MIL

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This Medicines Information Leaflet is produced locally to optimise the use of medicines by encouraging prescribing that is safe, clinically appropriate and cost-effective to the NHS.

Guidelines for prescribing and administering apomorphine in Parkinson's Disease

Parkinson's Disease (PD) is a progressive neurological disorder, affecting approximately 145,000 people in the UK[1], and is primarily caused by progressive loss of dopaminergic neurons in the basal ganglia.

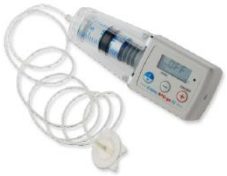
Patients can experience symptoms affecting motor (tremor, bradykinesia and rigidity) and non-motor functions (e.g. cognition and mood disorders, gastrointestinal dysfunction). In the early stages of PD, levodopa and dopamine agonists usually provide effective symptomatic relief from motor symptoms. However, after some time, these treatments may become less effective as the disease progress. Patients may experience refractory motor fluctuations and/or dyskinesia causing severe disability and reduced quality of life, despite optimal oral levodopa or adjunctive therapies. At this point a multidisciplinary assessment of the patient by their PD specialist team, may lead to a step up in therapy - intermittent subcutaneous injections and/or device-assisted subcutaneous infusion of apomorphine.

Apomorphine is a potent short-acting D_1 and D_2 receptor agonist, administered only subcutaneously as high rate of first-pass metabolism results in low bioavailability, rendering oral administration ineffective.

FORMULATIONS

1. **APO-go© pre-filled multi-dose pen 10mg/mL** for intermittent subcutaneous injections. The pre-filled pen is useful for patients in who have disabling "off periods" and are able to identify their symptoms and administer PRN doses.

2. **Crono APO-go© Infusion pump** for continuous subcutaneous infusions use APO-go© pre-filled syringes (PFS) 5mg/mL or APO-go© PODs 5mg/mL. The pump can be programmed by Parkinson's disease specialist healthcare professionals to deliver individualised, variable flow rates throughout the day and can also provide bolus doses for suitable patients.

APO-go© PFS 5mg/mL	APO-go© POD 5mg/mL
Can be used with Crono APO-go© III infusion pumps 	Can be used with Crono APO-go© III infusion pumps and PAR4 20 Infusion Pumps 

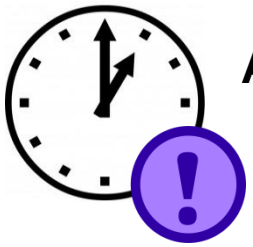
APO-go© is currently the only brand on the OUHFT formulary (all formulations except APO-go© POD), however it is not the only brand of apomorphine pen and pump available nationally.

Patients may be admitted with a Dacepton© (D-mine) branded pen or/and pump; in these circumstances (or if the patient requires APO-go© PODs) please contact the Parkinsons Disease Specialist Nurse (during working hours) or the company 24-hour helpline (see useful contacts) for advice.

INITIATING APOMORPHINE

Apomorphine challenge must precede its routine use and the doses should only be recommended, prescribed and administered by specialist healthcare professionals according to local protocol. The aim of apomorphine test doses is to establish patient suitability, efficacy in symptom relief and optimal starting doses. Please see the "Parkinson's" intranet page for further details on the apomorphine challenge protocol and step-by-step guides.

MANAGEMENT APOMORPHINE IN INPATIENTS



Apomorphine is a time critical medicine

Problems with **prescribing, administration or stock requests** should be dealt with urgently to prevent delays or omissions in doses

Apomorphine should be prescribed on admission to hospital and is a 'category 2' time critical medication; patient harm may be caused if the medication is delayed or omitted. Apomorphine must not be stopped abruptly unless under the advice of a Parkinson's disease specialist due to the risk of neuroleptic malignant syndrome on withdrawal of the drug. This includes pre-, peri- and post-operatively.

History taking

Establishing and documenting an accurate and current medication history is essential.

- **Formulation? Brand?**
  Is the apomorphine administered as a continuous infusion via a pump, a bolus subcutaneous regimen or a combination? What brand of apomorphine and pump do they have?
- **Current doses and/or infusion rates and timings?**
- **Back up regimen?**
  Patients should have a documented plan of what to do in case of pump failure?

The information for the above 3 points can be obtained via the patient, a relative, an up-to-date apomorphine booklet/passport, their GP record, recent clinic letters or specialist Parkinson's Disease nurse.

- **Equipment and supplies**
  Ensure the patient has brought in all necessary equipment with them, including (if relevant): medication, pump, giving sets, connectors and syringes.

Prescribing

Prescribers should utilize the EPR Apomorphine PowerPlan when prescribing. Specific dose information, such as infusion rates and timings, should be endorsed in the "special instructions" box. The dose or rate should not be altered unless instructed by a specialist.

Administration

Inspect the solution before administering; it should look clear and colourless in appearance. Discard if the solution is green in colour, cloudy or contains visible particles.

Training videos for the APO-go© Pen, POD and infusion pumps are available via the OUH Parkinson's Intranet Page. The Apo-go© manufacturers guides are also available in the apomorphine document library.

Expiry

Apo-go© pens and PODs should not be used after 48 hours of opening. Apo-go© pumps, syringes, giving sets and subcutaneous needles must be replaced every 24hrs.

Missing or broken equipment

If a patient has not brought their own equipment or medication in, further supplies can be obtained from pharmacy. OUH keeps a small supply of equipment **excluding** Apo-go© pumps as these are issued by the manufacturer on an individual patient basis. A new one can be ordered directly from the Apo-go©, but may take several days to arrive. If the pump is broken or cannot safely be set up, apomorphine infusions can safely be administered via a syringe infusion pump. Specialist advice should be sought as soon as possible.

Supply on discharge

Patients should continue to obtain supplies of medication via their usual route through either a Homecare provider or community pharmacy. Ensure the patient has access to at least 14 days of apomorphine to allow patient to order further supplies.

SIGNIFICANT MEDICINE INTERACTIONS AND COMMON SIDE

QTc prolongation – caution with newly prescribed medication which may cause hypokalaemia (e.g. diuretic). Avoid drugs that can cause QTc prolongation (e.g. amiodarone, clarithromycin, fluconazole).

Nausea/vomiting – patients may be co-prescribed domperidone for anti-emesis. Avoid anti-emetics which are dopamine antagonists (e.g. metoclopramide). Avoid ondansetron, it can cause severe hypotension.

Impulse control disorders, confusion, hallucinations, drowsiness, dizziness, subcutaneous nodules, yawning or **dyskinesia** – seek advice from Parkinson's specialist.

Skin reactions – further advice on skin management can be found on the Parkinson's intranet page. Consider referral to Parkinson's nurse.

Orthostatic hypotension - This will be looked for during the apomorphine challenge test and initial titration. If it is an ongoing, symptomatic issue for the patient, please seek advice from the Parkinson's specialist.

SURGERY

Elective surgery: patient will have discussed their surgery with the Parkinson's team prior to them being admitted – they will have a plan on EPR of how to manage their Parkinson's medication during their admission.

Emergency surgery: Apomorphine is considered safe in surgery as is administered subcutaneously, and also doesn't have the issues of amending oral medication to rotigotine patches.

See PD peri-op guideline for more information.

USEFUL CONTACTS	
Apo-go© 24 hour Technical Helpline	0808 196 4242
D-mine support line	0800 254 0175
OUH Specialist Parkinson's Nurse: Mabel Eghaghe	01865 234048 mabel.eghaghe@ouh.nhs.uk
OUH Specialist Parkinson's Nurse Administrator office:	01865 231295
OUH Parkinson's Team	See Parkinson's Disease Intranet page
Out of Hours Neurology registrar on call	Via OUH switchboard

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