Advanced Therapeutics in Movement Disorders

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As the Disease Progresses, the Therapeutic Window Narrows

Symptoms and side effects occur as the levodopa therapeutic window diminishes:

- Smooth, extended response
- Diminished duration
- Shorter, unpredictable response
- Absent or infrequent dyskinesia
- Increased incidence
- “On” time with increased dyskinesia of dyskinesia

Plasma Levodopa Concentrations

## Non-motor symptoms

<table>
<thead>
<tr>
<th>Neuropsychiatric</th>
<th>Dysautonomia</th>
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<tbody>
<tr>
<td>Depression</td>
<td>Orthostatic hypotension</td>
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<tr>
<td><strong>Sleep Disorders</strong></td>
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<tr>
<td>REM behavior disorder</td>
<td>Constipation/gastroparesis</td>
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<td><strong>Anxiety</strong></td>
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<td>Urinary disturbance</td>
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<td><strong>Hallucinations</strong></td>
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<td>Restless leg syndrome/periodic limb</td>
<td>Erectile dysfunction</td>
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<td>movements in sleep</td>
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<td><strong>Insomnia</strong></td>
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<td><strong>ICD/DDS/punding</strong></td>
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<td>Excessive daytime sleepiness/fatigue</td>
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<td><strong>Dementia</strong></td>
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<td><strong>Apathy</strong></td>
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<td>Obstructive sleep apnea</td>
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45% of patients with PD do NOT have a neurologist.

Some providers think “there is little that can be done” for patients with advanced Parkinson’s disease.

Care by neurologists leads to:
- Greater utilization of cost effective therapies
- Fewer hospitalizations
- Less fractures
- Improved patient mood
- Reduced nursing home placement
Advanced Therapeutics – a devoted program

- Objectives:
  - To ensure all patients with advanced PD have a movement disorders neurologist involved in their care
  - To promote education of physicians and patients
  - To provide patients with novel therapies
  - To promote research development in the field of advanced PD
Treatments

• Medications
• Novel delivery systems
• Surgical
Intec Accordion CL formulation gastroretentive platform

Supra Outer with IR
Levodopa
Outer envelope
Film
Inner Drug
Reservoir with CR
Levodopa
Outer Envelope
Film
Supra Outer with Carbidopa

AP CD/LD inside a capsule.
Sublingual apomorphine
MYOBLOC

• Botulinum toxin
  • Decreases amount of saliva and improves drooling
  • Effect lasts for up to 3 months

• Study design
  • Open label – no placebo injections after the first cycle
  • 4 injections - 2 in parotid and 2 in submandibular glands
  • 4 cycles of injections every 3 months
Alternate drug delivery systems
Carbidopa/levodopa enteral suspension
Apomorphine
Interventional Treatments
Collagen injections in vocal folds

- More than 90% of PD patients have voice and speech impairments
- The current treatment
  - Speech therapy, Lee Silverman Voice treatment (LSVT)
  - Vocal fold augmentation with collagen injections is being used safely for many disorders of vocal folds
- Few reports in PD demonstrate improvement in voice loudness
Novel Targets for DBS (Zona Incerta)

- DBS is an effective treatment for parkinsonism
- Stimulation adverse effect may occur
  - Dyskinesias
  - Ataxia
  - Behavioral and mood problems
- The zona incerta has been shown to be as efficacious compared with the traditional target of the STN
Palliative Care in PD

- Palliative Care is an approach to the treatment of patients and families affected by chronic, life threatening illness
- Focuses on relief of suffering
  - Medical symptoms management
  - Psychosocial support
  - Spiritual Wellbeing
  - Planning and preparing for future
Palliative Care in PD

- Hospital Stays
- ER Visits
- Falls and related complications
- Pneumonia
- Use of home health services
- Use of other services (e.g. counseling) outside of primary intervention
Thank you