

# Supplementary Material

## Parkinson Disease Associated Differences in Elective Orthopedic Surgery Outcomes: A National Readmissions Database Analysis

**Supplementary Table 1. PD vs No PD Non-elective Readmissions, 2013-2014**

	<b>Readmission rate, PD</b>	<b>Unadjusted Odds Ratio for readmission</b>	<b>p-value</b>	<b>*Adjusted Odds Ratio for readmission (95% CI)</b>	<b>p-value</b>
<b>PD</b>					
<b>Yes</b>	271 (5.66%)	1.97 (1.6-2.41)	<0.0001	1.31 (1.07-1.62)	0.0096
<b>No</b>	28,079 (2.96%)	ref		ref	

Supplementary Table 1 displays the percentage of PD and non-PD patients who were readmitted within 30 days of the index admission, as well as the unadjusted and adjusted odds ratio for readmission for PD vs non-PD patients.

\*adjusted for age, sex, socioeconomic status, expected payor, Elixhauser comorbidity score, index admission LOS, year, and discharge disposition

**Supplementary Table 2. PD and non-PD patient characteristics for elective partial and total hip replacement.**

Characteristic	Elective Partial Hip Replacement N=4941 (column %)		Elective Total Hip Replacement N=226383 (column %)	
	PD (n=116)	No PD (n=4,825)	PD (n=789)	No PD (n=225,594)
<b>Characteristic</b>				
<b>Age, mean (SD)</b>	79.6 (1.26)	76.8 (0.44)	71.7 (0.58)	65.4 (0.09)
40-49	0 (0.0)	151 (3.1)	*	15335 (6.8)
50-59	0 (0.0)	367 (7.6)	86 (10.9)	52881 (23.4)
60-69	13 (11.2)	684 (14.2)	204 (25.9)	76851 (34.1)
70-79	42 (36.2)	1157 (24)	337 (42.8)	57702 (25.6)
80+	61 (52.5)	2464 (51.1)	151 (19.2)	22825 (10.1)
<b>Sex</b>				
Male	42 (36.3)	1508 (31.3)	440 (55.8)	102133 (45.3)
Female	74 (63.7)	3317 (68.7)	349 (44.2)	123461 (54.7)
<b>Primary Payer</b>				
Medicare	114 (98)	3924 (81.3)	627 (79.5)	122117 (54.1)
Medicaid	0 (0.0)	117 (2.4)	*	8755 (3.9)
Private insurance	*	633 (13.1)	144 (18.2)	86871 (38.5)
Self-Pay, No charge, Other	0 (0.0)	150 (3.1)	*	7851 (3.5)
<b>Zip-code quartile</b>				
\$1 - \$37,999	38 (32.9)	1428 (29.6)	139 (17.7)	44607 (19.8)
\$38,000 - \$47,999	45 (38.9)	1614 (33.4)	222 (28.1)	60367 (26.8)
\$48,000 - \$63,999	14 (12.2)	1182 (24.5)	190 (24.1)	60458 (26.8)
\$64000+	19 (16)	601 (12.5)	238 (30.2)	60163 (26.7)
<b>Length of stay (median, IQR)</b>	3.57, (2.51-5.16)	2.42 (1.34-4.56)	2.49 (2.02-2.96)	2.42 (1.34-4.57)
1-2 day	10 (8.2)	420 (8.7)	74 (9.3)	97416 (43.2)
3 days	39 (33.3)	1222 (25.3)	603 (76.4)	98150 (43.5)
4 or more days	68 (58.5)	3183 (66)	112 (14.2)	30028 (13.3)
<b>Disposition after Index Admission</b>				
home /routine	5 (4.7)	604 (12.5)	125 (15.8)	65037 (28.8)
inpatient post-acute care	108 (93)	3327 (69)	389 (49.3)	53209 (23.6)
Home with HHC	3 (2.3)	891 (18.5)	275 (34.9)	107265 (47.5)
<b>Control/ownership of hospital</b>				
Government, nonfederal	19 (16.6)	651 (13.5)	74 (9.3)	20386 (9)
Private, not-for-profit	80 (68.9)	3440 (71.3)	603 (76.4)	174210 (77.2)
Private, for-profit	17 (14.5)	734 (15.2)	112 (14.2)	30998 (13.7)
<b>Hospital bedsize</b>				
small	22 (19.2)	814 (16.9)	129 (16.3)	43086 (19.1)
medium	27 (23)	1204 (25)	221 (28)	62153 (27.6)
large	67 (57.7)	2806 (58.2)	439 (55.6)	120355 (53.4)
<b>Teaching status</b>				
metropolitan non-teaching	33 (28.2)	1597 (33.1)	310 (39.3)	78708 (34.9)
metropolitan teaching	38 (33)	1948 (40.4)	421 (53.4)	123868 (54.9)
non-metropolitan	45 (38.8)	1279 (26.5)	58 (7.3)	23018 (10.2)

**Supplementary Table 3. Prevalence of Comorbid conditions at the time of elective partial and total hip replacement surgery in adults with and without Parkinson's disease**

	Elective Partial Hip Replacement n with condition (%)			Elective Total Hip Replacement n with condition (%)		
	PD (n=116)	No PD (n=4,825)	Prevalence ratio PD/non-PD	PD (n=789)	No PD (n=225,594)	Prevalence ratio PD/non-PD
<b>Number of chronic conditions excluding PD mean (SD)</b>	4.16 (0.44)	5.26 (0.14)		5.30 (0.16)	4.63 (0.03)	
<i>AIDS</i>	0 (0.0)	*	*	0 (0.0)	250 (0.1)	0.00
<i>Alcohol Abuse</i>	0 (0.0)	111 (2.3)	0.00	*	3707 (1.6)	*
<i>Deficiency anemias</i>	23 (20)	880 (18.2)	1.10	77 (9.7)	19463 (8.6)	1.13
<i>Rheumatoid arthritis/collagen vascular disease</i>	0 (0.0)	207 (4.3)	0.00	32 (4.1)	8320 (3.7)	1.11
<i>Chronic blood loss anemia</i>	0 (0.0)	115 (2.4)	0.00	*	2420 (1.1)	*
<i>Congestive heart failure</i>	*	440 (9.1)	*	19 (2.5)	4382 (1.9)	1.32
<i>Chronic pulmonary disease</i>	*	914 (19)	*	101 (12.8)	31417 (13.9)	0.92
<i>Coagulopathy</i>	*	173 (3.6)	*	32 (4)	3327 (1.5)	2.67
<i>Depression</i>	20 (17.6)	734 (15.2)	1.16	128 (16.3)	26636 (11.8)	1.38
<i>Diabetes, uncomplicated</i>	14 (11.8)	834 (17.3)	0.68	115 (14.6)	30818 (13.7)	1.07
<i>Diabetes, complicated</i>	*	114 (2.4)	*	24 (3)	2813 (1.2)	2.5
<i>Drug abuse</i>	0 (0.0)	28 (0.6)	0.00	*	1800 (0.8)	*
<i>Hypertension</i>	54 (46)	3354 (69.5)	0.66	491 (62.2)	135676 (60.1)	1.03
<i>Hypothyroidism</i>	18 (15.5)	929 (19.3)	0.80	125 (15.9)	30975 (13.7)	1.16
<i>Liver disease</i>	0 (0.0)	39 (0.8)	0.00	11 (1.4)	2553 (1.1)	1.27
<i>Lymphoma</i>	0 (0.0)	36 (0.7)	0.00	*	647 (0.3)	*
<i>Fluid and electrolyte disorders</i>	23 (19.7)	1111 (23)	0.86	71 (9)	15593 (6.9)	1.30
<i>Metastatic cancer</i>	0 (0.0)	196 (4.1)	0.00	0 (0.0)	293 (0.1)	0.00
<i>Obesity</i>	*	243 (5)	*	81 (10.3)	39716 (17.6)	0.59
<i>Paralysis</i>	0 (0.0)	109 (2.3)	0.00	*	471 (0.2)	*
<i>Peripheral vascular disorders</i>	*	265 (5.5)	*	25 (3.2)	5559 (2.5)	1.28
<i>Psychoses</i>	*	219 (4.5)	*	56 (7)	4566 (2)	3.5
<i>Pulmonary circulation disorders</i>	0 (0.0)	127 (2.6)	0.00	*	1367 (0.6)	*
<i>Renal failure</i>	*	561 (11.6)	*	71 (9)	9019 (4)	2.25
<i>Solid tumor without metastasis</i>	*	74 (1.5)	*	*	1015 (0.5)	*
<i>Peptic ulcer disease</i>	0 (0.0)	*	0.00	0 (0.0)	35 (0)	0.00
<i>Valvular disease</i>	*	290 (6)	*	43 (5.4)	7142 (3.2)	1.69
<i>Weight loss</i>	*	209 (4.3)	*	*	750 (0.3)	*

\* Per the HCUP data use agreement, events occurring in 10 or fewer individuals may not be publicly reported or displayed tables

**Supplementary Table 4. Number and cost of readmissions by PD status and Hip Replacement**

	<b>Number of all-cause 30-day readmissions</b>	<b>Percent readmitted within 30 days</b>	<b>Median cost \$ per readmission</b>
<b>PD</b>			
<i>Partial Hip replacement</i>	16	14.08	30,034 (7,457-50,547)
<i>Total Hip Replacement</i>	44	5.53	22,894 (13,296-41,924)
<b>No PD</b>			
<i>Partial Hip Replacement</i>	387	8.02	30,090 (16,680-52,592)
<i>Total Hip Replacement</i>	6836	3.03	27,337 (14,553-55,342)

**Supplementary Table 5. PD vs No PD Non-elective Readmissions, 2013-2014 Partial Hip Replacements**

	<b>Readmission rate, PD</b>	<b>Unadjusted Odds Ratio for readmission</b>	<b>p-value</b>	<b>*Adjusted Odds Ratio for readmission (95% CI)</b>	<b>p-value</b>
<b>PD</b>					
<b>Yes</b>	16 (14.08%)	1.88 (0.73-4.84)	0.1899	1.85 (0.72-4.76)	0.1999
<b>No</b>	387 (8.02%)	ref		ref	

\*adjusted for age, sex, socioeconomic status, expected payor, Elixhauser comorbidity score, index admission LOS, year, and discharge disposition

**Supplementary Table 6. PD vs No PD Non-elective Readmissions, 2013-2014 Total Hip replacements**

	Readmission rate, PD	Unadjusted Odds Ratio for readmission	p-value	*Adjusted Odds Ratio for readmission (95% CI)	p-value
<b>PD</b>					
<b>Yes</b>	44 (5.53%)	<b>1.87 (1.15-3.04)</b>	<b>0.0111</b>	1.19 (0.72-1.96)	0.5036
<b>No</b>	6,836 (3.03%)	ref		ref	

\*adjusted for age, sex, socioeconomic status, expected payor, Elixhauser comorbidity score, index admission LOS, year, and discharge disposition