NHS
Greater Glasgow and Clyde

CLINICAL GUIDELINE

Myasthenia Gravis or Lambert-Eaton Myasthenia Syndrome – Medicines that may affect patients

A guideline is intended to assist healthcare professionals in the choice of disease-specific treatments.

Clinical judgement should be exercised on the applicability of any guideline, influenced by individual patient characteristics. Clinicians should be mindful of the potential for harmful polypharmacy and increased susceptibility to adverse drug reactions in patients with multiple morbidities or frailty.

If, after discussion with the patient or carer, there are good reasons for not following a guideline, it is good practice to record these and communicate them to others involved in the care of the patient.

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Important Note:

The Intranet version of this document is the only version that is maintained.
Any printed copies should therefore be viewed as 'Uncontrolled' and as such, may not necessarily contain the latest updates and amendments.

Information for healthcare professionals

Medicines that may affect patients with Myasthenia Gravis or Lambert-Eaton Myasthenic Syndrome

There are certain medicines that have been reported to worsen or induce myasthenia gravis (MG), often by increasing muscular weakness, and should be used with caution in patients with this condition. The list of medicines in table 1 has been compiled to assist prescribers in the decision making process when prescribing medicines for patients with myasthenia gravis.

The medicines in this list have been classed according to those which should be:

- ▲ ▲Absolutely contraindicated
- ▲ Avoided
- ■ Used with caution
- ● Probably safe with patient monitoring.

This list is not exhaustive, best attempts have been made to identify problematic medicines but it is acknowledged that information may not be complete. If a medicine is not on the list it is not guaranteed that it will be safe in myasthenia gravis, please be vigilant with new medicines where safety in myasthenia gravis may be lacking. It is important that patients and doctors be alert to the early signs of an exacerbation of myasthenia gravis (MG) when a new medicine is commenced, even if it is not on the list or is listed as probably safe.

If further advice is required this can be obtained from the neurology pharmacy team on 61978 or the on call neurology registrar who can be contacted via switchboard.

Table 1: Medicines that may affect patients with Myasthenia Gravis or Lambert Eaton Myasthenic Syndrome

Avoid ▲	Caution ■	Probably Safe ●
Infections		
▲▲ **Telithromycin is Absolutely Contraindicated**		
Aminoglycosides[1] ▲ Gentamicin, amikacin, tobramycin, streptomycin, neomycin **Antimalarials** ▲ Chloroquine, mefloquine, quinine **Polymyxins** ▲ Colistimethate sodium **Clindamycin** ▲ (caution with topical) **Ribavirin** ▲	**Macrolides** ■ Clarithromycin, erythromycin, azithromycin **Penicillins** ■ Ampicillin **Quinolones** ■ Ciprofloxacin, ofloxacin, levofloxacin, moxifloxacin, norfloxacin **Tetracyclines** ■ Doxycycline, lymecycline, minocycline, oxytetracycline, tetracycline, demeclocycline **Vancomycin** ■ **Co-trimoxazole** ■ (sulphonamides) **Nitrofurantoin** ■ **Imipenem-cilastin** ■ **Rifampicin** ■ **Ritonavir** ■	**Penicillins** (except ampicillin) ● **Aztreonam** ● **Meropenem** ● **Trimethoprim** ● **Ceftriaxone** ● **Metronidazole** ● **Aciclovir** ●
Cardiovascular		
Anti-arrhythmics[1] ▲ Procainamide, lidocaine, disopyramide, propafenone	**Anti-platelets** ■ Dipyridamole (may counteract the effect of pyridostigmine) **Beta-blockers**[2] ■ (class effect including ophthalmic preparations) **Statins**[3] ■ (class effect) **Diuretics** ■ (class effect, monitor electrolytes) **Calcium Channel Blockers** ■ Felodipine, verapamil, nifedipine, diltiazem **Methyldopa** ■	**Calcium Channel Blockers** Amlodipine ●
Pain & Musculoskeletal		
Strong opioids ▲ (class effect) **Rheumatology** Penicillamine ▲ Hydroxychloroquine ▲ Colchicine ▲ **Methocarbamol** ▲ **Quinine** ▲	**Weak opioids** ■ (class effect, includes tramadol) **Etanercept** ■ **Riluzole** ■	**Paracetamol** ● **Ibuprofen** ● **Naproxen** ●

1. If this medicine is clinically indicated and no alternative exists, seek specialist advice.
2. Do not discontinue if patient on existing therapy.
3. Consider withdrawal if clinical condition worsens.

Table 1: Medicines that may affect patients with Myasthenia Gravis or Lambert Eaton Myasthenic Syndrome cont'd.

Avoid ▲	Caution ■	Probably Safe ●
Nervous System		
Anxiolytics & Hypnotics Benzodiazepines ▲ (class effect) Zopiclone, Zolpidem ▲ Diphenhydramine (Nytol®) ▲ **Movement Disorders** Orphenadrine ▲ Procyclidine ▲ Trihexyphenidyl ▲	**Anti-epileptics** ■ Carbamazepine, Ethosuximide, Phenobarbitone, Phenytoin, Gabapentin **Antipsychotics** ■ (class effect, includes first and second generation) **Tricyclic antidepressants** ■ (class effect) **Buspirone** ■ **Lithium** ■ **Monoamine-Oxidase Inhibitors** ■ Isocarboxacid, phenelzine, tranylcypromine **Amantadine** ■	**Anti-epileptics** ● Levetiracetam, Lamotrigine, Sodium Valproate
Gastrointestinal		
Co-phenotrope ▲ **Magnesium containing antacids/laxatives** ▲	**Antimuscarinics** ■ Hyoscine (hydrobromide and butylbromide), dicycloverine **H2-receptor antagonists** ■ **Anti-emetics** ■ Prochlorperazine, droperidol	**Antimuscarinics** Propantheline ● (this is routinely used to counteract the side effects of pyridostigmine)
Endocrine		
Levothyroxine ▲ Avoid over replacement	**Corticosteroids** ■ (commonly used to treat MG. Sudden increases in dose could exacerbate symptoms – please consult neurology) **Bisphosphonates** ■	
Genito-urinary		
	Apha-adrenoceptor blockers ■ Alfuzosin, doxazosin, indoramin, prazosin, tamsulosin, terazosin **Antimuscarinics** ■ Darifenacin, fesoterodine, flavoxate, oxybutynin, solifenacin, trospium, propiverine, tolterodine **Oestrogens/Progestogens** ■ Hormonal changes may affect MG symptoms	
Skin/Ophthalmology		
Polymyxin or bacitracin containing preparations ▲	**Acetazolamide** ■ **Antimuscarinic eye drops** ■ atropine, cyclopentolate, tropicamide **Beta-blocker eye drops** ■ **Imiquimod** ■	

Table 1: Medicines that may affect patients with Myasthenia Gravis or Lambert Eaton Myasthenic Syndrome cont'd.

Avoid ▲	Caution ■	Probably Safe ●
Anaesthesia		
Discussion with neurology advised prior to myasthenic patient undergoing anaesthesia		
	Inhalational agents ■ myasthenic patients require smaller amounts of these agents **Non-depolarising drugs** ■ myasthenic patients are particularly sensitive to these agents **Depolarising drugs** ■ variable response in myasthenia gravis **Local anaesthetics** ■ myasthenic patients require smaller amounts of these agents **Antimuscarincs** ■ Atropine, glycopyrronium	**Propofol** ●
Chemotherapeutic Agents		
Discussion with neurology advised prior to commencing chemotherapy in myasthenic patient		
	Doxorubicin, etoposide, cisplatin, fludarabine ■ **Ipilimumab, nivolumab, pembrolizumab, atezolizumab** ■	
Miscellaneous		
Sedating antihistamines ▲ Alimemazine, clemastine, chlorphenamine, cyproheptadine, hydroxyzine, ketotifen, promethazine **Avoid live vaccines if on immunosupression** ▲ **Botulinum Toxin** ▲ **Magnesium supplements** ▲ (unless treating hypomagnesaemia)	**Interferon (alpha and beta)** ■ **Trientene** ■ **Iodinated Contrast Media** ■ **Glatiramer** ■	

References

The following references have been used to compile this list in conjunction with local expert opinion:

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