



Methods for Calculating Levodopa Equivalent Daily Dose (LEDD) in PPMI Data

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Summary

PPMI collects the dosage of Parkinson's Disease (PD) medications taken by study participants on the Concomitant Medications (CONMED) log, which can be converted to a Levodopa Equivalent Daily Dose (LEDD) using the methods described in Tomlinson, et al.

Method

A column titled "LEDD" has been added to the Concomitant Medications (CONMED) table to show the LEDD for each individual PD medication listed in the log. The LEDD was calculated by first using an algorithm to calculate the daily dose (mg) of each PD medication. The medication dose and frequency are taken from the CONMED table. Next, the daily dose for each PD medication was multiplied by the appropriate conversion factor listed in Table 1 below. These conversions factors were calculated using the methods described in Tomlinson, et al.

For PD medications except COMT inhibitors, the column LEDD will show the value of the Levodopa equivalent dose for that medication. For COMT inhibitors, the column LEDD will read "LD x 0.33" (for Entacapone) or "LD x 0.5" (for Tolcapone). To find the LEDD for COMT inhibitors, first find the total dose of Levodopa only, and then multiply the Levodopa dose by either 0.33 or 0.5 as instructed.

To find the total LEDD at a specific time point, add all values of the column LEDD for the PD medications taken at that time point. Anticholinergics and other PD medications that are not included in the calculation of the total LEDD will have a missing value for the LEDD column.

Due to the complexity of the LEDD calculation, the LEDD column is only updated quarterly, so this column will not necessarily be up-to-date with the other data in the CONMED table.





Table 1. Conversion factors used to calculate LEDDs for PD drugs

Drug Class	Drug	Conversion factor
Dopamine Replacement	Levodopa	x 1
	Controlled-release Levodopa (includes Rytary)	x 0.7
	Duodopa	x 1.11
COMT Inhibitors	Entacapone	LD x 0.33*
	Tolcapone	LD x 0.5*
Dopamine Agonists	Pramipexole, Lisuride, Pergolide	x 100
	Ropinirole	x 20
	Rotigotine	x 30.3
	Piribedil	x 1
	Bromocriptine	x 10
	Cabergolin	x 66.67
	DHEC	x 5
MAOB Inhibitors	Selegiline 10 mg (oral)	x 10
	Selegiline 1.25 mg (sublingual)	x 80
	Rasagiline	x 100
Other	Amantadine	x 1
	Apomorphine	x 10

*Regardless of the Entacapone/Tolcapone dose, the Levodopa dose is multiplied by the conversion factor and added to the other subtotal LEDDs to find the total LEDD.

The following PD drugs are NOT included in the LEDD calculation:

- Propranolol
- All Anti-cholinergics
 - Benztropine / Cogentin
 - Biperiden / Akineton
 - Budipin / Parkinsan
 - Trihexyphenidyl / Artane
- Investigational drugs

Anticholinergics and other medications that are not included in the calculation of the total LEDD will have a missing value for the variable LEDD.





References

1. Tomlinson CL, Stowe R, Patel S, Rick C, Gray R, and Clarke CE (2010). "Systematic review of levodopa dose equivalency reporting in Parkinson's disease," *Movement Disorders*, 25(15): 2649-2653.

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