

### **Online Supplementary Material**

Economic Impact of Postoperative Urinary Retention in the US Hospital Setting. *JHEOR*. 2024;11(2):29-34. [doi:10.36469/jheor.2024.121641](https://doi.org/10.36469/jheor.2024.121641)

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This supplementary material has been provided by the authors to give readers additional information about their work.



**Table S1: Cohort Data Cleaning Attrition – Inpatient**

<b>Criteria</b>	<b>Patient counts (N)</b>	<b>Percentage (%)</b>
Cohort before data cleaning	331,429	100.00
Remove patients where cost > charges (Main analysis)	330,838	99.82
Remove extreme values for difference = charges - cost	329,897	99.72
Remove extreme values and zeros for cost	328,196	99.48
Remove extreme values for charges	327,611	99.82

**Table S2: Cohort Data Cleaning Attrition – Outpatient**

<b>Criteria</b>	<b>Patient Counts (N)</b>	<b>Percentage (%)</b>
Cohort before data cleaning	437,685	100.00
Remove patients where cost > charges (main analysis)	437,063	99.86
Remove extreme values for difference = charges - cost	437,054	100.00
Remove extreme values and zeros for cost	436,047	99.77
Remove extreme values for charges	435,435	99.86

**Table S3: Generalized Linear Model – Adjusted Hospital Charges, With and Without Postoperative Urinary Retention Following Surgery Sensitivity Analysis<sup>1</sup>**

	Total Hospital Charges	POUR		No POUR		Difference in adj means	95% CI for difference in means
		Adj. Mean, \$	95%CI	Adj. Mean, \$	95%CI		
Inpatient	Step two <sup>2</sup>	96,997	(91,934, 102,338)	88,191	(83,641, 92,989)	8,806	(7,825.11, 9,785.95)
	Step three <sup>3</sup>	95,651	(90,717, 100,854)	87,506	(83,045, 92,208)	8,145	(7,199.16, 9,090.91)
	Step four <sup>4</sup>	94,711	(89,876, 99,806)	87,007	(82,618, 91,630)	7,704	(6,783.94, 8,623.73)
Outpatient	Step two <sup>2</sup>	61,711	(58,470, 65,131)	48,541	(46,168, 51,035)	13,170	(11,760.05, 14,579.79)
	Step three <sup>3</sup>	61,446	(58,221, 64,851)	48,518	(46,147, 51,010)	12,929	(11,528.36, 14,329.03)
	Step four <sup>4</sup>	61,477	(58,265, 64,865)	48,587	(46,225, 51,070)	12,890	(11,496.91, 14,282.76)

<sup>1</sup> The model adjusts for age, gender, race, ethnicity, index year, number of comorbidities, whether provider is a teaching hospital, US census region of provider, and surgery type.

<sup>2</sup> Analytic sample has been trimmed for extreme differences between charges and costs.

<sup>3</sup> Analytic sample has been trimmed for (1) extreme differences between charges and costs, and (2) extreme costs.

<sup>4</sup> Analytic sample has been trimmed for (1) extreme differences between charges and costs, (2) extreme costs, and (3) extreme charges.

Abbreviations: CI, confidence interval; POUR, postoperative retention.

**Table S4: Clinical Characteristics of Surgical Patients With and Without POUR in Both Outpatient and Inpatient Surgical Settings**

Characteristics	Outpatient		Inpatient	
	With POUR N= 2,756	Without POUR N=434,307	With POUR N=13,020	Without POUR N=317,818
Age, years (SD)	67.1 (13.2)	55.1 (15.6)	68.1 (12.5)	62.1 (13.1)
Male (%)	694 (25.2)	162,932 (37.5)	4,833 (37.1)	192,614 (60.6)
Female (%)	2,062 (74.8)	271,375 (62.5)	8,187 (62.9)	125,204 (39.4)
Benign prostatic hyperplasia (%)	677 (24.6)	12,703 (2.9)	2,967 (22.8)	13,527 (4.3)
NMB (%)				
Rocuronium	2,626 (95.3)	418,709 (96.4)	12,241 (94.0)	301,379 (94.8)
Vecuronium	206 (7.5)	20,537 (4.7)	1,257 (9.7)	25,549 (8.0)
Scopolamine	205 (7.4)	41,540 (9.6)	1,491 (11.5)	48,281 (15.2)
Surgery type (%)				
Knee/hip arthroplasty	604 (21.9)	48,631 (11.2)	6,915 (53.1)	160,681 (50.6)
Hernia surgery	1,817 (65.9)	324,295 (74.7)	1,600 (12.3)	36,881 (11.6)
Rectal surgery	119 (4.3)	11,847 (2.7)	3,151 (24.2)	74,368 (23.4)
Laparoscopic surgery	216 (7.8)	49,534 (11.4)	1,354 (10.4)	45,888 (14.4)

Abbreviations: NMB, neuromuscular blockade; POUR, postoperative urinary retention.

**Table S5: Post-operative Urinary Retention (POUR) Definition**

The *primary outcome* post-operative urinary retention (POUR) is defined as:

POUR Code	Type	Description
R33	ICD-10	Retention of urine
51702	CPT	Insertion of temporary indwelling bladder catheter
51701	CPT	Insertion of non-indwelling bladder catheter
51703	CPT	Insertion of non-indwelling bladder catheter, complicated

Abbreviation: ICD-10, *International Classification of Disease 10th version*; CPT: *Current Procedural Terminology*.