

MG & Vaccinations

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There are three main issues regarding vaccinations that are commonly raised by patients with myasthenia gravis (MG).

- Are vaccines safe for MG patients?
- Are there any particular vaccines that MG patients need to take?
- Do vaccinations worsen MG symptoms?

Vaccination is a way of reducing the chance of contracting an infectious disease. The aim of vaccinations is to generate specific immunity against an organism responsible for a particular disease; the principle being that if the vaccinated person is then exposed to the actual infection they will be protected from developing the disease. All vaccines involve giving the patient a modified version of the organism that actually causes disease. Based on the way in which the organism is altered, vaccines are divided into 3 types:

- 1) Live attenuated Vaccines: the live organism had been altered in such a way as to ensure that it will not cause full blown disease when administered to a healthy person.
- 2) Inactivated vaccines: organism is killed before administration.
- 3) Extracts of or detoxified toxins: toxins that usually are responsible for producing disease are isolated, inactivated and administered to the patient.

Inactivated vaccines and detoxified vaccines can be given to all patients with MG. It is only the live attenuated vaccines where caution is advised. Myasthenia gravis itself does not affect the ability of an individual to receive vaccines. Thus all patients with MG who are not on any treatment can have all vaccines including those in group 1. Pyridostigmine (Mestinon) also does not prevent patients from having vaccines. The only problem with vaccines is if patients are on immunosuppressive treatment (long term steroids, Imuran, methotrexate etc), as there is a risk of developing infection when given live attenuated vaccines, e.g., oral polio vaccinations and varicella zoster (shingles) vaccination. Such vaccinations could be dangerous for a myasthenic receiving immunosuppression. The dose of immunosuppressive therapy also helps in making a decision on whether they can get the vaccination. Information on shingles vaccination and recommendations of the Advisory Committee on Immunization Practices (ACIP) which also includes recommendation for patients on immunosuppressive therapy can be found at http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5705a1.htm?s_cid=rr5705a1_e. If another family member receives a vaccination with a live virus the immunosuppressed patient may need to avoid contact.

The second issue is whether there are any vaccines that MG patients should have. Once again this is not relevant for patients on no treatment nor for those just taking Mestinon. However patients on immunosuppressive treatment are at slightly increased risk of developing infections and so it may be

appropriate for some of them to have vaccinations to protect against pneumonia and influenza. These vaccines are usually only given to patients who have been on high doses of immunosuppression for several years. In addition, elderly immunosuppressed patients who also have lung disease may also benefit from the vaccine that gives protection against some types of pneumonia. This needs to be discussed on an individual basis with the PCP as it is only appropriate for certain people.

The other controversial issue is whether vaccination can trigger or worsen MG. There is no convincing evidence that vaccination affects MG symptoms in any way. One Canadian study looking at MG patients after influenza vaccination did not notice increase in exacerbations (Zinman L, 2009). Furthermore it is well known that episodes of infection can precipitate myasthenic crises and since vaccination helps prevent infection it seems sensible for MG patients to have appropriate vaccines.

Information on vaccination can be found at [http:// www.cdc.gov/vaccines](http://www.cdc.gov/vaccines). ACIP recommendations of vaccines for persons with altered immunocompetence : <http://www.cdc.gov/mmwr/preview/mmwrhtml/00023141.htm>

1) Zinman L, Thoma J, Kwong JC, Kopp A, Stukel TA, Juurlink DN. *Muscle Nerve*. 2009 Dec;40(6):947-51. doi: 10.1002/mus.21440. *Safety of influenza vaccination in patients with myasthenia gravis: a population-based study.*