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 the use of Parkinson's medication in patients who are Nil by Mouth (NBM) or dysphagic

Parkinson's disease (PD) is a neurological condition resulting from loss of dopamine-producing neurons in the substantia nigra area of the basal ganglia. PD is predominantly a movement disorder, causing bradykinesia, rigidity, tremor and postural instability, but non-motor symptoms can be equally debilitating for some patients. These include constipation, sleep disorders, pain, autonomic dysfunction and neuropsychiatric illnesses.

Drug therapy is crucial in managing PD because it enables symptoms to be substantially improved. If medication is not given, patients may lose their ability to swallow, increasing the risk of aspiration; they may be unable to speak; and their movement is impaired, increasing dependency on staff. In addition, they are at risk of falls and fractures, which can be detrimental to their independence and wellbeing. Withholding Parkinson's drugs can lead to a Neuroleptic-like Malignant Syndrome, associated with fever, confusion, raised concentrations of muscle enzyme (creatinine kinase), and even death.

Patients with PD may be admitted to hospital for many reasons, often unrelated to their Parkinson's, but if their PD medication is not managed appropriately, they tend to have poorer outcomes. The timing of Parkinson's medication is important to achieve continuous dopaminergic stimulation for the optimal control of symptoms and to reduce the incidence of motor complications.

Parkinson's drugs are <u>TIME CRITICAL</u> medications

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

If patients cannot take their regular PD medication, it is essential to immediately assess how best to administer these medicines to prevent complications from missed or delayed doses.

Ideally medication should be given via an alternative enteral route if patients are unable to swallow tablets whole (e.g. dispersible tablets in water in swallowing difficulties or through enteral feeding tubes if oral route not suitable) – **<u>scenario 1</u>**. However, conversion to a rotigotine patch may be required in patients with no enteral access – **<u>scenario 2</u>**.

For complex patients, a PD specialist (i.e. specialist PD nurse or on-call neurologist) should ideally be involved in this conversion, but the following offers a guide if PD specialist support is unavailable (e.g. out of hours or at the weekend).

PD drugs should <u>not</u> be held if a patient is NBM for surgery. Doses can be given with sips of clear fluid up until anaesthetic induction. Surgery should be timed to minimize disruption to medicine regimens.

Scenario 1: Dysphagic patient with enteral route available

Can patient safely swallow fluids/soft foods?

→ Yes/Partial

Refer to Speech and Language Therapy for assessment.
Consider trialing one tablet at a time on a teaspoon of thickened fluids/soft food.
Review if appropriate to switch to dispersible tablet or liquid formulation.

↓ No

Does patient have an enteral feeding tube (e.g. NG/NJ/PEG tube) in situ, in the correct position and tolerated by patient?

→ No

If no, see **Scenario 2** below.

Contact PD specialist nurse or on-call neurology registrar for advice (if available).

↓ Yes

Administration of Levodopa + dopa-decarboxylase inhibitors (co-careldopa or co-beneldopa) via enteral feeding tubes[1,6]

Calculate the patients total daily dose of levodopa (including modified release (MR) and immediate release (IR) doses) and change to dispersible co-beneldopa tablets. Divide the total daily levodopa doses evenly throughout the waking day. Adjust ongoing dose regimen based on symptoms. Never crush or open MR tablets or capsules for enteral tube administration.

Example:
Co-careldopa IR 12.5mg/50mg QDS + co-careldopa MR 50mg/200mg ON
*Total daily levodopa dose: (50mg*4) + 200mg = 400mg*
Equivalent co-beneldopa dispersible tablet regimen = 100mg/25mg QDS

See Therapeutic Substitution & Therapy Suspension MIL.

Administration of Dopamine Agonists via enteral feeding tubes[1,6]

Immediate release (IR) preparations of pramipexole and ropinirole can be crushed and dispersed in water for enteral tube administration (unlicensed).

Modified release (MR) preparations cannot be crushed and must be first switched to the equivalent IR preparation. The total daily dose should then be given in three divided doses throughout the waking day.

Example:
Ropinirole 12mg MR OD = ropinirole 4mg IR TDS

See Therapeutic Substitution & Therapy Suspension MIL.

COMT inhibitors (entacapone, tolcapone, opicapone) and MAO-B inhibitors (selegiline, rasagiline, safinamide) can be safely omitted until patients can swallow medication orally[1,8]

Convert back to usual PD medication regimen once patient is able to safely swallow – contact PD nurse to advise.

Scenario 2: Nil enteral access available (e.g. GI failure or unsuitable/failed enteral tube)

Convert each separate preparation of **levodopa** or **dopamine agonist** to its equivalent rotigotine patch strength and add together for the total rotigotine dose required – see tables below

Please note equivalent rotigotine doses may differ depending on resource/dose calculator used – at OUH, please use the conversion tables below as it has been approved by the OUH Parkinson's disease specialists.

Total dose daily levodopa (mg/day)	Rotigotine patch equivalent (mg/24 hours)
100	2
200	4
300	6
400	8
500	10
600	12
800	16 (max dose)

*Dose is daily **levodopa** proportion e.g. -*
- Sinemet® (co-careldopa) 12.5mg/50mg BD = 50mg levodopa BD = 100mg daily dose
- Madopar® (co-beneldopa) 100mg/25mg TDS = 100mg levodopa TDS = 300mg daily dose
- Stalevo® (levodopa, carbidopa, entacapone) 200mg/50mg/200mg TDS = 200mg TDS levodopa = 600mg daily dose

Pramipexole MR (expressed as base)	Pramipexole IR (expressed as base)	Ropinirole IR	Ropinirole MR	Equivalent rotigotine patch mg/24 hours
0.26mg OD	0.088mg TDS	0.75mg TDS	2mg OD	2
0.52mg OD	0.18mg TDS	1mg TDS	4mg OD	4
1.05mg OD	0.35mg TDS	2mg TDS	6mg OD	6
1.57mg OD	0.53mg TDS	3mg TDS	8mg OD	8
2.1mg OD	0.7mg TDS	4mg TDS	12mg OD	12
2.62mg OD	0.88mg TDS	6mg TDS	16mg OD	14
3.15mg OD	1.05mg TDS	8mg TDS	24mg OD	16 (max dose)

Using Rotigotine patches[9,10]

Rotigotine patches are available as 1mg, 2mg, 3mg, 4mg, 6mg and 8mg strengths. Patches should not be cut.
The maximum daily dose of rotigotine is 16mg unless patients are at risk of or have pre-existing dementia/psychiatric disorders (e.g. delirium) where the maximum recommended dose is 12mg daily.
Patches must be replaced every 24 hours and applied to clean, dry, intact healthy skin on the abdomen, thigh, hip, flank, shoulder or upper arm.
The patch site should be rotated, and the same site should not be used within 14 days.

Convert back to usual PD medication regimen once patient is able to safely swallow – contact PD nurse to advise

Further Information:

Further information can also be obtained from the OUH Trust intranet site.

OUH Parkinson's Disease Information website

Contact details for Parkinson's Specialist Nurse at Oxford University Hospitals:

Mabel Eghaghe: Advanced Nurse Practitioner-Parkinson's Disease
Tel: 01865-2 34048
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Inpatient advice available Monday-Wednesday & Friday

References:

1. Reid J. Acute management of Parkinson's patients. NHS Fyfe, 2017. Available from: https://www.fifeadtc.scot.nhs.uk/media/6928/pd-nbm-guideline_2017.pdf
2. Blochberger A., Jones S. Parkinson's disease: clinical features and diagnosis. Clinical Pharmacist 2011: 3 361
3. Kearney D., Dunsmure L. Parkinson's Disease management Clinical Pharmacist 2011: 3 368
4. Brennan K, Genever R: Algorithm for estimating parenteral doses of drugs for Parkinson's Disease, BMJ 2010: 341
5. Joint Formulary Committee. *British National Formulary* (online) London: BMJ Group and Pharmaceutical Press. Parkinson's disease Treatment Summary. Available from: http://www.medicinescomplete.com
6. White B., Bradnam V. Handbook of drug administration via enteral feeding tubes. Available from: http://www.medicinescomplete.com
7. LeWitt P et al. Overnight Switch from oral dopaminergic agonists to Transdermal rotigotine patch in subjects with Parkinson's Disease. Clinical Neuropharmacol. 2007 30(5):256-265.
8. Brennan K. Parkinson's disease medicines formulations for adults with swallowing difficulties. Specialist Pharmacy Service. June 2022. Available from: https://www.sps.nhs.uk/articles/parkinsons-disease-medicines-formulations-for-adults-with-swallowing-difficulties/
9. Summary of Product Characteristics: Neupro 2mg/24 h Transdermal patch. UCB Pharma Limited. Updated 1st January 2021. Available from: https://www.medicines.org.uk/emc/product/186/smpc
10. Tomlinson C et al. Systematic Review of Levodopa Dose Equivalency Reporting in Parkinson's Disease. Movement Disorders, Vol. 25, No. 15, 2010.
11. Parkinson's UK. Emergency Management of Patients with Parkinson's. Reviewed 2/11/2019. Available from: https://www.parkinsons.org.uk/professionals/resources/emergency-management-patients-parkinsons

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