18th ICNMD Patient Summary

Dear Myasthenia Alliance Australia,

We would like to share with you a summary of the sessions at the 18th **International Congress of Neuromuscular Diseases (ICNMD**) 2024 held in Perth from the 25-29th October. International and national attendees were welcomed with an opening ceremony, which included a welcome to country by the Whadjuk peoples and a performance with the **yidaki**.

ICNMD 2024 included:

- attendees from more than **25** countries,
- over **120** invited speakers,
- over **50** scientific sessions,
- a day dedicated to the neuromuscular junction
- sponsors and exhibitors displaying a range of innovations including patient registries, diagnostic tests, new therapies in neuromuscular diseases and Virtual Reality (VR) patient experiences.

We would like to preface this summary by noting that as a pharmaceutical company, we are guided by professional codes of conduct which require that we do not discuss or share information about products with patients that have not already been prescribed those products. We follow these rules strictly and therefore we cannot include summaries of sessions that outlined medications for Myasthenia Gravis (MG) and have instead focused on disease-only education sessions. We hope that you find the content useful. For information on treatments for MG, please speak to your neurologist or other health professional. A glossary is provided at the end of this document for scientific terms.

ICNMD 2024 was a fantastic conference. As doctors, academics and pharmaceutical industry teams from around the world left to catch flights home, there was a strong sense of hope about the future for patients with MG.

Yours sincerely,

The UCB Team.

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Handling fatigue in MG

Prof. Stefan Blum from Princess Alexandra Hospital in Brisbane discussed how fatigue has a significant impact on patients with MG. It can be very difficult to research and describe fatigue as its definition is vague and broad. He highlighted the importance of distinguishing the following two types of fatigue, which may overlap:

- Peripheral fatigue, which is due to antibody breakdown of the **neuromuscular junction**. This can be measured with diagnostic tools in a neurology clinic.
- Central or general fatigue which is a subjective feeling of lacking energy. It can be both mental and physical tiredness and can include 'brain fog.' This can be very hard to measure.

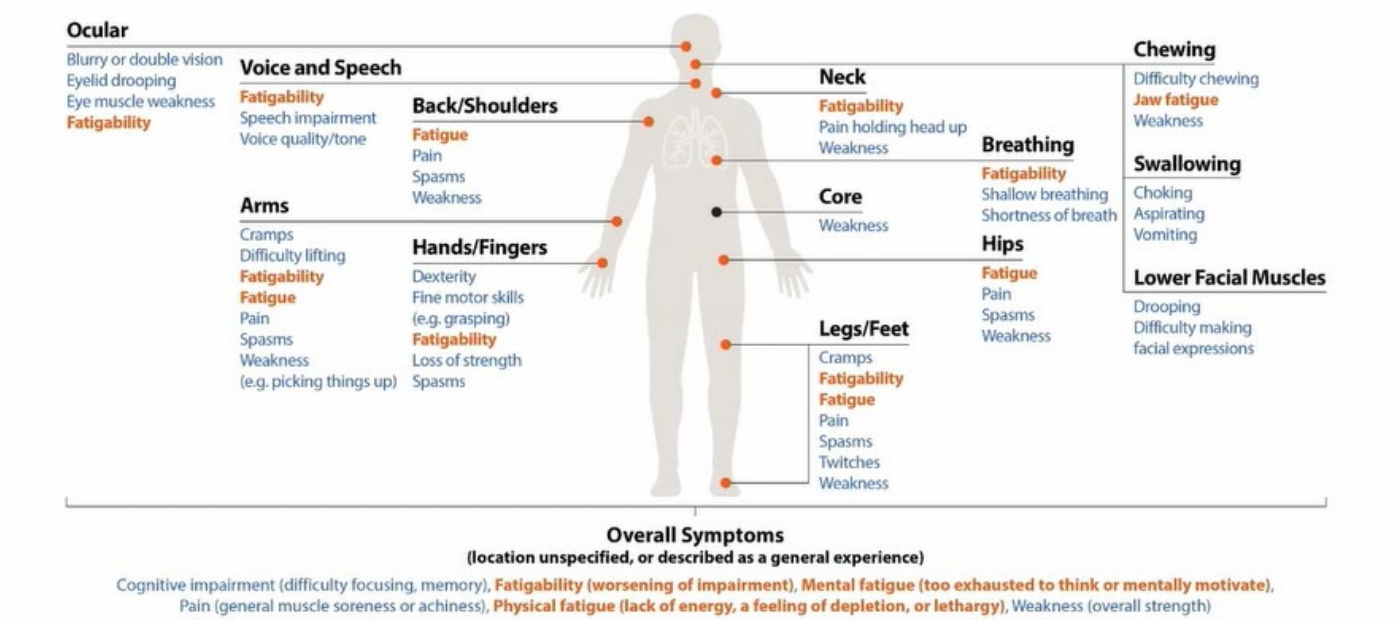
Central or general fatigue in MG can be caused by several of the following factors:

- a chronic **autoimmune** disease is present;
- treatment side effects;
- higher **BMI**;
- poor sleep;
- difficulty breathing;
- depression;
- and the psychological impact of having MG.

Prof. Blum presented a figure (Figure. 1, below) showing the different types of fatigue that may be experienced by a patient with MG.[1]

He advised that management of fatigue should include good MG control with steroid minimisation, addressing lifestyle factors, increasing exercise and managing depression.

Figure 1: Types of Fatigue Symptoms (from Jackson K et al. Neurol Ther. 2022)



Outcome measures

Assoc. Prof. Carolina Barnett-Tapia from the University of Toronto discussed the complexities in assessing patients' MG symptoms and the challenge of measuring fluctuating symptoms accurately. She provided an overview of some of the outcome measures in MG. Outcome measures are questionaries or tools that are used by clinicians in practice or in studies to measure the disease.

There are 10 outcome measures specific to MG, but clinicians also use other more general tools.

In recent years, there has increasingly been a patient focus when developing these tools. This is beneficial because patients are the best judges of their health status, and some symptoms may not be visible in the clinician's office. One of the big challenges with measuring MG is the fluctuation in fatigue of muscle groups over hours and days; patients may appear fine during appointments with their doctor but not at other times. Assoc. Prof. Barnett-Tapia presented several direct patient quotes articulating this, including the following:

"*It's just such a quick snapshot of how I'm doing, really, at that very moment...I could have a good hour where people wouldn't even know that I have MG at all. I look like I have lots of energy and what not. But then, at a moment's notice, it could completely change.*"

The key findings of paper titled "*The Lived Experience of Myasthenia Gravis: A Patient-Led Analysis*" by Law **et al.**[2] was presented. In this paper, the patient authors collected and analysed insights from 114 MG patients worldwide. The authors highlighted five main themes describing the experience of living with MG:

1. The fluctuating unpredictable symptoms.
2. The need to constantly adapt, making trade-offs in many areas of their lives.
3. **Treatment inertia** and undertreatment
4. Feeling disconnected with healthcare professionals
5. Feelings of anxiety, frustration, guilt, anger, loneliness, and depression

Assoc. Prof. Barnett-Tapia explained that fluctuating unpredictable symptoms (the first point above) have made it hard for clinicians to measure MG and they are one of the hardest parts about living with MG.

Nevertheless, she spoke about three of the main scores used by clinicians and in studies: The **MG-ADL**, the **MGC** and the **QMS**. The change in these tools that is clinically meaningful is:

- MG-ADL ≥ 2 points,
- MGC ≥ 3 points, and
- QMG 2 or 3 points.

She also discussed **PASS** or **Patient Acceptable Symptom States**. This concept/tool has been used for many years in other fields of medicine such as rheumatology and orthopaedic surgery. Rather than a measure of change, PASS is described as a threshold. For example, a question asked to assess the PASS score in MG could be, "*Considering all the ways you are affected by MG, if you had to stay on your current state for the next months, would you say that your current disease status is satisfactory*?" The answer could be either yes or no.

Other relevant measurable outcomes that do not focus on MG symptoms include:
• Quality of life
• Hospitalisation
• Adverse effects of treatment

The effects of age and sex: management of MG before, during and after pregnancy.

Assoc. Prof. Isabel Leite from the University of Oxford spoke about the management of MG in pregnancy, the **post-partum** period and in **neonatal** MG.

She encouraged her physician peers to:

- Consider both the patient and their health background (age, social circumstances, first vs subsequent pregnancy, co-morbidities e.g., diabetes).
- Consider different aspects of their MG (form, severity, control, treatments, and complications).
- Provide reassurance to mitigate patients' worries. She explained that most women have eventless pregnancies and spontaneous vaginal delivery, however MG symptoms may exacerbate in around 30%-40% of patients[3] so it is best to plan ahead and ensure the mother's MG is as well controlled as possible.
- Plan ahead of conception where possible. She advised it is generally not a good time to start a new treatment during pregnancy unless it is changing to a medication that is considered more compatible with pregnancy.

More specifically, she advised her physician peers to:

- Facilitate a multidisciplinary approach involving other healthcare professionals.
- Ensure that the patient gives birth in hospital with **obstetric**, **neurology** and **neonatal** teams with experience in MG and to prepare birth plans early on.
- Provide regular medical follow-up and support continuing post-partum.
- Ensure the patient's other medical conditions (e.g., diabetes) are well under control.
- Encourage breastfeeding while respecting the patient's choice.
- Accommodate patients' choices in decision making, if possible and safe.

Assoc. Prof Leite then discussed neonatal MG, a transient condition that can occur in the newborn. It is caused by the mother's **antibodies** crossing the placenta. This condition affects 10-20% of all newborns of MG mothers.[4]

Please note that the treatments discussed are not summarised here, speak with your treating healthcare professional for more information.

The Swedish DIG-MG study

Prof. Anna Punga from Uppsala University discussed a recent study in Sweden with lifestyle interventions (physical activity and sleep hygiene) aimed at reducing general fatigue with MG. Please note the use of the word 'general' here is different to the fatigability experienced by MG patient's due antibody attack of muscle receptors. It refers to fatigue felt by people unaffected by MG. The study is not yet published, and the study data are still being analysed.

To be included patients needed to have stable MG for 6 months. The interventions included digital counselling in a group regarding physical activity, sleep hygiene, general health, and digital follow-up with a "smart ring" (OURA). The OURA rings enable remote digital supervision of physical activity, sleep, and biological parameters such as heart frequency, number of steps, and temperature.

The primacy outcome for this study was: "Can digital lifestyle intervention in an online-group format improve fatigue as measured by MG-ADL in MG patients by at least 30%?"
The secondary outcome was: "Can lifestyle intervention improve fatigue as measured by FSS (fatigue severity scale) in MG by at least 30%?"
Other outcomes of interest include heart rate variability, temperature fluctuations, and sleep and activity parameters, which are measured by the OURA ring. These OURA ring outcomes were to be collected throughout the entire study period for 30 weeks. Other data were extracted from the patient's medical charts and the Swedish MG registry.

See further information on the study here: https://ctv.veeva.com/study/digital-phenotyping-and-lifestyle-intervention-in-patients-with-myasthenia-gravis
See further information on OURA rings here: Oura Ring. Smart Ring for Fitness, Stress, Sleep & Health.

Image 1: OURA ring from Oura Ring. Smart Ring for Fitness, Stress, Sleep & Health.

Glossary:

AChR. Acetylcholine Receptors

Anti-acetylcholine receptor antibodies. Antibodies found in most people with gMG, which attack cells involved in signalling between your nerves and muscles.[5]

Autoimmune condition. A condition that causes your immune system to mistakenly attack your body's own tissues.[6]

BMI. Body Mass Index. A measure of body fat that is the ratio of the weight of the body in kilograms to the square of its height in meters.[7]

Et al. 'and others'. Used commonly in academic writing when just the main author is listed in the body of the text. The rest of the authors are often listed in the full reference list.[8]

ICU. Intensive care unit of a hospital.

IgG antibodies. A type of antibody.

MG-ADL. A simple 8-question survey that measures how much MG symptoms are affecting your daily life.[9]

MGC. A hybrid of 6 clinician and 4 patient-reported items from a patient's medical history.[10]

MG-QOL-15. A patient reported tool focussing on quality of life for MG patients.[10]

MuSK. Muscle Specific Kinase receptors

Neonatal. Of, relating to, or affecting the newborn and especially the human infant during the first month after birth.[11]

Neurology. A branch of medicine concerned especially with the structure, function, and diseases of the nervous system.[12]

Neuromuscular junction. The place where a nerve terminal and muscle fibre communicate (13)**.**

Obstetric. Of, relating to, or associated with childbirth**.**[14]

Ocular. Relating to the eye.[15]

Primary Outcome. Considered the most important outcome and defined at the start of a study.[16]

Proteome. The proteome is all the proteins produced by something.[17]

QMG. Quantitative Myasthenia Gravis Score. A clinician-assessed score that measures muscle strength and fatigability.[10]

Secondary Outcome. An important outcome but not as important as the primary outcome. May influence design of future studies**.**[18]

Treatment inertia. Failure to initiate or intensify therapy when therapeutic goals are not reached.[19]

Yidaki. One of the aboriginal words for what is commonly referred to as a didjeridu.[20]

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