NHS HEART of ENGLAND NHS Foundation Trust

Administration of continuous subcutaneous Apomorphine infusion in Parkinson's Disease

(Version 2)

Guideline Readership

Medical, nursing and pharmacy inpatient teams within HEFT caring for a patient who has subcutaneous apomorphine infusion at home, since this treatment will need to be continued whilst an inpatient.

Guideline Objectives

These guidelines aim to inform the person administering continuous subcutaneous apomorphine infusion how to deliver safe and appropriate therapy.

Key Pages - Flow chart 1 and sample prescriptions (p2 and 3)

Other Guidance

No specific national guidance in place regarding conversion of home Apo-Go pumps into other devices for hospital use. See references list regarding apomorphine treatment and use of the Apo-Go pump.

Review Date: Jan 2018
Guideline Author: Dr Sally A Jones

Administration of Continuous Subcutaneous Apomorphine

FLOW CHART 1

Parkinson's patient on home Apomorphine infusion via APO-Go pump (i.e. continuation of usual treatment)

Inform specialist PD team of patients admission:

BHH – Dr Sally Jones (Cons) or Maggie Johnson/D Liberato (PD CNS) via switchboard
SOL – Dr Rob Wears (Cons) or Maggie Johnson/D Liberato (PD CNS) via switchboard
GHH – Dr Ram Byravan (Cons) or Maggie Johnson/D Liberato (PD CNS) via switchboard
(or if unavailable, on call elderly care consultant or SpR)
PD Specialist Nurses: 0121 4652839 (Maggie Johnson/Debbie Liberato)

- If the patient/carer is well enough and able to continue to set up their own apomorphine pump (APO-Go pump device) – they should CONTINUE doing this whilst an inpatient
- Inform PD CNS Maggie Johnson/ Debbie Liberato who will come to ward & provide training to staff.
- Doctors should prescribe on EP as "syringe driver see separate sheet" and then write the details on separate paper chart.

BOX A

If the patient is NOT well enough to set up their own apomorphine (APO-Go) pump device, or if nursing staff are not confident that the patient can do this:

1. Use the Alaris GH pump with guardrails instead of the patient's own device. NB The patient can be converted to the hospital Alaris pump at any time, even if they are part way through their own pump, if for any reason, the nursing staff are not confident with the patient being able to care for their own pump.
2. Order APO-go apomorphine prefilled 10ml syringes from pharmacy (5mg per ml)
3. Put the contents of the Apo-Go 10ml syringe into an empty 50ml syringe, ready for use in the Alaris GH. Some patients may need more than 1 syringe of Apo-Go placed into the empty 50ml syringe (See box B)
4. Do NOT add any other drugs and do NOT dilute. The Alaris pump will work even with small volumes.
5. Ensure that the patient gets the same **milligrams (mg) per hour** as with their own pump
6. Each patient will be on a different dose/rate of apomorphine – they will usually know this in ml per hour for their ApoGo pump at home. This needs to be converted to mg per hour for Alaris pump. See Box B.
7. Set VTBI (volume to be infused). Pump is usually used during waking hours only, usually 8am to 10pm (14hours). Pumps on higher rates may be on for fewer hours. See Box B for conversion.
8. Deep subcut and horizontal insertion (about 45°) in lower abdomen or outer thigh.
9. Discard any apomorphine left in the pump at the end of the day.
10. Change infusion site every day & massage the skin after removing pump to prevent nodule formation.
11. Monitoring/Cautions:
    a. May cause hypotension, especially when first initiated (give fluids, lie flat)
    b. May cause vomiting (give domperidone, rectal preparation if necessary)
    c. Caution in cardiac disease, postural hypotension or vasoactive medications – check with PD team
    d. Hourly BP/HR & monitoring of PD symptoms including mental state (delirium may occur) after any dose changes or if unwell, until patient stable. Call PD team for advice if any concerns.

BOX B – Conversion Chart for changing Patients own Apo-Go pump to Hospital Alaris GH

ml per hour (pts pump)	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0
mg per hour (for Alaris)	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0
VTBI in ml for 8am-10pm	5.6	7.0	8.4	9.8	11.2	12.6	14.0	15.4	16.8	18.2	19.6	Max daily dose is usally 100mg per day. Therefore for patients on greater than 7.5mg per hour, set the VTBI at 20ml unless advised otherwise by PD team.					
No. of ApoGo syringes needed	1	1	1	1	2	2	2	2	2	2	2						

Example Apomorphine Prescription:

See flow chart 1 for conversion table, VTBI calculations & set up instructions

Prescribe on EP as "syringe driver see separate sheet"

TO BE READ IN CONJUNCTION WITH FLOW CHART

HEART OF ENGLAND NHS FOUNDATION TRUST

INTRAVENOUS FLUID PRESCRIPTION AND ADMINISTRATION CHART

REGISTRATION DETAILS	
NAME	James Parkinson
DATE OF BIRTH	11/04/1755
CONSULTANT	Jones
PID	123456

DATE	BOTTLE NO.	IV FLUID	VOLUME	DRUG/ELECTROLYTE DOSE TO BE ADDED	RATE	SPECIAL DIRECTIONS	PRESCRIBER SIGNATURE	DRUG ADDITION Made:	DRUG ADDITION Check:	ADMINISTRATION Made:	ADMINISTRATION Check:	TIME STARTS	TIME FINISH	VOLUME GIVEN
Example 1. Patient able to set up & use their own Apo-Go pump as normal. (usually 8am to 10pm) NOTE – flow rate & settings are already pre-programmed into the patients own pump – neither staff nor patient have to set these. Patient will usually remember their usual flow rate – but if not it doesn't matter. Allow them to set up pump as usual.														
1/2/15		Apomorphine pre-filled syringe (10ml)	"As per pre-set volume on pump"		"As per the pre-set rate on Apo-Go pump." (or give rate if known)	Sub cut. Via Apo-Go pump 8am to 10pm. Discard remainder of syringe contents at 10pm.	S Jones							
Example 2. Patient NOT able to set up & use their own Apo-Go pump as normal. Convert to Alaris pump. Patient usually uses 0.6ml per hour during waking hours (approx. 8am – 10pm). NOTE – rate & volume to be infused (VTBI) will have to be calculated using Box B on flow chart. [0.6ml/hr = 3mg/hr, with VTBI 8.4ml]														
1/2/15		Apomorphine (Apo Go Pre filled syringe) 10ml	8.4ml VTBI		3mg per hour	Sub cut. Via Alaris pump 8am to 10pm. Discard remainder of syringe contents at 10pm.	S Jones							
Example 3. Patient NOT able to set up & use their own Apo-Go pump as normal. Convert to Alaris pump. Patient usually uses 1.2 ml per hour during waking hours (approx. 8am – 10pm). NOTE – rate & volume to be infused (VTBI) will have to be calculated using Box B on flow chart. [1.2ml/hr = 6mg/hr, with VTBI 16.8ml]														
1/2/15		Apomorphine (ApoGo Pre filled syringe) 20ml	16.8ml VTBI		6mg per hour	Sub cut. Via Alaris pump 8am to 10pm. Discard remainder of syringe contents at 10pm.	S Jones							

Administration of Continuous Subcutaneous Apomorphine

FLOW CHART 2

PD PATIENTS WHO ARE NOT USUALLY ON APOMORPHINE:

INITIATION OF NEW TREATMENT

THIS SHOULD ONLY BE DONE IN CONJUCTION WITH THE SPECIALIST PD TEAM WHO WILL GUIDE INITIATION AND DOSE CHANGES

Unless already on home apomorphine, nearly all PD inpatients can be managed with oral or NG medications, or transdermal rotigotine if NBM. Apomorphine is usually initiated in stable outpatients and ***this flow chart should rarely be required***.

ONLY if the PD team agree that the patient is for inpatient initiation of apomorphine:

1. Give domperidone 20mg PO tds for 48 hours (or 60mg bd PR for 24 hours) PRIOR to apomorphine & continue this, usually long term. Needs ECG first.
2. Use the Alaris GH pump with guardrails
3. Order APO-go apomorphine prefilled 10ml syringes from pharmacy (5mg per ml)
4. Put the contents of the Apo-Go 10ml syringe into an empty 50ml syringe, ready for use in the Alaris GH. Do NOT add any other drugs and do NOT dilute. The Alaris pump will work even with small volumes.
5. Commence apomorphine infusion at 1mg per hour, increased as guided by PD team (usually in increments of 0.5mg per hour at maximum of 4 hourly intervals - usual dose 2 to 4mg per hour, max dose 10mg per hour)
6. Set VTBI (volume to be infused). Pump is usually used during waking hours only, usually 8am to 10pm (14hours).
    - 1.0mg per hour (0.2ml/hr) for 14 hours = VTBI 2.8ml
    - 1.5mg per hour (0.3ml/hr) for 14 hours = VTBI 4.2ml
    - See Box B for conversions of 2mg per hour and greater
7. Deep subcut and horizontal insertion (about 45°) in lower abdomen or outer thigh.
8. Discard any apomorphine left in the pump at the end of the day.
9. Change infusion site every day & massage the skin after removing pump to prevent nodule formation.
10. If it is decided to continue Apomorphine as home treatment on discharge, the PD Nurse **MUST** be involved in the discharge process in order to provide training to family/community teams and to obtain home pump. This will take time to do safely, so contact PD CNS at the earliest opportunity.

MONITORING:

- Adverse effects are more likely when apomorphine treatment is first initiated or dose increased.
- May cause hypotension – lie flat, give fluids. Discuss with PD team before increasing dose.
- Nearly always causes vomiting – domperidone anti-emetic of choice
- Caution in those with cardiac disease, postural hypotension or on vasoactive medications. Check ECG.
- Hourly BP/HR and monitoring of PD symptoms including mental state (delirium may occur) until on stable dose
- Development of dyskinesia (wriggling) may mean too high a dose.

Executive Summary & Overview

Patients with complex Parkinson's disease on home apomorphine infusions can be admitted to any acute medical or surgical ward, and the individual medical, nursing and pharmacy staff need to know what to do in the event of this, particularly if the patient is admitted out of hours and the parkinson's team is unavailable. Where possible patients should be encouraged to continue using their own bespoke APO-Go pump whilst an inpatient, but the ward staff will be unfamiliar with this device – the guideline should help the ward staff prescribe and administer the apomorphine via a more familiar device if the patient is unable to set up their own whilst they are unwell.

1. Body of Guideline

This guideline refers to patients known to have Parkinson's disease and whom require treatment with continuous subcutaneous apomorphine infusion during their inpatient stay. The majority of these patients will already be using this drug in the community. A small minority of patients may have apomorphine treatment initiated whilst an inpatient, but this should only be on the advice of the Parkinson's team. Most patients who cannot swallow oral Parkinson's medication can now be managed with dispersible medication via NG tube, or conversion to a transdermal rotigotine patch rather than using apomorphine as "rescue" therapy for patients who are nil by mouth.

2. Reason for Development of the Guideline

There are several patients with Parkinson's disease in the HEFT catchment area who use continous subcutaneous apomorphine infusion at home. Most HEFT staff are unfamiliar with the drug and are not trained in the use of the specific Apomorphine pump used at home. The small numbers of patients mean that it would not be practical to maintain training for every nurse at HEFT in the use of this specialist pump. Therefore, a guideline is needed to enable the drug to be converted into a more commonly used pump device that the HEFT nurses are trained to use whilst the patient is an inpatient. The guideline should also enable the ward staff to safely monitor patients using this drug.

3. Methodology

After reviewing previous local guidelines and reviewing relevant publications, this guideline was written by

- Dr Sally Jones (Consultant Geriatrician with interest in Parkinson's Disease, BHH)

Input/guidance was also sought from:

- Sister Maggie Johnson, Parkinson's Disease Specialist Nurse.
- Shahzad Razaq, Lead Pharmacist, Elderly Care.
- Mark Simkin, Faculty Educator, Medical Devices.
- Dr R Wears (Consultant Geriatrician with interest in PD, Solihull)
- Dr R Byravan (Consultant Geriatrician with interest in PD, GHH)

4. Implementation in HEFT & Community

This guideline applies only to inpatients. The guideline will be available on the intranet and ward managers will be informed.

5. Monitoring & Suggested Quality Standards

The guideline will be reviewed every 3 years. All patients requiring apomorphine infusion during an inpatient stay should be referred to the Parkinson's team (see flow chart) who will be able to assess that correct dosage/usage/monitoring has been attained.

6. References

1. Apomorphine in Parkinson's Disease: National Clinical guideline for diagnosis and management in primary and secondary care. (Extracted from National Collaborating Centre for Chronic Conditions. London: Royal College of Physicians, 2006).
2. Use of Apomorphine in Parkinson's disease. JD O'Sullivan, AJ Lees, Hospital Medicine 1999; 60:11.
3. Peri-operative problems in Parkinson's disease and their management. Apomorphine with rectal domperidone. N Galvex-Jiminez and AE Lang 1996:23; 198-203.
4. Parkinson's disease and APO-Go (continuous subcutaneous infusion using the pre-filled syringe). Information for patients, family, friends and carers. UCL NHS Foundation Trust. 2012.

Meta Data

Guideline Author:	Dr Sally Jones
Guideline Sponsor:	Elderly Care Directorate
Date of Approval:	
Date of Launch:	
Approved by:	
Date of CGG Ratification:	
Review Date:	January 2018
Key Words	Apomorphine, Parkinson's Disease
Related Policies / Topic / Driver	Apomorphine in Parkinson's disease: National clinical guideline for diagnosis and management in primary and secondary care. APO-go pump user guide

Revision History

Version No	Date of Issue	Author	Reason for Issue
1.0	Oct 2006	Dr Peter Wallis/Sr M Johnson	Staff unfamiliar with apomorphine use
2.0	Jan 2015	Dr Sally Jones/Sr M Johnson	Expiry of previous guideline with significant change in practice since previous.

Clinical Director: **Signed: Martin Sandler** *(paper copy of signature filed with S Jones)*

Name: Martin Sandler

Date: Sept 2014

The below section is to aid the development of your guideline and is not be published

Launch and Implementation Plan for Clinical Guidelines

To be completed and attached to any document which guides practice when submitted to the appropriate committee for consideration and approval.

Action	***Who***	***When***	***How***
If previous document is in use: proposed action to retrieve out-of-date copies of the document (electronic and /or paper)	Mark Collyer	March 2014	Remove previous electronic version
Initiate addition to clinical guidelines SharePoint	Mark Collyer	After CSC approval	
Communicate new guideline/ changes to guideline	Sally Jones	After CSC approval	Communication bulletin. Email to ward managers and medical staff.
Offer awareness training / incorporate within existing training programmes	Sally Jones	Tbc	PRN support/training will be offered as part of email/communication if requested by specific ward areas.
Circulation of document(paper)	n/a	n/a	
Circulation of document(electronic)	Sally Jones	After CSC approval	Electronic to ward managers and medical staff.

Clinical Guidelines Appraisal Checklist

All clinical guidelines must be appraised using this appraisal checklist before submission to the Clinical Standards Committee for formal ratification (adapted from Appraisal of Guidelines Instrument, AGREE Collaboration, 2001).
The appraisal tool will be completed by the clinical guideline Lead or Author with the support and advice of the Directorate of Healthcare Governance.
Please see the guidance on using the Appraisal Instrument for a more detailed user guide. **(Attachment 1; Appendix 2)**

1. The overall objective(s) of the guideline is (are) specifically described.

Strongly Agree	4	3	2	1	Strongly Disagree

2. The patients to whom the guideline is meant to apply are specifically described.

Strongly Agree	4	3	2	1	Strongly Disagree

3. The target users of the guideline are clearly defined.

Strongly Agree	4	3	2	1	Strongly Disagree

4. The health benefits, side effects and risks have been considered in formulating the recommendations.

Strongly Agree	4	3	2	1	Strongly Disagree

5. The recommendations are specific and unambiguous.

Strongly Agree	4	3	2	1	Strongly Disagree

6. The different options for management of the condition are clearly presented.

Strongly Agree	4	3	2	1	Strongly Disagree

7. Key recommendations are easily identifiable.

Strongly Agree	4	3	2	1	Strongly Disagree

8. The guideline presents key review criteria for monitoring and audit purposes.

Strongly Agree	4	3	2	1	Strongly Disagree

9. There is an explicit link between the recommendations and the supporting evidence.

Strongly Agree	4	3	2	1	Strongly Disagree

10. A timescale for reviewing the guideline is provided.

Strongly Agree	4	3	2	1	Strongly Disagree

11. The guideline was consulted with individuals from all the relevant professional groups.

Strongly Agree	4	3	2	1	Strongly Disagree

Name of Speciality/check needed		**Name of Person Consulted**
A & E	☐	....
Acute Medicine	☐	....
Anaesthetics	☐	....
Cardiology	☐	....
Dermatology	☐	....
Diabetes	☐	....
Elderly Care	■	Ram Byravan, Rob Wears, M Sandler
ENT	☐	....
Facilities	☐	....
Gastroenterology	☐	....
General Medicine	☐	....

General Surgery	☐	....
Infection Control	☐	....
Infectious Diseases	☐	....
ITU	☐	....
Laboratory Medicine	☐	....
Matrons	☐	....
Obstetrics and Gynaecology	☐	....
Oncology/Haematology	☐	....
Ophthalmology	☐	....
Paediatrics	☐	....
Pharmacy	■	Shazad Razaq....................
Pre-operative Assessment	☐	....
Primary Care	☐	....
Radiology	☐	....
Renal	☐	....
Respiratory Medicine	☐	....
Rheumatology	☐	....
Theatres	☐	....
Therapies (Dietetics, Speech and Language, Occupational Therapy, Physiotherapy)	☐	....
Thoracic Surgery	☐	....
Trauma & Orthopaedics	☐	....
Urology	☐	....
Age Discrimination check	☐	....
Other	■	1. Medical Devices - Mark Simkin 2. PD CNS - Maggie Johnson

SCORE = 41

(NB a score of at least 33 must be obtained before formal ratification by the Clinical Standards Committee can be obtained)

Title of Guideline …Administration of Continuous Subcutaneous Apormorphine infusion in Parkinson's Disease………………………………………………………………………

Directorate ………Elderly…………………………………………………………………..

Clinical Guideline Lead: M Sandler *(copy of paper signature/review/scoring filed with SJones)*

Date of Appraisal …Sept 2014…………………………………………………………………