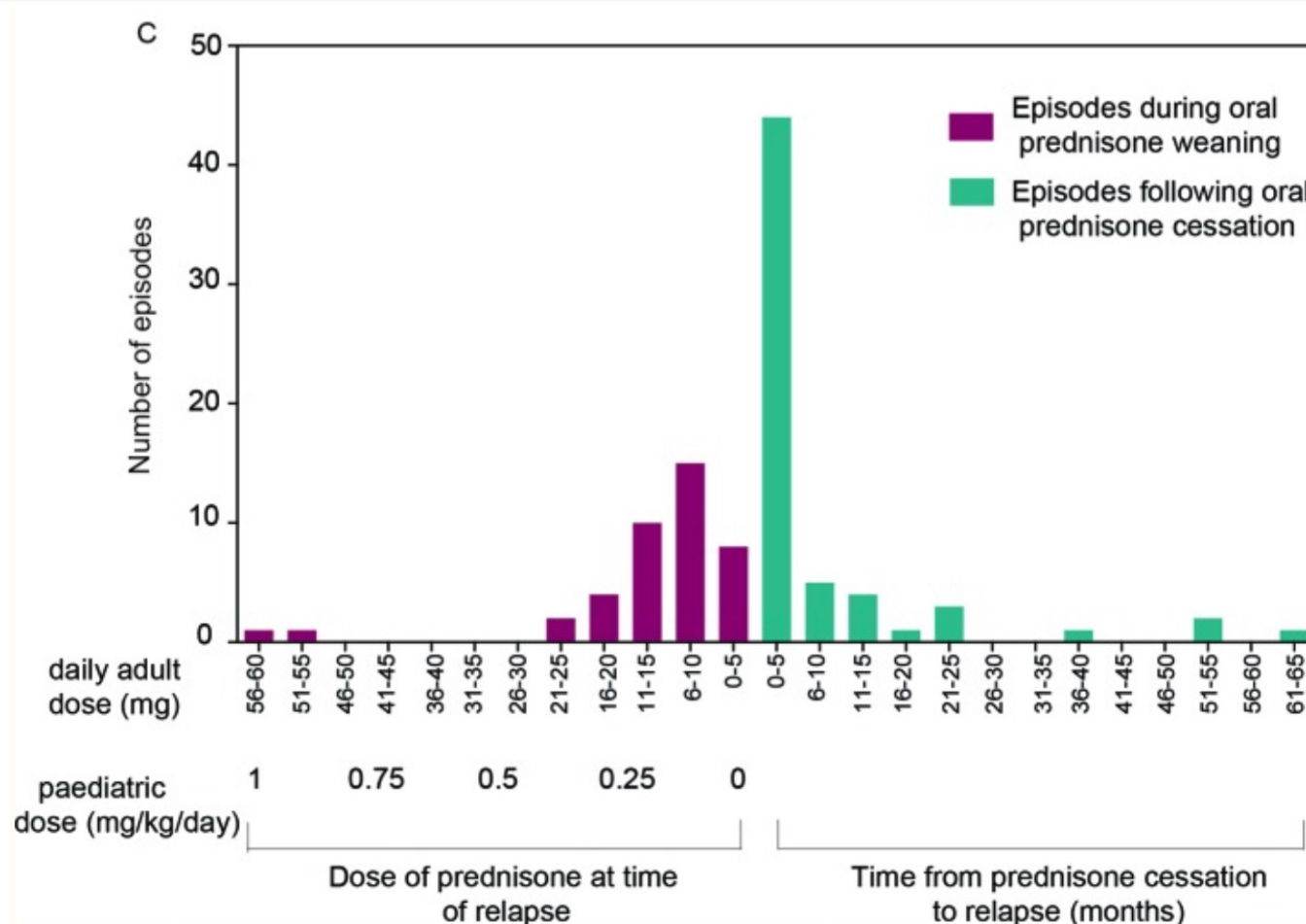
Acute: Standard of Care

- Methylprednisolone IV 1000 mg daily (or 30 mg/kg in children) x5 days + prolonged oral taper
- No improvement: PLEX 1-1.5 volumes x5 cycles – or,
- Intravenous immunoglobulin (IVIg) at 2 g/kg (divided over 1-5 days)

Preventive Therapies: Preliminary

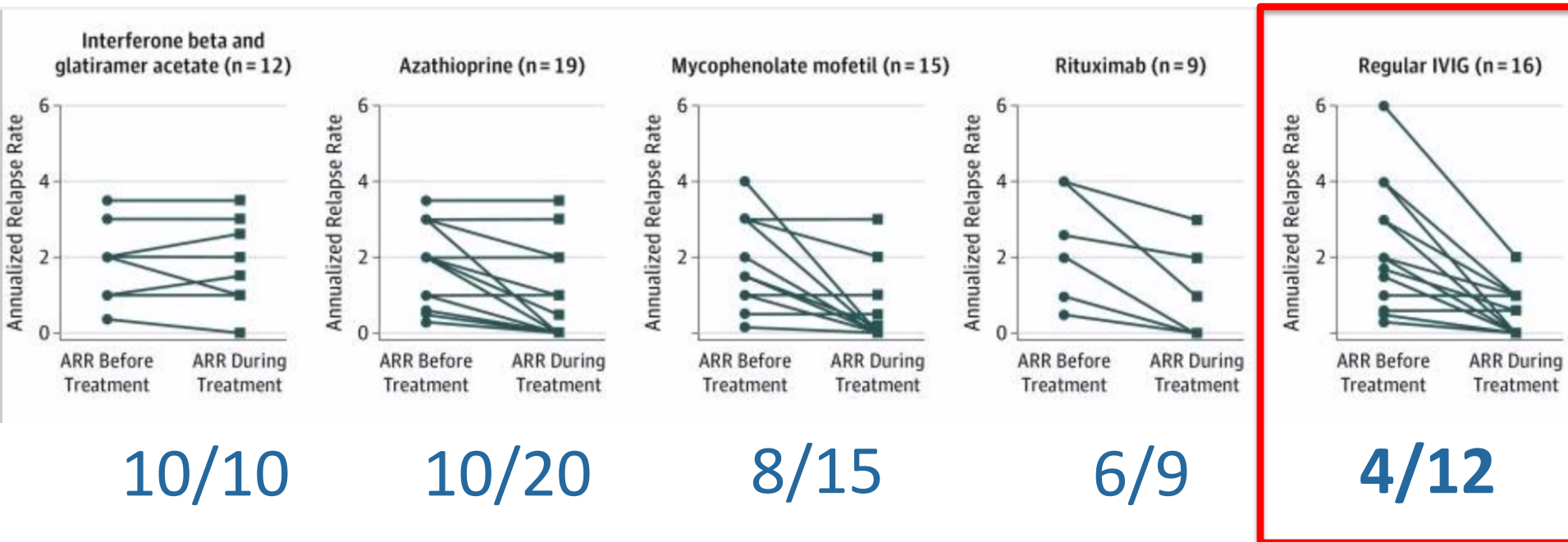
1. Steroids
2. IVIG/SCIG
3. Mycophenolate mofetil/azathioprine
4. Tocilizumab
5. New ideas

Steroids



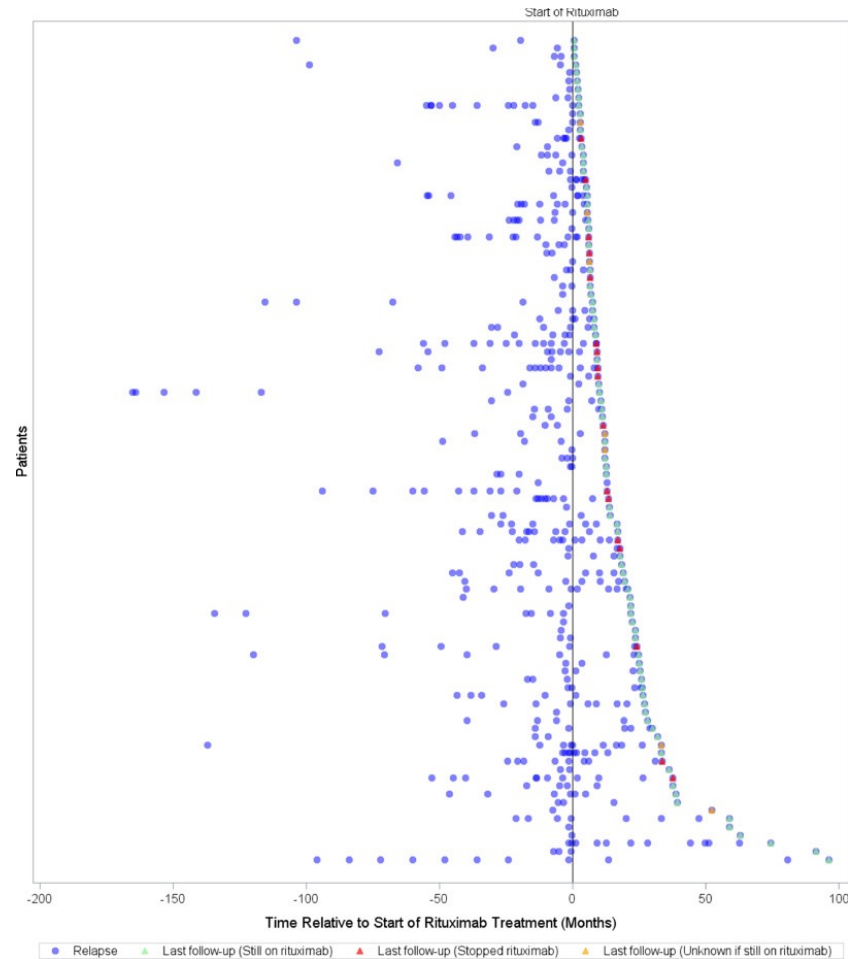
Ramanathan S. *JNNP*. 2018 Feb;89(2):127.

MOG Preventive Treatment: Non-Responders



Hacohen Y, et al. *JAMA Neurol.* 2018 Apr 1;75(4):478-487.

Rituximab



Whittham D. et al. *MSARD*.
Vol. 44, Sep 2020.