

DMT Readiness and Vaccine-Related Concerns



What is the patient's concern

- 1 Safety of vaccines in combination with DMT
- 2 Effectiveness of vaccines in combination with DMT
- 3 General vaccine hesitancy, regardless of DMT

Recent study showed vaccine hesitancy in 10–20% of patients with MS

MS DMTs and Vaccine Safety



Data suggest most vaccines, including COVID-19 vaccines, are safe in people with MS receiving DMT¹⁻⁴

In general, the risks of vaccine-preventable infection outweigh any potential risks from vaccines¹⁻⁵



Vaccine-related risks

Live-attenuated vaccines generally not recommended during DMT¹⁻³

- Possible increase in risk because they cause active infections⁵
- Studies are scarce

Vaccine-related fever may worsen symptoms temporarily⁴

Risks of vaccine-preventable infection

Some people with MS have higher morbidity from vaccine-preventable infections⁶

- People on certain DMTs and/or with severe disability

MS relapses with superimposed infection may cause more severe and sustained disability than spontaneous relapses^{2,3,6}

1. Farez MF et al. *Neurology*. 2019;93:584-594; 2. Reyes S et al. *Pract Neurol*. 2020;20:435-445; 3. Riva A et al. *Mult Scler*. 2021;27:347-359;

4. National MS Society. <https://www.nationalmssociety.org/coronavirus-covid-19-information/covid-19-vaccine-guidance#section-3>. Accessed August 26, 2022;

5. Zrzavy T et al. *Front Immunol*. 2019;10:1883; 6. Yap SM et al. *Mult Scler Relat Disord*. 2021;56:103236.

MS DMTs and Vaccine Efficacy



- Mechanistically, DMTs that impact the adaptive immune system may decrease vaccine efficacy by impairing development of long-term memory B/T cells¹
- COVID-19 pandemic has spurred research allowing for improved understanding of the effects of DMTs on vaccine response

- **Humoral (ie, antibody) immune response**
 - Greatest reductions seen with B-cell depleting therapies and sphingosine 1-phosphate (S1P) receptor modulators^{3,4}
- **Cellular (ie, T-cell) responses**
 - Relatively preserved with anti-CD20 therapy³
 - Decreased with S1P receptor modulators⁴

Attenuated responses and/or intact cellular responses may still be protective

1. Ciotti J et al. *Mult Scler Relat Disord*. 2020;45:102439; 2. Zrzavy T et al. *Front Immunol*. 2019;10:1883; 3. Apostolidis SA et al. *Nat Med*. 2021;27:1990-2001; 4. Zabalza A et al. *Mult Scler*. 2022;28:1138-1145.

MS, DMTs, and Vaccines: Patient Counseling



Rationale for encouraging vaccination

- To avoid infection-associated disability accrual during MS relapses
- To reduce potentially higher risk of complications from vaccine-preventable infections that may develop while receiving certain DMTs

Strategies to optimize vaccine response and DMT efficacy

- Early pre-treatment vaccination, when possible, to avoid attenuated vaccine responses or delayed/interrupted DMT

Decisions should be individualized for each patient and DMT