Multiple sclerosis medications and coronavirus

Having multiple sclerosis would not increase the risk of coronavirus disease (COVID19) in most patients. People with MS generally have more robust immune systems, so robust that the immune system attacks their nervous system, causing the MS. The disease, MS, does not cause suppression of the immune system.

Some people with disabilities may be at increased risk of complications of COVID19. This includes people with weakness of their breathing muscles, or decreased ability to cough. Very few people with MS are affected in this way.

In general, people on disease-modifying therapies should continue these therapies. Specific information about each medication follows:

**Interferons (Avonex, Betaseron, Extavia, Plegridy, Rebif):** These are not immunosuppressive medications and there is no increase in infection risk. Some have suggested that the body does not produce enough interferon to combat COVID19 virus infection early in disease, and that this increases the risk of lung damage with COVID19. If this is true, then interferons for MS would potentially be beneficial. This remains unproven. Currently, the recommendation is to continue the interferon.

**Glatiramer acetate (Copaxone, Glatopa, Mylan):** These are not immunosuppressive medications and there is no increase in infection risk. Currently, the recommendation is to continue the glatiramer acetate.

**Fumarates (Tecfidera, Vumerity):**
- Effects on lymphocytes: These medications can cause a decrease in the lymphocyte count. In most patients, this decrease is slight, but in about 5% of the patients it can be significant (and is part of the standard monitoring).
- Risk of respiratory infections: There have been rare reports of some viral infections on fumarates. However, there is no increase in upper respiratory infections seen with fumarates thus far.
- How long do immune effects last: Should fumarates be discontinued, the immunologic effects slowly return to normal over 2 or more months. Therefore, stopping the medication would not be helpful during an acute infection.
- **Recommendation:** Currently, the recommendation is to continue the fumarates.

**S1P receptor modulators (Gilenya, Mayzent, Zeposia):**
- Effects on lymphocytes: These medications cause a marked decrease in lymphocyte counts, but this does not correlate with infections. However, the effector lymphocytes (the ones that fight viruses) are not altered by these medications.
- Risk of respiratory infections: There is an increase in upper respiratory infections with these medications. For example, bronchitis was seen in 8% of patients treated with Gilenya compared to 4% for those treated with placebo. Influenza was seen in 13% of patients treated with Gilenya compared to 10% for those treated with placebo. However, there is some suggestion that S1P receptor modulators might be helpful in decreasing the
lung damage from COVID19, and a clinical trial is underway to determine whether
treatment with S1P receptor modulators helps patients with COVID19 infections.

How long do immune effects last: Should these medications be discontinued, the
immunologic effects slowly return to normal over 2 or more months. Therefore, stopping
the medication would not be helpful during an acute infection.

Recommendation: Currently, the recommendation is to continue these medications.

**Teriflunomide (Aubagio):**
- **Effects on lymphocytes:** This medication can cause a slight decrease in the lymphocyte
count.
- **Risk of respiratory infections:** There have been rare reports of some viral infections on
teriflunomide. There is an increase in upper respiratory infections with teriflunomide. For
example, bronchitis was seen in 8% of patients treated with teriflunomide compared to
6% for those treated with placebo. Upper respiratory infections were seen in 9% of those
 treated with teriflunomide compared to 7% treated with placebo. Influenza was seen in
12% of patients treated with teriflunomide compared to 10% for those treated with
placebo. There are several types of bacterial infections of the lungs reported with
teriflunomide.
- **How long do immune effects last:** If teriflunomide is discontinued it must be actively
removed from the body with cholestyramine or activated charcoal for 11 days. The
immune effects last for a few months after removal of the teriflunomide. Therefore,
stopping the medication would not be helpful during an acute infection.

Recommendation: Currently, the recommendation is to continue the teriflunomide.

**Cladribine (Mavenclad):** This medication is taken for one week. A second week of
medication is given one month later. This is repeated 1 year later. There are no treatments
in years 3 or 4.
- **Effects on lymphocytes:** Following these doses, there is a mild decrease in the
lymphocyte count. There are long lasting effects on the immune system.
- **Risk of respiratory infections:** Upper respiratory infections were seen in 38% of those
treated with cladribine and 32% in those treated with placebo.
- **How long do immune effects last:** If cladribine is discontinued, the immune effects last
for several years. Therefore, stopping the medication would not be helpful during an
acute infection.

Recommendation: Currently, the recommendation is to continue the cladribine.

**Natalizumab (Tysabri):** This medication is given intravenously once a month.
- **Effects on lymphocytes:** This medication blocks lymphocytes from being able to get out
of the bloodstream and into the tissues. It prevents lymphocytes from getting into the
brain in people with MS. It also blocks lymphocytes from getting into other body tissues.
In the presence of an infection, these blood vessels get much more leaky and the
lymphocytes are able to partially get into the tissue.
- **Risk of respiratory infections:** The risk of respiratory infections was 17% with
natalizumab and 16% with placebo. There are rare lung infections from some bacteria or
fungi.
How long do immune effects last: If natalizumab is discontinued, the immune effects last about 3 months. Therefore, stopping the medication would not be helpful during an acute infection.
Recommendation: Currently, the recommendation is to continue the natalizumab.

Anti-CD20 medications (Ocrevus, Rituxan): The medication is given intravenously every 6 months.
Effects on lymphocytes: Anti-CD20 medications cause B cells to be removed from the body. These cells function as amplifiers of the immune response. T cells, which fight virus infections, can be activated if they detect a virus. In the presence of a B cell, the activation of the T cell is much greater.
Risk of respiratory infections: Upper respiratory infections were seen in 40% of patients treated with Ocrevus and 33% of patients treated with Rebif. Lower respiratory infections (pneumonia) were seen in 8% of patients treated with Ocrevus and 5% of those treated with Rebif. In a separate study, 49% of patients treated with Ocrevus had an upper respiratory infection compared to 43% of patients on placebo. Lower respiratory infections were seen in 10% of patients treated with Ocrevus and 9% of patients on placebo.
How long do immune effects last: If anti-CD20 medications are discontinued, the immune effects last about 8-12 months. Therefore, stopping the medication would not be helpful during an acute infection.
Recommendation: Currently, the recommendation is to continue the anti-CD20 medication.

Alemtuzumab (Lemtrada): Alemtuzumab causes many types of white blood cells to be removed from the body.
Effects on lymphocytes: Alemtuzumab causes a decrease in many types of lymphocytes. Risk of respiratory infections: Infections occurred in 71% of patients treated with Lemtrada and 53% of patients treated with Rebif. Upper respiratory infections were seen in 16% of those treated with Lemtrada and 13% of those treated with Rebif.
How long do immune effects last: If Alemtuzumab is discontinued, lymphocyte numbers increase over about 12 months. However, other immune effects last for several years. Therefore, stopping the medication would not be helpful during an acute infection.
Recommendation: Currently, the recommendation is to continue the Alemtuzumab.