

ABSTRACT

OBJECTIVE: To describe patient demographic and medication utilization patterns within a state Medicaid program for patients diagnosed with Parkinson's disease (PD).

BACKGROUND: Little is known regarding medication treatment patterns within the Medicaid PD population. Assessing and identifying demographic and medication use patterns forms the foundation for understanding how treatment decisions ultimately impact disease progression and the outcomes that result.

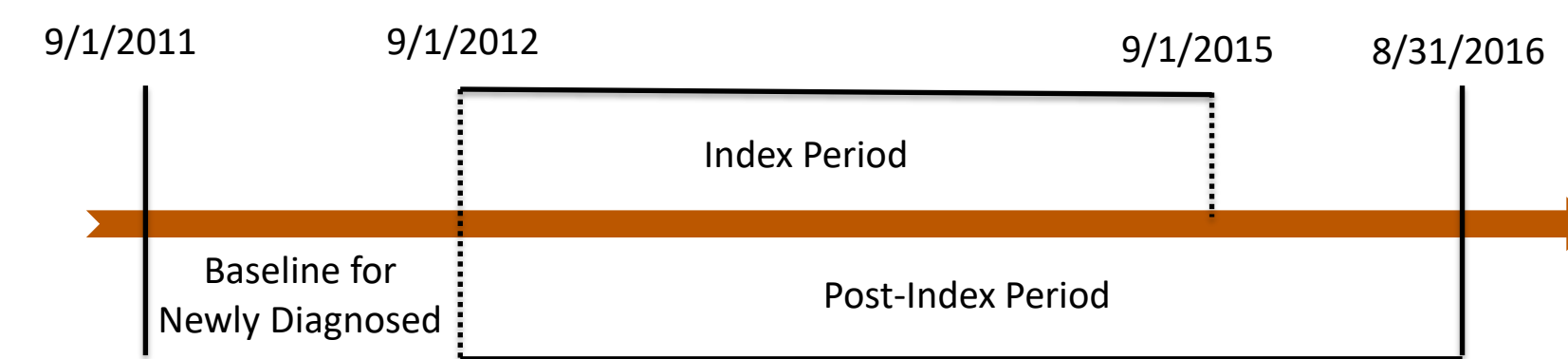
METHODS: We conducted an observational study of secondary medical and prescription utilization data derived from Texas Medicaid administrative healthcare claims for patients aged 18 to 63 years with a PD diagnosis between 9/1/12 and 8/31/15, and utilizing at least one or a combination of the following PD medication classes: levodopa, dopamine agonists (DA), monoamine oxidase-b (MAOB) inhibitors, or catechol-o-methyl transferase (COMT) inhibitors at any time following the diagnosis. Patients were characterized as newly or previously diagnosed with PD and were followed for 12 months post-index. Medication adherence was calculated using the proportion of days covered (PDC) during the post-index period beginning with the date of first prescription. We measured rates of persistence using a 45-day gap in therapy to define discontinuation of medication.

RESULTS: A total of 691 patients diagnosed with PD were included in the study sample with an average age of 55.2 years, 53.1% were female, and 42% were characterized as newly diagnosed. A total of 81.9% of patients utilized levodopa in mono- or combination therapy, followed by DA (43%), MAOB (8.7%), and COMT (5%). Combined levodopa/DA use was seen in 23.9% of patients. Overall, newly diagnosed patients utilized levodopa over DA as the initial treatment by a 2:1 ratio and averaged 41.6 days to start levodopa and 33.6 days to start DA. Patients <55 and ≥55 years utilized levodopa first over DA by a 1.56:1 and 2.28:1 ratio, respectively. Adherence rates in the 12-month post-index period for all patients using levodopa (no DA) were 65.3%, 64.8% for DA (no levodopa), and 60.4% for those using combination levodopa/DA. Within those same cohorts, persistency rates for levodopa patients were 52.6%, 51.2% for DA, and 47.3% for levodopa/DA.

CONCLUSIONS: Our sample of Medicaid patients showed predominant use of levodopa, followed by DA, with relatively low rates of medication adherence and persistence across both classes of PD therapy.

RESULTS

Figure 1. Observational Study Design Framework



PD diagnosis naïve (newly diagnosed)

- No evidence of a PD diagnosis within 12 months prior to the index date, or to beginning of study period

PD diagnosis non-naïve (previously diagnosed)

- Evidence of at least 1 PD diagnosis within 12 months prior to the index date, or to beginning of study period

Table 1. Study Sample Attrition Table

Step	Inclusion Criteria	Patients
1	Patients with at least 1 diagnosis of PD between 9/1/12 and 8/31/15	18,829
2	Patients with 12 months pre-index and post-index eligibility	13,984
3	Patients under the age of 64 years	2,997
4	Patients with at least one claim for [Levodopa, DA, MAOB or COMT] during Post-Index	691

Figure 2. Gender Distribution

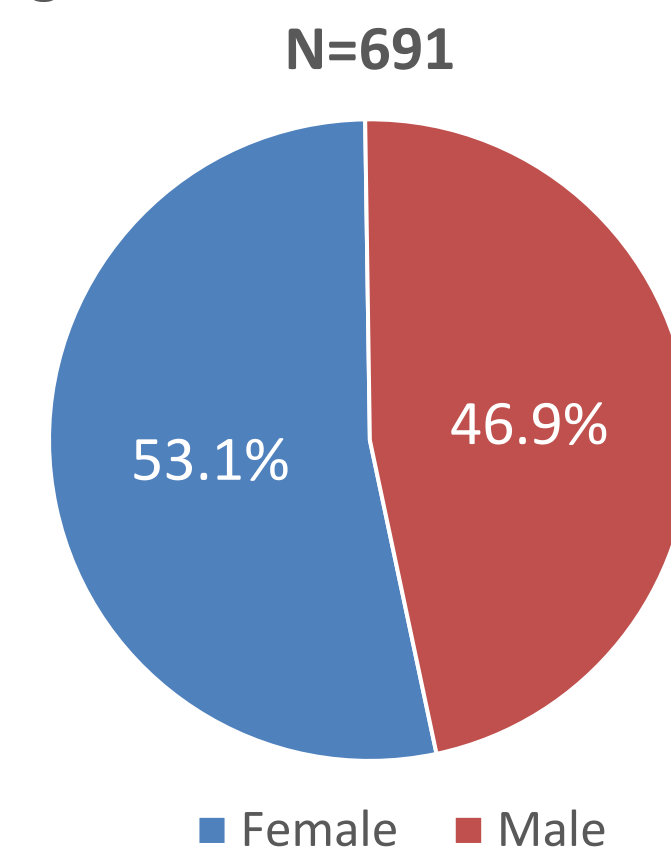


Figure 3. PD Diagnosis Status

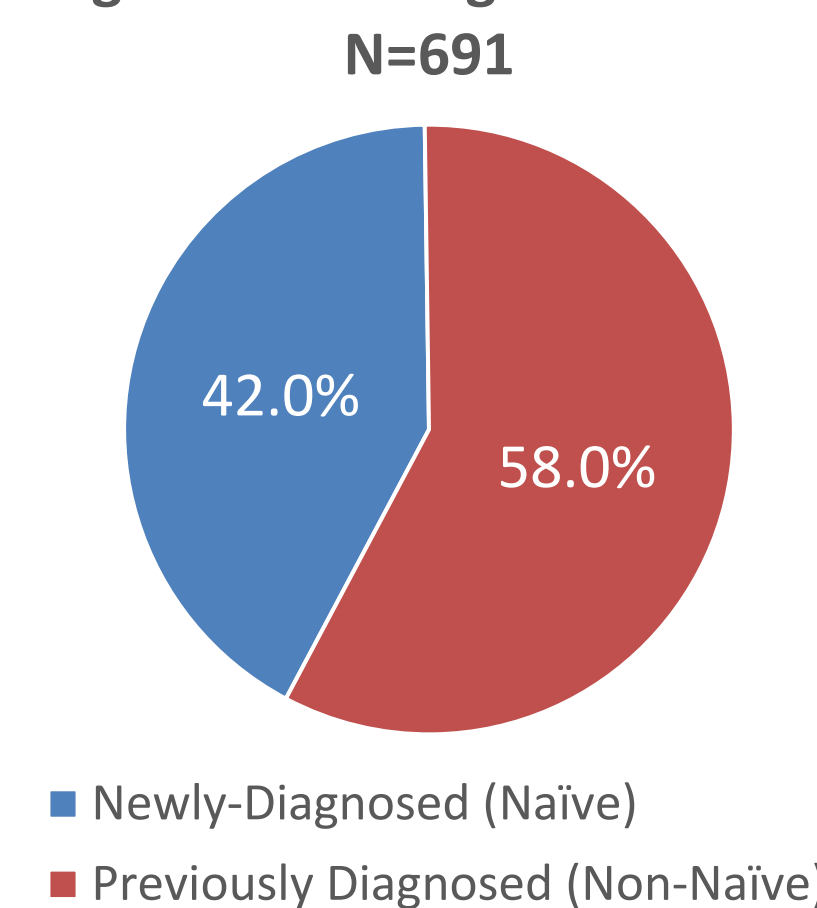


Figure 4. Initial Treatment for Newly-Diagnosed PD Patients

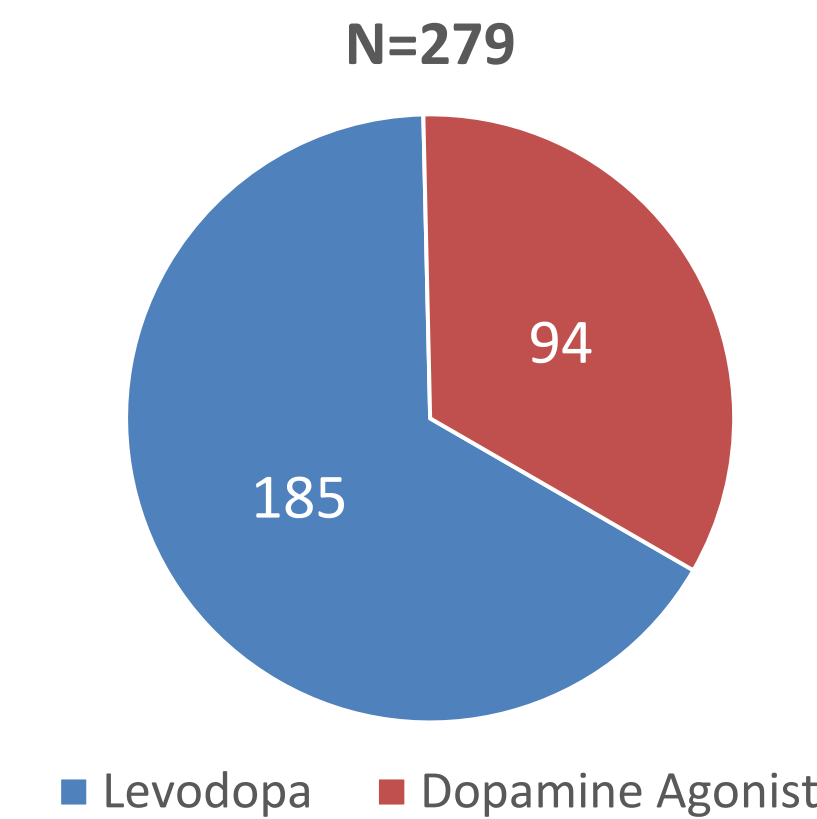


Figure 5. Drug Class Utilization During Post-Index Period

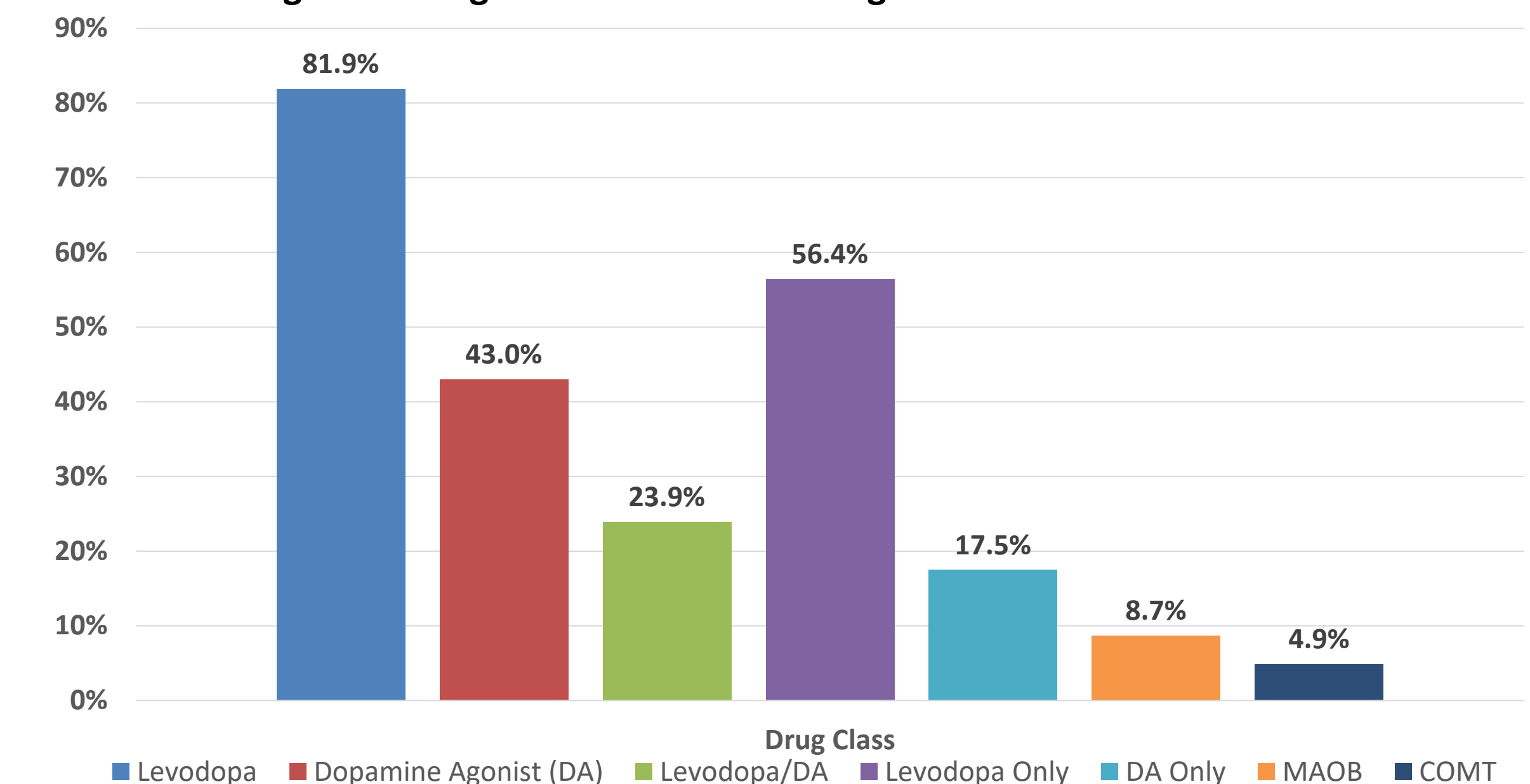


Table 2. Initial Treatment and Days to Start by Age Group

PD Medication	Under Age 55	Avg. Days to Start Under Age 55	Age 55-63	Avg. Days to Start Age 55-63	Total
Levodopa	64 (34.6%)	54.6	121 (65.4%)	34.8	185
Dopamine Agonist	41 (43.6%)	43.1	53 (56.4%)	26.3	94

Figure 6. Drug Adherence During Post-Index Period

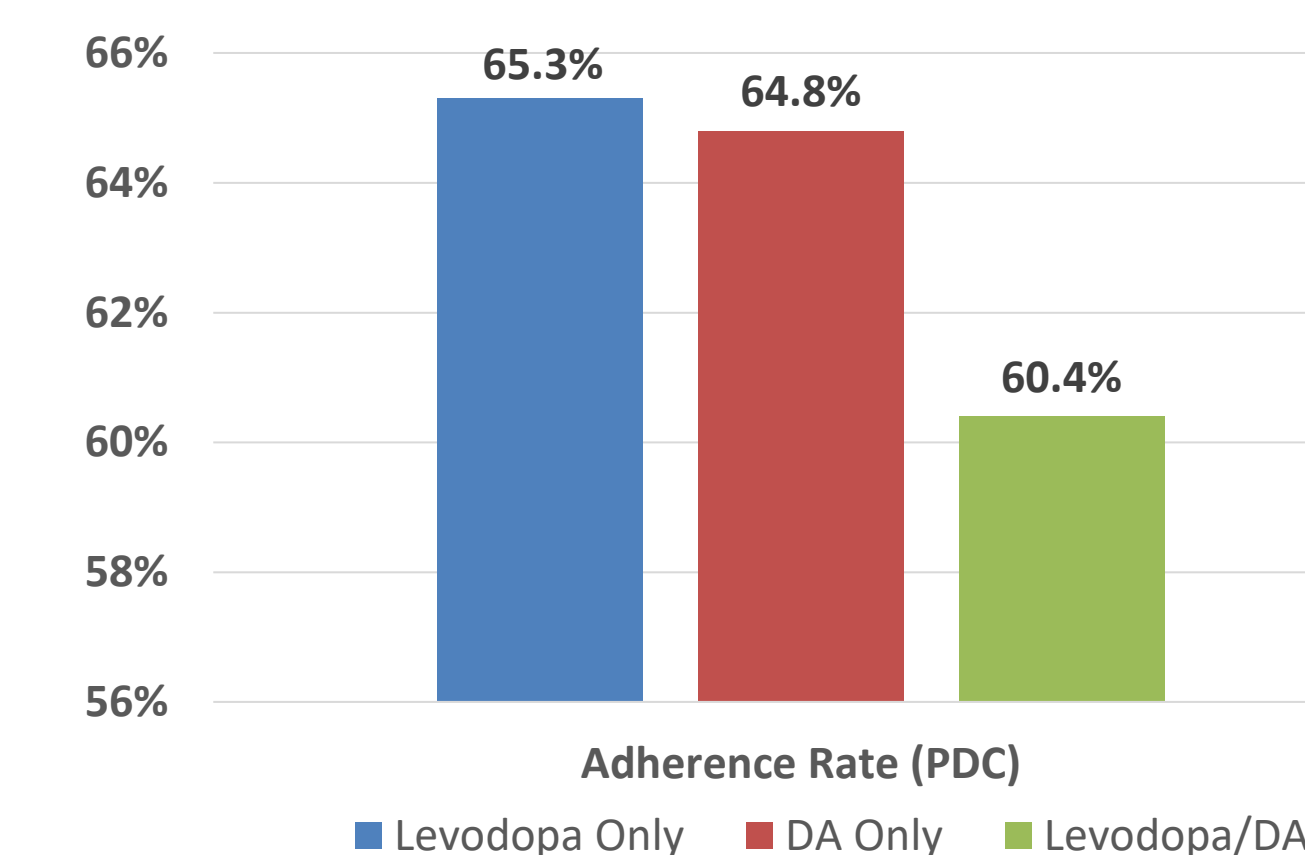
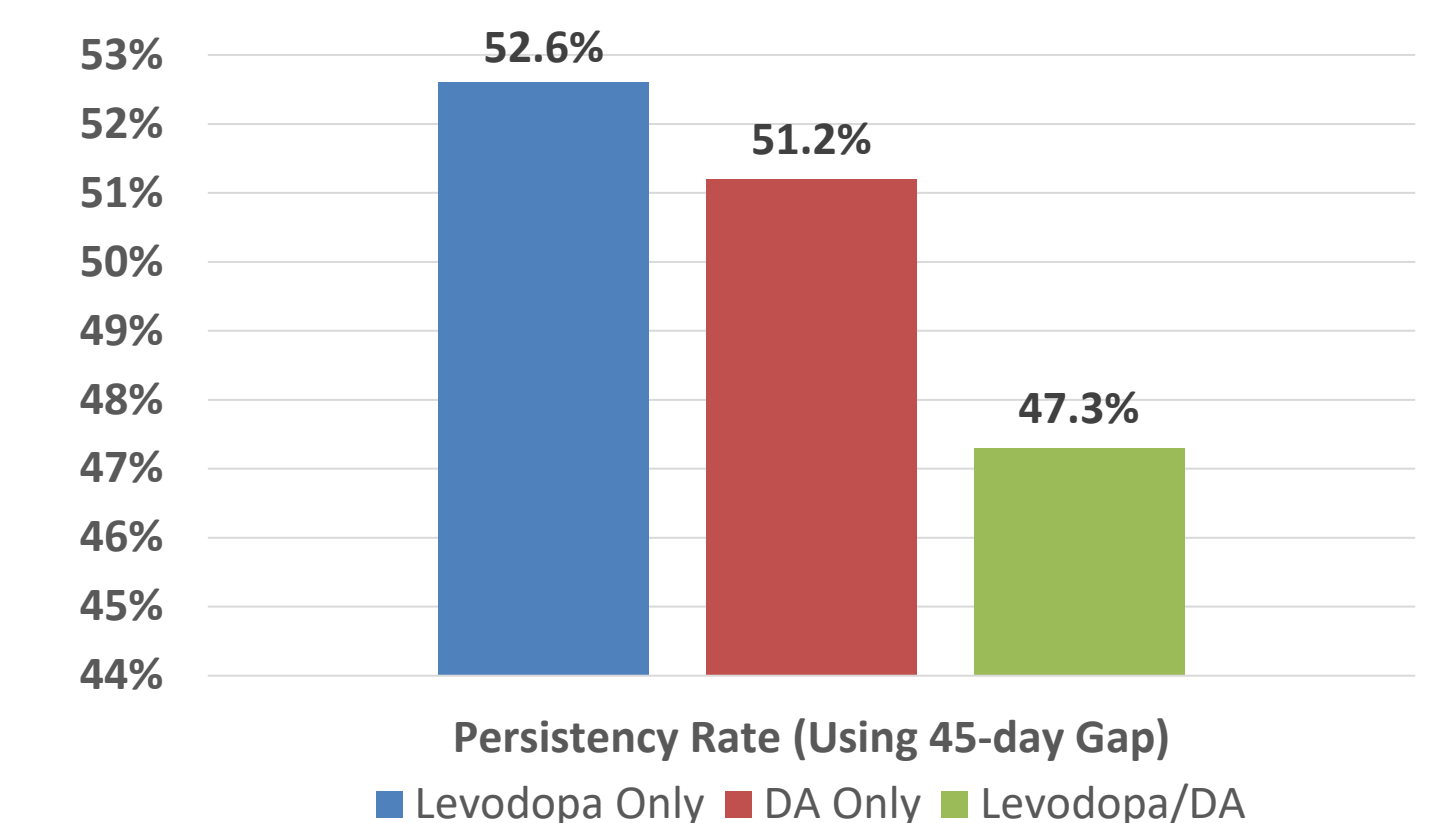


Figure 7. Percent of Persistent Patients During Post-Index Period

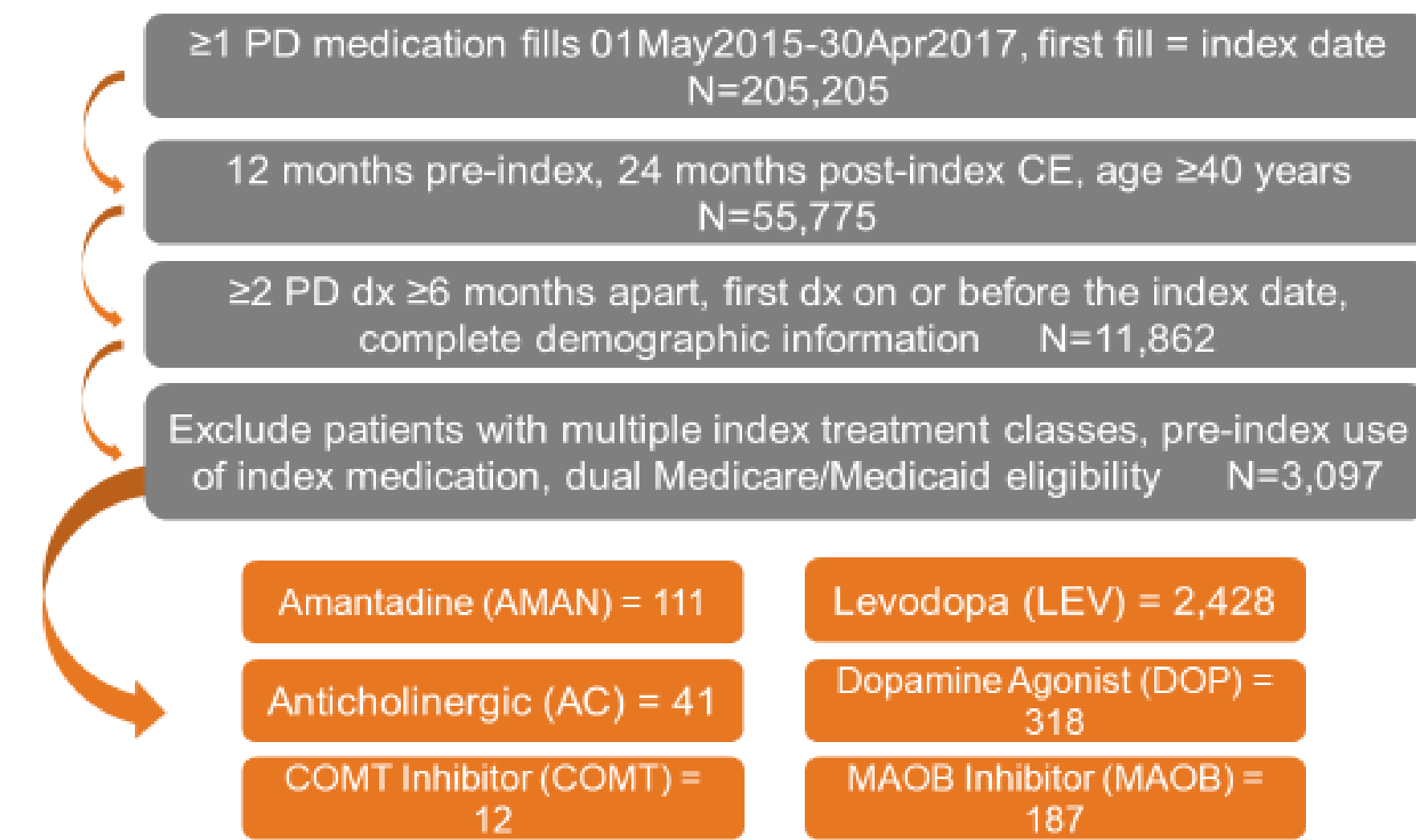


Abstract

- Objective:** Characterize prominent medication utilization patterns among patients with Parkinson's disease (PD).
- Background:** Multiple classes of medications, as monotherapy or polytherapy, are prescribed to treat PD symptoms. Current information about treatments over time is limited.
- Methods:** US commercial and Medicare Advantage Part D (MAPD) enrollees ≥40 years old who had ≥2 PD diagnoses and initiated a PD treatment during 01 May 2015 - 30 April 2017 were identified. The date a new class of PD treatment began was the index date. Patients had continuous insurance coverage for 12 months before and 24 months after index. Cohorts were assigned by index treatment (amantadine (AMAN), anticholinergic (AC), catechol-O-methyl transferase inhibitor (COMT), levodopa (LEV), dopamine agonist (DOP) or monoamine oxidase B inhibitor (MAOB)) and analyzed descriptively. A line of therapy (LOT) algorithm examined sequential regimens prescribed by PD medication class, length of and reason for end in patients' first 3 LOTs during the post-index period.
- Results:** 3,097 patients were identified and assigned to LEV (n=2,428), DOP (318), MAOB (187), AMAN (111), AC (41) and COMT (12) cohorts (Figure 1). Patients were mostly male (62.5%) with MAPD coverage (79.5%). LEV cohort was oldest (mean=75.4, SD=8.1) (Table 1). Total number of LOTs ranged from 1-15; 1,633 (52.7%) of patients had ≥2 LOTs and 845 (27.3%) had ≥3 LOTs. LEV was the most common treatment; 2,460 (79.4%) of patients' first LOT included LEV, of whom 2,389 (77.1%) had LEV monotherapy in their first LOT (Figure 3) and 1,843 (59.5%) were treated with only LEV monotherapy during the first 3 LOTs (data not shown). Overall, 88.0% of patients with a first LOT, 70.1% with a second LOT and 69.7% with a third LOT had LEV monotherapy, DOP monotherapy, or LEV/DOP polytherapy (Figure 3). LEV had the longest mean duration (421 days) in the first LOT. Regimens with LEV (mean range 217-370 days) or LEV/DOP (295-601) had the longest mean durations in each cohort in the second LOT. In the third LOT, the longest lasting regimen in each cohort contained LEV or DOP in monotherapy or combination therapies (Figure 4). Reasons for LOT end varied by LOT and cohort, but higher percentages of second and third LOTs endured until study end (Figure 5).
- Conclusions:** PD treatment patterns were stable for most patients; LEV was the most common PD treatment and had the highest percentage of patients with a single regimen. DOP was also common as monotherapy and in LEV/DOP combination. LEV and DOP were components in the longest lasting regimens.

Patient Attrition Flow

Figure 1. Attrition diagram



Patient Demographics and Characteristics, Pre-Index

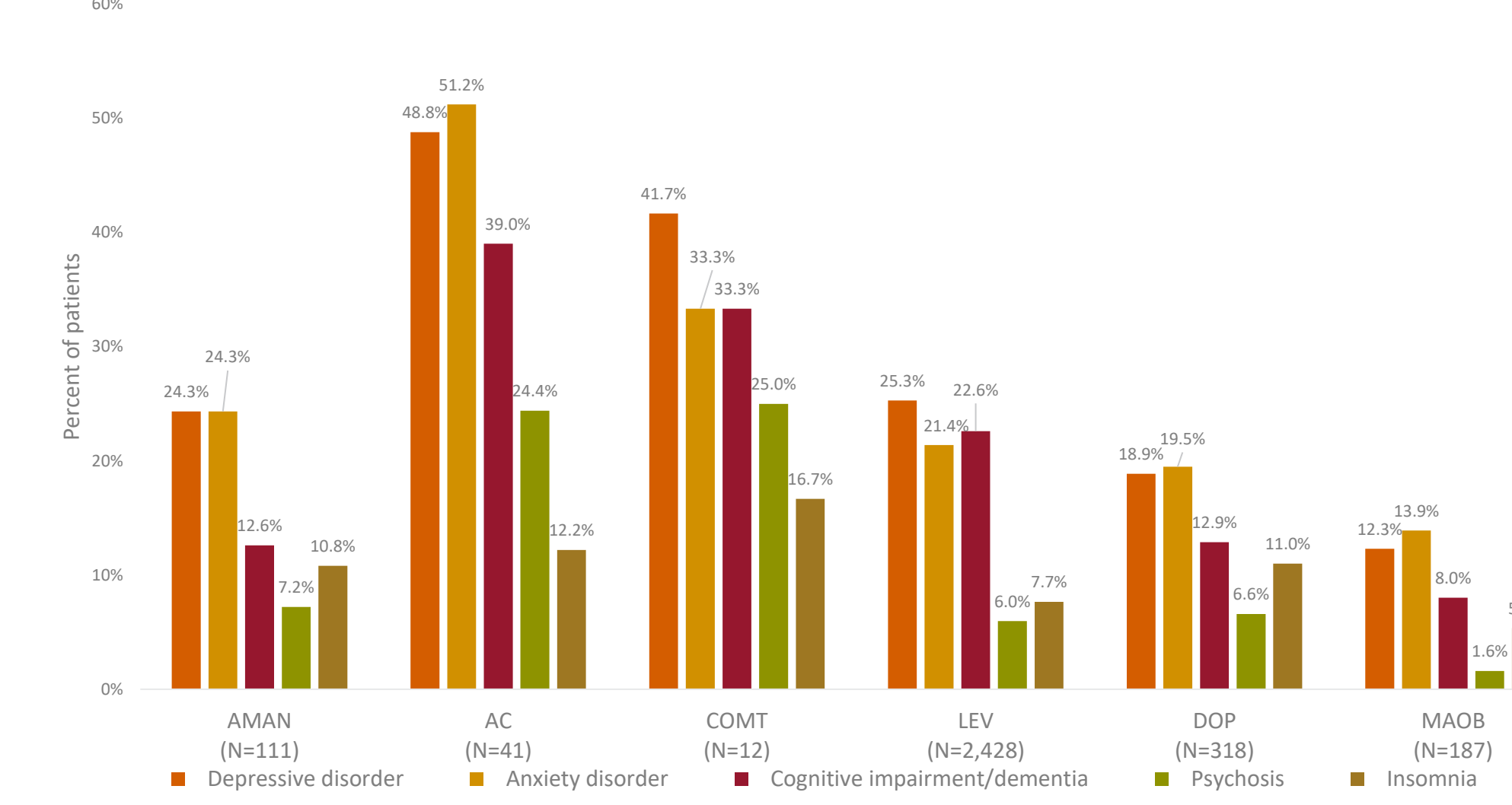
Table 1. Patient demographics

Demographics		AMAN (N=111)	AC (N=41)	COMT (N=12)	LEV (N=2,428)	DOP (N=318)	MAOB (N=187)	
Age	mean	72.68	71.17	74.17	75.38	69.72	68.44	
	SD	8.53	10.78	9.44	8.09	10.25	10.78	
Gender	Female	n	48	17	4	925	112	54
	%	43.24	41.46	33.33	38.10	35.22	28.88	
Male	n	63	24	8	1,503	206	133	
	%	56.76	58.54	66.67	61.90	64.78	71.12	
Insurance type	Commercial	n	22	10	3	418	97	86
	%	19.82	24.39	25.00	17.22	30.50	45.99	
Medicare	n	89	31	9	2,010	221	101	
	%	80.18	75.61	75.00	82.78	69.50	54.01	
Year of Index Date	2015	n	49	15	10	775	142	72
	%	44.14	36.59	83.33	31.92	44.65	38.50	
	2016	n	46	18	2	1,149	128	82
Charlson Comorbidity Index score	mean	1.14	1.32	1.50	1.39	0.91	0.96	
	SD	1.69	1.66	1.78	1.73	1.43	1.48	

- Behavioral health conditions were observed among patients in all cohorts, and across cohort comparisons were significant for all conditions except insomnia (Figure 2).

Patient Demographics and Characteristics, Pre-Index

Figure 2. Behavioral health conditions by cohort



Results: Line of Therapy (LOT) Analysis*

A regimen was considered a combination therapy in a LOT if the second medication was added within 14 days after LOT start. A patient could repeat the same LOT if there was a ≥60 gap in days with medication coverage.

1st LOT: There were 3,097 patients with a 1st LOT

- Monotherapies were more common than combinations and this was likely because the study population could not have 2 medications on the index date.

- Over three-fourths of the study population had LEV monotherapy and almost one-tenth had DOP monotherapy.

2nd LOT: 1,633 patients had a second LOT

- LEV was still the most common treatment (47.6%), although the overall percentage of patients with LEV treatment was lower by roughly 38 percentage points (from 77.1% in first LOT).

3rd LOT: 845 patients had a third LOT

- LEV and DOP were the most common treatments:
 - Over 70% of patients had LEV monotherapy or LEV as a component in polypharmacy.
 - Over 25% had DOP as monotherapy or as a component in polypharmacy.

Results (continued)

Figure 3. Top 10 regimens in each LOT (all cohorts)

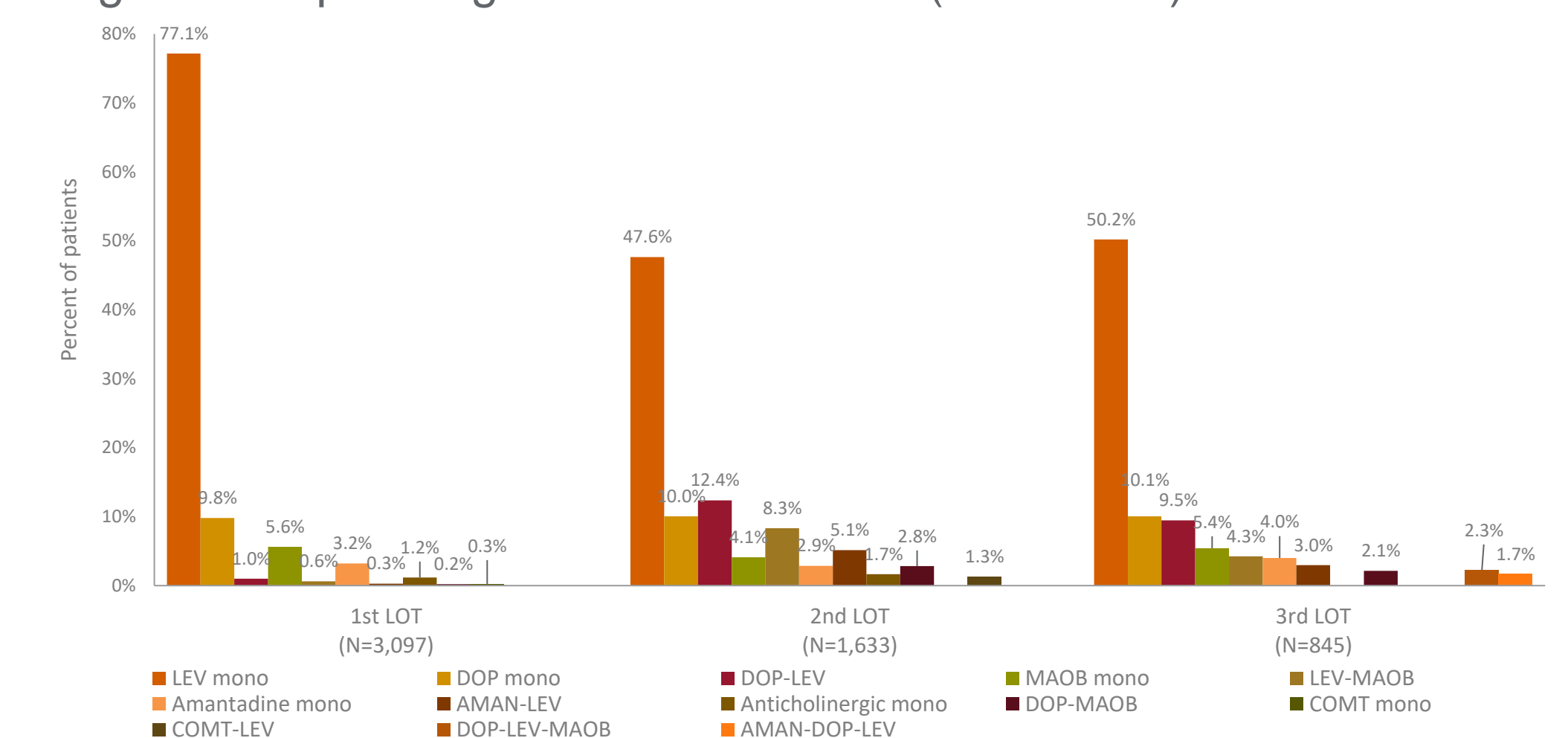


Figure 4. Mean days of top 10 regimens in each LOT by cohort

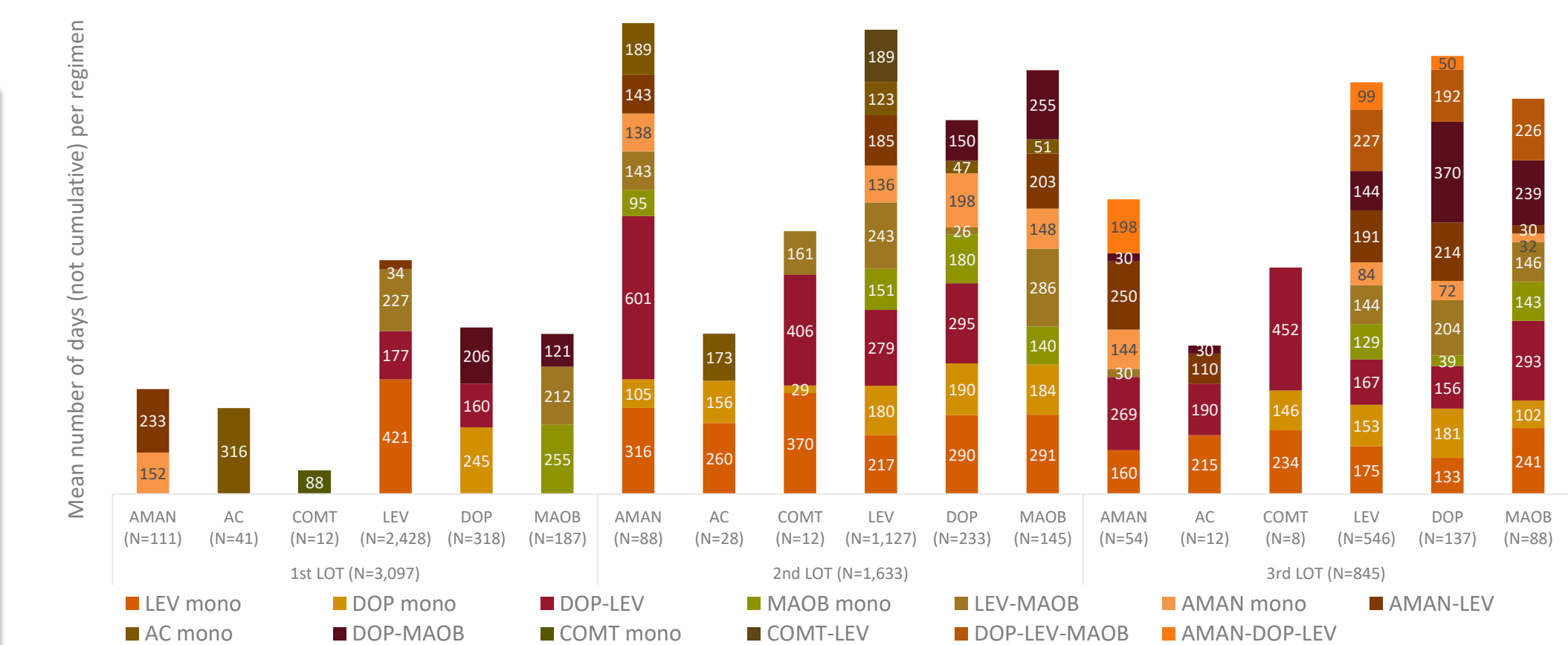


Figure 5. Reason for LOT end by cohort

