

## The Epidemiology of Parkinsonism in Alaska Native People Figures and tables

**Table 1. Characteristic signs and symptoms of parkinsonism subtypes**

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Typical Parkinson symptoms
Resting tremor
Bradykinesia
Rigidity
Asymmetric onset
Atypical Parkinson symptoms
Postural instability within 3 years
Freezing within 3 years
Dementia preceding motor findings or onset within the first year
Symptomatic dysautonomia

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**Diagnostic criteria for idiopathic Parkinson's disease**

Possible
2 of 4 typical symptoms, one must be resting tremor
No atypical symptoms
Symptoms present for < 3 years
Probable
3 of 4 typical symptoms
No atypical symptoms
Symptoms present for at least 3 years
Demonstrated beneficial response to dopamine or dopamine like medication
Definite
3 of 4 typical symptoms
No atypical symptoms
Symptoms present for at least 3 years
Demonstrated beneficial response to dopamine or dopamine like medication
Pathologic confirmation

**Table 2. Diagnostic criteria for atypical parkinsonism subtypes.**

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Progressive supranuclear palsy
Postural instability within 3 years
Freezing within 3 years
Eye movement abnormalities
Multiple system atrophy
Symptomatic dysautonomia (orthostatic light headedness, constipation)
Urologic symptoms
Corticobasilar degeneration
Ideomotor apraxia (difficulty with fine motor movements such as handwriting)
Dystonia
Myoclonus
Alien-limb phenomenon (involuntary grasping, purposeless movements or levitation in an apraxic limb)

Table 3. Demographics

	Typical n = 123	Atypical n = 18	p
Male (%) (male : female = 0.95)	60 (48.8)	11 (61.1)	0.45*
Mean age onset (SD)	61.1 (12.8)	66.1 (12.8)	0.14†
Mean age at diagnosis (SD)	63.7 (12.9)	68.0 (12.1)	0.18†
Mean delay in diagnosis, yrs. (SE)	2.6 (0.28)	1.9 (0.38)	0.13†
Disease duration in years (SD)	8.8 (7.4)	5.7 (3.8)	0.02†
Mortality (%)	30 (24.4)	7 (38.9)	0.19*
Crude mortality rate per 100,000 person years	4.57	1.07	0.28†

\* Chi-square

† T-test

Region	Number of Cases	Population ≥35 years†	Rate per 100,000* (95% CI)
Southeast	40	6,532	609 (421, 797)
Northwest	14	4,185	333 (159, 508)
North Slope	6	1,981	302 (61, 543)
South Central	45	16,216	277 (196, 357)
Southwest	27	11,489	234 (146, 323)
Interior	9	5,616	160 (56, 264)
Total	141	46,019	306 (256, 357)

\*Fisher's exact test  $p < 0.001$

†Alaska Native Population according to the 2010 census

Table 4. Crude age-specific prevalence per 100,000 for typical parkinsonism†.

Age (years)	Male			Female			Total		
	Prevalent cases	Population	Proportion	Prevalent cases	Population	Proportion	Prevalent cases	Population	Proportion
35-54	7	15769	44.4	6	16067	37.3	13	31836	40.8
55-64	10	6373	156.9	12	6756	177.6	22	13129	167.6
65-74	16	2911	549.6	13	3150	412.7	29	6061	478.5
75-84	12	1131	1061.0	14	1551	902.6	26	2682	969.4
85+	5	272	1838.2	3	434	691.2	8	706	1133.1
Totals	50	26456	189.0*	48	27958	171.7*	98	54414	180.1

Due to low numbers, ages 35 – 54 were combined.

\*Two tailed T-test p = 0.46

†2013 Alaska Native population

Figure 2. Age Specific Prevalence of Typical Parkinsonism

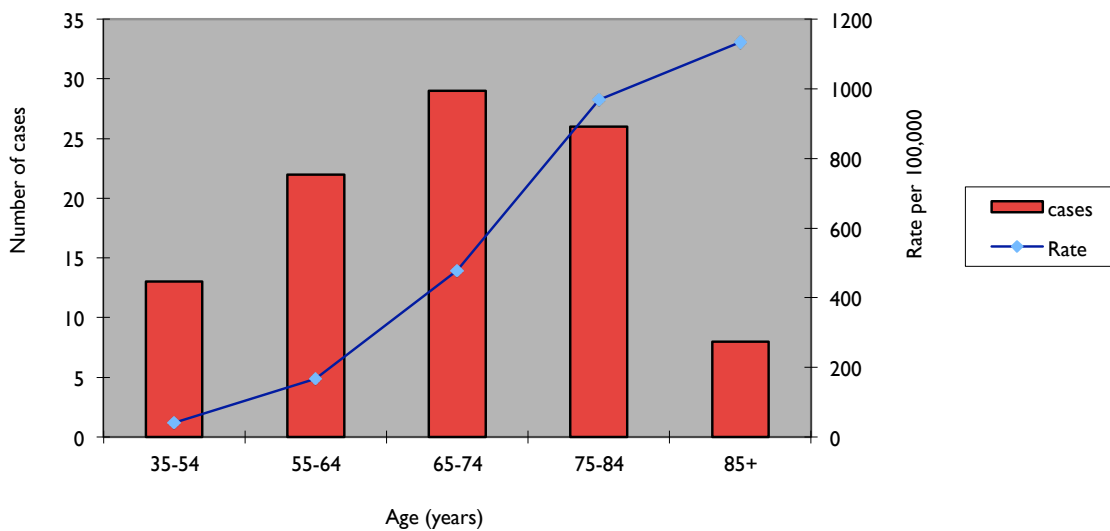


Table 5. Prevalence per 100,000 for typical parkinsonism age-adjusted to the 2010 U.S. population using the direct method.

Age (years)	Male			Female			Total		
	Crude	Population	Adjusted	Crude	Population	Adjusted	Crude	Population	Adjusted
35-54	44	42,578,358	18905	37.3	43,498,964	16225	40.8	86,077,322	35120
55-64	188	17,601,148	33143	192.4	18,881,581	36328	167.6	36,482,729	61145
65-74	584	10,096,519	58964	444.4	11,616,910	51626	478.5	21,713,429	103899
75-84	1,061	5,476,762	58108	838.2	7,584,360	63572	969.4	13,061,122	126614
85+	1,838	1,789,679	32898	691.2	3,703,754	25600	1133.1	5,493,433	62246
Totals		77,542,466	202018		85,285,569	193351		162,828,035	389024
Rate			260.5			226.7			238.9

Table 6. Crude and age-adjusted prevalence per 100,000 for atypical parkinsonism. Age specific rates are not shown due to small numbers.

Age (years)	Male			Female			Total		
	Prevalent cases	Population	Proportion	Prevalent cases	Population	Proportion	Prevalent cases	Population	Proportion
Crude	6	26456	22.7*	5	27958	17.9*	11	54414	20.2
Adjusted†			32.0			27.6			29.2

\*Two tailed T-test p = 0.98

†Proportion adjusted to 2010 U.S. population

Table 7. Crude age-specific annual incidence rates per 100,000 person years for typical parkinsonism.

Age (years)	Male			Female			Total		
	Incident cases	Population	Rate	Incident cases	Population	Rate	Incident cases	Population	Rate
35-54	10	21526	46	11	21868	50	21	43394	48
55-64	13	4378	297	14	4526	309	27	8903	303
65-74	15	2176	689	13	2362	550	28	4538	617
75-84	10	906	1104	6	1197	501	16	2102	761
85+	2	186	1073	1	368	272	3	554	541
Totals	50	29172	171	45	30320	148	95	59492	160

Due to low numbers, ages 35 – 54 were combined.

\*Two tailed T-test  $p = 0.22$

Figure 3. Age-Specific Annual Incidence Rates of Typical Parkinsonism

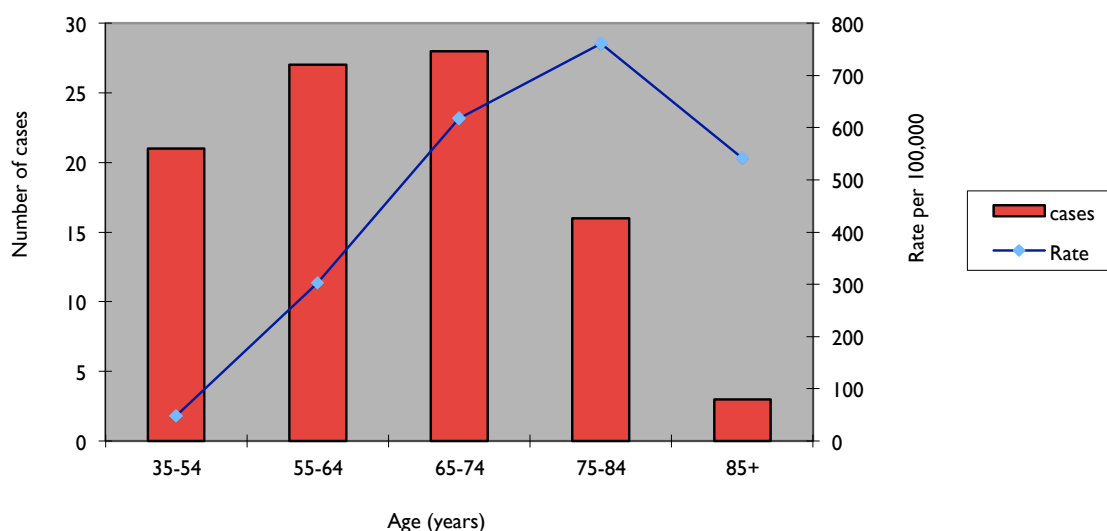


Table 8. Incidence per 100,000 person years for typical parkinsonism age-adjusted to the 2010 U.S. population using the direct method.

Age (years)	Male			Female			Total		
	Crude	Population	Adjusted	Crude	Population	Adjusted	Crude	Population	Adjusted
35-54	46	42,578,358	19,780	50	43,498,964	21881	48	86,077,322	41656
55-64	297	17,601,148	52,266	309	18,881,581	58412	303	36,482,729	110636
65-74	689	10,096,519	69,588	550	11,616,910	63941	617	21,713,429	133968
75-84	1,104	5,476,762	60,483	501	7,584,360	38019	761	13,061,122	99398
85+	1,073	1,789,679	19,200	272	3,703,754	10072	541	5,493,433	29740
Totals	171	77,542,466	221,317	148	85,285,569	192325	160	162,828,035	415399
Rate			285			225			255

Table 9. Crude age-adjusted annual incidence rate of atypical parkinsonism per 100,000 person years.

Age (years)	Male			Female			Total		
	Incident cases	Population	Rate	Incident cases	Population	Rate	Incident cases	Population	Rate
Crude	10	29,172	2.4*	6	30,320	1.4*	16	60,501	1.9
Adjusted†			3.9			3.0			2.0

\*Two tailed T-test p = 0.78

†Proportion adjusted to 2010 U.S. population

Table 10. Case Characteristics

Characteristic	Typical n = 123	Atypical n = 18	P value	Urban n = 64	Rural n = 77	p-value
Males, n (%)	61 (49.2)	10 (58.8)	0.46‡	27 (38.0)	44 (62.0)	0.08‡
Age in years						
Symptom onset, mean (SD)	61.3 (12.9)	65.6 (13.0)	0.21†	61.0 (13.2)	62.4 (12.7)	0.53†
Diagnosis, mean (SD)	63.9 (12.9)	67.5 (12.4)	0.27†	63.6 (12.7)	64.9 (13.0)	0.57†
Diagnosis delay (SE)	2.6 (0.28)	1.9 (0.4)	0.18†	2.6 (0.38)	2.4 (0.33)	0.76†
Certainty of diagnosis*				n = 56*	n = 67*	0.25‡
Definite, n (%)	0			0	0	
Probable, n (%)	108 (88)			52 (93)	56 (84)	
Possible/likely, n (%)	15 (12)			4 (7)	11 (16)	

‡ Chi square

† T-test

\*Typical cases only as certainty of diagnosis does not apply in atypical cases.

§Scale 0 to 4; 0 = no problems/completely independent; 4 = severe problems/totally dependent

Table 11. Medications

Medication class, n (%)	Typical n = 123		Never taken	Atypical n = 18		Never taken	p value*
	Previously taken	Currently taking		Previously taken	Currently taking		
L-dopa	6 (4.9)	116 (94.3)	1 (0.8)	7 (38.9)	9 (50.0)	2 (11.1)	<0.001
Dopa Agonist	23 (18.7)	38 (30.9)	62 (50.4)	2 (11.1)	2 (11.1)	14 (77.8)	0.09
Anticholinergic	4 (3.3)	4 (3.3)	115 (93.5)	1 (5.6)	0	17 (94.4)	0.66
Amantadine	4 (3)	11 (8.9)	108 (87.8)	0	5 (27.8)	13 (72.2)	0.05
MAOB Inhibitor	20 (16.3)	60 (48.8)	43 (35)	4 (22.2)	0	14 (77.8)	<0.001
COMT Inhibitor	8 (6.5)	3 (2.4)	112 (91.1)	2 (11.1)	0	16 (88.9)	0.66

\*Chi-Square

## Appendix

### Data Elements:

- Registry ID
- Year of Birth
- Gender
- Ethnicity
- Education
- Primary health service clinic
- Living? Date of death if not.
- Abstractor
- Source of information
- Year of diagnosis
- Clinic signs or symptoms
- Postural reflex impairment
- Asymmetric onset of signs?
- Response to levodopa or dopamine agonist
- Progression
- Other supportive symptoms
- Light headedness on standing
- Eating tasks
- Dressing
- Hygiene
- Tremor
- Getting out of bed, car or deep chair
- Walking balance
- Freezing
- Exclusion criteria (prominent postural instability, freezing or medication unrelated hallucinations within the first 3 years)
- Signs or symptoms suggestive of movement disorder in addition to or alternative to PD (dementia, progressive supranuclear palsy, multiple system atrophy, corticobaslar degeneration, essential tremor)
- Anti-PD meds
- Anti-tremor meds
- Meds that cause parkinsonism or tremor
- Diagnosis
- Presence of other neurologic disorders