**KEY POINTS**

- **Do not Stop**
  It is crucial to not stop Parkinson’s (PD) DRUGS for any significant length of time. There is a risk of Neuroleptic Malignant Like Syndrome (Parkinsonism Hyperpyrexia Syndrome) which may be fatal, as well as causing significant exacerbation of symptoms and patient distress including ability to move and may affect ability to swallow.

- **Medications**
  Patients own medications can be used if in pharmacy labelled bottles and are dated within the past 6 months. Compliance devices can be used if the medications are identifiable and dated within 4 weeks. Pharmacist/technician can assess and document suitability and aid with medicine identification. Essential PD medications are held in AMU, Wards 5, 6 and 23A in Ninewells. A smaller selection is available from Omnicell, Tay or stroke wards in PRI and emergency drug cupboard in Stracathro. A medicines locator can be used to find medications in stock via staffnet. If the above options have been exhausted an-on-call pharmacist is available through switchboard for advice. **Consider giving a one off prescription if doses have been missed.**

- **Surgical patients:**
  If possible levodopa and dopamine agonists should be continued throughout the peri-operative period (refer to peri-operative guidelines (Staffnet link only)). Other PD medication may interact with anaesthetics – contact anaesthetist for advice.

- **Early referral to PD team**
  Ensure early referral to the local PD team within 24 hrs so medicine administration problems can be prevented before missed doses occur. If prolonged surgery expected or if oral route is going to be compromised post-operatively it may be worthwhile considering alternative routes pre-operatively. Please discuss with Parkinson’s nurse specialist/Pharmacist.

What to do when oral route is compromised

Alternative routes (Nasogastric or Transdermal or Subcutaneous) need to be considered as appropriate. As far as possible use patients own regimen. First consider:

- Can the patient swallow their usual tablets?
- Can the patient swallow other formulations e.g. liquids or dispersible tablets? Does the patient have a nasogastric (NG) tube or would it be appropriate to insert one for the purpose of administering medicines?
- Is there any reason why the patient must not be given any oral medications (e.g. in some cases peri-operatively)?

(See Flow Chart)

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**Rotigotine patch**

Appropriate in patients with no available oral or NG route. Rotigotine is a dopamine agonist, available in a transdermal patch formulation.

**Consider:**

Neuropsychiatric side-effects – dopamine agonists tend to cause more neuro-psychiatric side-effects than levodopa, e.g. hallucinations and drowsiness. Therefore there is an increased risk of delirium and dose reductions may be necessary.

Hypotension/or.thostatic hypotension may occur with rotigotine patches, similar to oral medications. The specialist PD team is best placed to assess patient history and clinical status to decide if a rotigotine patch is appropriate and advise on appropriate initial doses. Rotigotine patch can be started by an acute care team, in cases where the oral/ NG route is unsuitable (see flow chart).

**Dose conversions for rotigotine patches**

For patients who usually take an oral dopamine agonist an equivalent dose can be relatively straightforward to work out (See table 1). For patients taking levodopa, an initial dose of rotigotine patch 2 mg/24 hours regardless of the previous levodopa dose should be started. The patient should then be monitored for response and side effects. Increase rotigotine in 2 mg steps after 24 hours depending on response. Contact PD team if available before increasing dose. Younger patients without cognitive impairment on higher doses of levodopa-consider starting at 4mg.

**Table 1: Dopamine agonist equivalent doses of total 24 hour dose**

<table>
<thead>
<tr>
<th>Pramipexole (salt content)</th>
<th>Pramipexole (base content)</th>
<th>Rotigotine</th>
<th>Rotigotine patch/24hrs*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 375µg</td>
<td>Up to 260µg</td>
<td>Up to 2mg</td>
<td>2mg</td>
</tr>
<tr>
<td>750µg</td>
<td>520µg</td>
<td>4mg</td>
<td>4mg</td>
</tr>
<tr>
<td>1.5mg</td>
<td>1.05mg</td>
<td>6mg</td>
<td>6mg</td>
</tr>
<tr>
<td>2.25mg</td>
<td>1.57mg</td>
<td>8mg</td>
<td>8mg</td>
</tr>
<tr>
<td>3mg</td>
<td>2.1mg</td>
<td>12mg</td>
<td>10-12mg</td>
</tr>
<tr>
<td>3.75mg</td>
<td>2.62mg</td>
<td>18mg</td>
<td>14mg</td>
</tr>
<tr>
<td>4.5mg</td>
<td>3.15mg</td>
<td>24mg</td>
<td>Max 16mg</td>
</tr>
</tbody>
</table>

Multiple patches may need to be applied to provide total dose ensure ordered from pharmacy at earliest opportunity

**Subcutaneous route:**

Apomorphine is a potent dopamine agonist. Under no circumstances should this be initiated without involvement of a PD Team. If a patient is admitted on apomorphine please contact the PD nurse specialist as soon as possible. If urgent advice is needed out of hours there is a 24 hour Apo-go helpline available on 0844 880 1327.

**REFERENCES/ACKNOWLEDGEMENTS**

We thank the following for permission to adapt their protocols.

NHS Greater Glasgow& Clyde Medicine Information Service

Norfolk & Norwich University Hospital NHS Foundation Trust
Management of Parkinson’s in the Acute Setting Flow Chart (NHS Tayside)

Do not miss medication in patients with Parkinson’s.
Confirm the patient's correct medication regimen and prescribe at exact times ‘Get it on time’.
Can the patient swallow their medications safely?

YES
Prescribe normal medication at exact times.

NO
Can the patient swallow liquids?

YES
Follow Table 2.

NO
NG Tube in situ

Do not give patients haloperidol, metoclopramide, cyclizine, prochlorperazine.

Patient on both DA and levodopa medicines
- Use Table 1 to convert DA dose to equivalent rotigotine patch.
  - Add 2mg to rotigotine dose to replace levodopa part of regimen.
  *Maximum dose of rotigotine allowed is 16mg*

Patient on Dopamine agonist (DA) only
- Use Table 1 to convert DA dose to equivalent rotigotine patch.

Patient on Levodopa only (Caution- check no previous adverse effects with DA)
- Prescribe 2mg rotigotine patch.
  - If PD control sub-optimal after 24 hours increase by 2mg.
  - Consider starting at 4mg in younger patients with no cognitive impairment.

Table 2 (use thickened fluid for modified diet if appropriate)

<table>
<thead>
<tr>
<th>Medicine*</th>
<th>Formulation</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Co-Beneldopa (Madopar®) (Levodopa)</td>
<td>Dispersible Tablets</td>
<td>Continue, no change required</td>
</tr>
<tr>
<td></td>
<td>Capsules</td>
<td>Use dispersible tablets same dose</td>
</tr>
<tr>
<td></td>
<td>Modified Release Capsules</td>
<td>Convert to dispersible tablets, reduce dose by 30% and consider need to alter dose/frequency if hypotension occurs</td>
</tr>
<tr>
<td>Co-Carel dopa (Sinemet®) (Levodopa)</td>
<td>Tablets (plain release)</td>
<td>Continue current regimen, plain release tablets will disperse in water</td>
</tr>
<tr>
<td></td>
<td>Modified Release Tablets</td>
<td>Convert to plain release tablets, reduce dose by 30% and consider the need to alter dose/frequency if hypotension occurs</td>
</tr>
<tr>
<td>Stalevo® (Levodopa + COMT inhibitor)</td>
<td>Tablets</td>
<td>Convert levodopa content to Co-beneldopa dispersible/co-carel dopa plain release</td>
</tr>
<tr>
<td>Ropinirole or Pramipexole Dopamine Agonist (DA)</td>
<td>Tablets (plain release)</td>
<td>Calculate 24 hour dose and follow Table 1</td>
</tr>
<tr>
<td></td>
<td>Modified Release Tablets</td>
<td>Follow Table 1</td>
</tr>
</tbody>
</table>

Note: selegiline, rasagiline, amantadine and entacapone are not essential in acute situations and can be omitted.

ESSENTIAL - REMEMBER TO ALERT NURSING STAFF OF CHANGES

If area PNS not available; other PNS can be contacted for advice.
Or contact patients Parkinson’s Doctor / Ward pharmacist/on-call pharmacist (out of hours).

***Seek advice as soon as possible****