Increasing medical complexity among inpatients in urology over time: A comparative retrospective chart review

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ABSTRACT

Introduction: This study aimed to evaluate temporal trends in the medical complexity of urologic inpatients and investigate their implications for clinical care delivery.
Methods: A retrospective comparative chart review was conducted for urologic inpatients admitted to a tertiary care center during two time periods: 2006–2007 and 2019–2020. A random sample of 150 patient charts from each cohort (N=300) was analyzed using a structured data extraction protocol in REDCap. Indicators of medical complexity included comorbidities, polypharmacy, and healthcare resource utilization. Statistical analyses comprised independent-samples t-tests, logistic regression, and multiple linear regression modeling.
Results: Analysis of 300 patient records revealed a significant increase in medical complexity in the contemporary cohort compared to the historical cohort. Patients admitted in 2019–2020 exhibited higher Charlson comorbidity index scores, a greater number of chronic conditions, and increased polypharmacy. Utilization of home care services and specialist consultations during hospitalization was also more prevalent in the contemporary cohort. Although length of stay (LOS) remained comparable between cohorts, open abdominal surgery and the number of prescription medications were significant predictors of prolonged LOS ($p<0.05$).
Conclusions: The medical complexity of urologic inpatients has escalated over time, driven by increased comorbid burden and healthcare system interactions. Despite advances in surgical techniques that would traditionally reduce LOS, these improvements may be counterbalanced by

the growing complexity of patient populations. Interventions such as pre-admission optimization and integrated multidisciplinary care are essential to address the challenges posed by this evolving clinical landscape.

INTRODUCTION

Medical complexity arises from multiple interacting factors, including biological, social, environmental and economic influences. These factors contribute to multimorbidity, polypharmacy, and complex management and functional needs [1,2]. Aging is a key driver of medical complexity as risk factors for chronic disease accumulate over an individual's lifetime. As such, frailty and medical complexity are closely related and often concomitant [3,4]. While many complex patients are frail, the role of age in complexity may also be contextual as patients of various ages can be perceived by physicians to be complex for a multitude of different reasons [5]. Ultimately, medical complexity is context-dependent by nature, and so too are the challenges it may pose for any individual patient's care.

Rigid thresholds for medical complexity are challenging to establish, however many markers of medical complexity are generally accepted in the literature. These include multimorbidity, polypharmacy, multiple physician or specialist involvement in care, being a resident of a long-term care facility [6]. Multimorbidity is further associated increased length of stay among medical inpatients, particularly when there is multisystem involvement [7]. Overall, complex patients exhibit increased health care resource utilization, interact with the health care system more frequently, and are at higher risk of poor outcomes as a result of their complex management needs [8].

In general, patient complexity is thought to be increasing over time, and is significant in the Canadian population wherein 1 in 4 people >40-years-old have 2 or more chronic medical conditions, and 1 in 4 >65-years old are taking at least 10 prescription medications [9–11]. As such, the identification of complex patients and development of management strategies for their care is paramount to providing safe, and effective care for our patients.

Previous work examining the complexity of patients followed by medical subspecialists and primary care physicians revealed high levels of overall medical complexity with significant variability between specialties [6]. This suggests that while the prevalence of medical complexity may be generally high, it is important to analyze patient complexity within populations treated by a particular specialty service. For urologists in particular, data suggests that we must be prepared to care for a relatively complex population; Patients >65-years-old constituted 35% of all inpatient surgeries in the US in 2010, while over 65% of inpatient surgeries done by urologists served this demographic [12]. Furthermore, acute urological presentations to the emergency department have been shown to have increased over time in the Canadian setting, with older patients being more likely to require admission to hospital, highlighting the need to better characterize the complexity of this population.[13]

The primary aim of this study is to assess whether medical complexity of urological inpatients has changed over time, and associated impacts on clinical care. The secondary aim was to develop a model of factors impacting length of stay for this population. Specifically, we hypothesize that medical complexity will have increased in this population over time leading to more complex care needs and hospital stays.

METHODS

Study design

This study was a comparative retrospective chart review. REDCap was used to design a data capture tool and complete structured chart reviews of electronic medical records for all participants.

A complete list of included variables is provided in *Appendix 1*.

Comorbid burden was assessed using the Charlson Comorbidity Index (CCI), a validated tool for predicting 10-year survival in patients with multimorbidity. A checklist of chronic diagnoses as recommended by Tonelli et al. was applied (2015) [14,15].

Patient selection and inclusion criteria

We identified all urological inpatients admitted to the QEII Hospital in Halifax, NS through our institutional Discharge Abstract Database (DAD). Two cohorts were selected: September 2006 to March 2007 (Historic cohort) and September 2019 to March 2020 (Contemporary cohort). Eligibility included all patients admitted during these periods. From each cohort, a random sample of 150 patients was selected for detailed chart review using REDCap.

We chose the September-to-March timeframe to capture a representative inpatient load while minimizing seasonal biases, such as summer slowdowns and holiday-related variations. The 2006-2007 cohort represented the earliest available DAD data, while the 2019-2020 cohort was the most recent period before COVID-19-related operational disruptions.

Data analysis

Baseline descriptive statistics were reported as counts, means, medians, standard deviations, and percentages, with 95% confidence intervals where applicable. Categorical variables were analyzed using logistic regression. T-tests were performed to compare scalar variables between cohorts. Chi square tests were used to compare proportions where appropriate. Multiple linear regression identified significant predictors of length of stay (LOS). Statistical significance was set at $p < 0.05$ for all analyses. Statistical analyses were conducted using SPSS version 29 (IBM Corp., 2022, Armonk, NY).

RESULTS

Participants
There were similar numbers of overall admissions in each cohort (Historic = 1580; Contemproary = 1497). 300 charts were randomly selected for review (Historic n=150; Contemporary n = 150). Both cohorts were comparable in terms of sex composition (Historic female = 29%, male = 71%; Contemporary female = 25%, male = 75%). Patients in the Historic cohort were younger (63, SD=15, versus 65, SD=14 years-old, respectively) but this difference was not statistically significant (p=0.077).

Markers of complexity
Multiple key markers of complexity were significantly increased in the Contemporary cohort compared to Historic including BMI, number of prescription medications, number of non-urologist physicians seen in the year prior, number of hospital admissions in the year prior, number of chronic disease diagnoses, and CCI scores, and are shown in *Table 1*. The number of hospital admissions in the month prior did not differ significantly between cohorts, p>0.05.

Patients in the Contemporary cohort had significantly higher odds of having formal home care services prior to hospital admission (OR = 5.04, 95% CI = 1.4 – 18, p = 0.010). Contemporary patients also had significantly higher odds of having an admission to hospital in the year prior (OR = 1.7, 95% CI 1.00 – 2.8, p = 0.033). The proportions of patients admitted from long-term care facilities was the same between cohorts (n=3, 2%, respectively. Additional odds ratios for markers of complexity are shown in *Table 2*.

Characteristics of admission
Transurethral resections were the most common procedures among both cohorts (Historic n=38, 25%, versus Recent n=34, 23%). The proportion of open abdominal surgeries performed was significantly higher in the Historic cohort (Historic n=35, 23%, versus Cont. n=19, 13%, $X^2(1)=6.6$, p=0.010). The breakdown of surgical procedures is shown in *Table 3*. Surgical categorizations schemes can be found in *Appendix 2*.

Patients in the Contemporary cohort had significantly higher odds of having a physician specialist service consulted during admission (OR=2.9, 95 % CI = 1.6 – 5.2, p<0.001). Odds of unplanned procedures (takeback OR or interventional radiology procedures), escalation of care to a higher level, or interdisciplinary consults were not significantly different (Table 4).

Average LOS was similar between the two cohorts (Historic = 3.7 versus Contemporary = 4.2 days, p=0.3), despite increased medical complexity in the Contemporary cohort. This stability in LOS may reflect advancements in clinical protocols, improved care coordination, and enhanced hospital efficiency over time. Multiple linear regression was used to determine significant drivers of LOS using the entire cohort (n=300). The model explained 51% of variance in LOS ($R^2=0.51$, adjusted $R^2=0.501$), and was statistically significant, F (7, 292) = 44.86, p<0.001. Having had open abdominal surgery was associated with a 4.1 day increase in LOS compared to those did not (β=4.1, SE = 0.903, p<0.001). Each additional prescription medication at admission was associated with a 0.55 day increase in LOS (β=0.55, SE = 0.12, p<0.001). LOS increased by 5.4 days for each physician service consulted during admission (β=5.4, SE = 0.37, p=<0.001). For each specialist seen in the year prior to admission, LOS decreased by 0.79 days (β=-0.79, SE = 0.33, p=0.016). Cohort, age at admission, and CCI scores were not significant determinants of LOS. Two models were run, one with sex included, and one without. Sex was not a significant factor in the former, and the latter was the most parsimonious and in reported here. Full model summary is shown in *Table 5*.

Patients in the Contemporary cohort had significantly lower odds of a simple discharge home (i.e. discharged directly to their original residence without new home care supports or intervening transfer to another hospital/care setting) (OR=0.31, 95% CI= 0.15 – 0.62, p<0.001).

DISCUSSION

This comparative retrospective chart review of 300 urological inpatients demonstrates a significant increase in the medical complexity of urological inpatients over time when comparing cohorts from 2006-07 to 2019-20. This increase was associated with greater healthcare resource utilization and more complex care needs. Patients in the Contemporary cohort had higher BMIs, more chronic diagnoses, and a greater degree of polypharmacy. Correspondingly, their Charlson Comorbidity Index (CCI) scores were also significantly higher.

Before admission, the Contemporary cohort exhibited higher healthcare utilization, seeing more non-urology specialists and experiencing more frequent hospital admissions. They were five times more likely to receive home care services prior to admission, highlighting an increased reliance on healthcare services. Within the hospital, these patients required more physician specialist consultations and faced greater challenges in achieving a straightforward discharge.

Interestingly, age did not differ significantly between cohorts, suggesting that increased complexity is not solely attributable to aging. Far prior to our study timeframe, an analysis of patients enrolled in Medicare in the US revealed that urology was the 3rd most frequently seen service among patients >65 years-old, and as previously noted urologists perform a disproportionate number of surgeries on patients in this age range overall [16,12]. In the context of the present study, however, the lack of significant increase in age in the context of increasing medical complexity and care needs suggests that our studies findings underscore a broader shift in the clinical complexity of patients requiring urological care, independent of demographic changes.

Tonelli et al. (2018) characterized the medical complexity of patients seen amongst medical specialists and primary care physicians using 9 markers of patient complexity including multiple comorbid diagnoses, higher numbers of prescription medications and polypharmacy, multiple physician or specialist involvement in care, being a resident of a long-term care facility, and admission to hospital. When analyzing 2.5 million patients over a 1-year timeframe, nearly one-third of patients had multiple comorbid diagnoses, with a median of 3 prescription medications per patient, and overall complexity of patients was found to vary significantly between specialties [6]. Our findings suggest that urologists are caring for a relatively complex patient population when compared to medical subspecialists.

Despite these complexities, length of stay (LOS) remained similar between cohorts (4.2 vs. 3.7 days, p=0.3). The reduced need for open abdominal surgeries in the Contemporary cohort may have counterbalanced the effects of increased comorbidities. Indeed, while the types of interventions performed between cohorts was similar overall, the proportion of open abdominal surgeries was significantly smaller in the Contemporary cohort (13% v. 25%) which was found to be a key driver of LOS in our regression analysis accounting for an additional 4 days in hospital. We propose that increased medical complexity and care needs may mitigate potential reductions in LOS expected with less invasive surgical approaches. This is supported by previous work showing poorer outcomes for patients with frailty regardless of degree of operative stress, including for relatively low levels, such as in cystoscopy [17].

While the number of open abdominal surgeries decreased in the Contempory cohort, there was not a proportional increase in laparoscopic or robotic surgeries reflecting the transition to less-invasive approaches as one might expect. Multiple factors likely contribute to this difference, including changes in operative indications for prostate cancer and increasing prevalence of active surveillance over time. Additionally, more patients underwent IR procedures or had medical (i.e. non-operative) admissions in the contemporary cohort, helping to account for this difference.

Interestingly, non-urology physician specialist involvement had opposing effects on LOS, dependent on the timing of specialist involvement relative to admission. Each non-urologist a patient had seen in the year prior to admission decreased LOS by 0.79 days, while each specialist service consulted during admission contributed 5.4 days to LOS in our regression analysis. This suggests that pre-admission optimization of non-urologic care may have a protective role for urological inpatients. The difference in the scale of these effects is likely due to the time necessary to correct and observe acute issues in the inpatient setting compared to issues dealt with through outpatient follow up.

Polypharmacy was prevalent among both cohorts, but Contemporary patients had significantly higher numbers of prescription medications on admission (4.3 v. 3.4). In our regression analysis each prescription medication at the time of admission contributed 0.55 days to LOS. Both polypharmacy and multimorbidity present a challenge to traditional single-disease treatment approaches which may not account for multiple drug interactions, and impacts on other comorbid conditions [18,19]. Collaboration with multidisciplinary colleagues, in particular clinical pharmacists, offers a means of reducing drug-related adverse events, decrease LOS, and improve emergency department visits and re-admission rates in a cost-efficient manner for increasingly complex patients [20,21].

Clinical implications

Our findings highlight critical areas for intervention. Strategies such as pre-admission optimization, interdisciplinary care models, and closer outpatient monitoring could mitigate hospital resource use. Incorporating clinical pharmacists to manage polypharmacy could reduce adverse drug events, emergency department visits, and readmissions.

Limitations

Our study has several important limitations. Firstly, as a retrospective chart review, the quality of our data is dependent on the availability and reliability of data with the electronic medical record. Overall, nearly all data points we set out to collect were reliably available, however important socioeconomic variables such as income, cultural and gender identity, and languages spoken were not available to be incorporated into our analysis. While the distribution of surgeries/procedures performed were similar between cohorts overall, the Contemporary cohort included only 2 cases of robot-assisted laparoscopic surgery which may be an underrepresentation of current real-world urological practice.

CONCLUSIONS

In this comparative retrospective chart review, the medical complexity of urological inpatients was shown to have increased over time and is not simply explained by caring for an aging population. Contemporary urological inpatients have a larger burden of comorbid chronic disease, and a greater degree of polypharmacy requiring more non-urologist physician involvement in care. This increase in complexity appears to mitigate potential decreases in LOS expected from a transition toward less invasive surgical approaches over time. Efforts to optimize chronic disease management prior to admission, and the incorporation of multidisciplinary roles such as clinical pharmacists may help to improve the outcomes and economics of delivering care to the increasingly complex patient population under the care of urologists. Future prospective study is needed to better identify complex urological inpatients and develop strategies to improve the care we provide to them.

REFERENCES

1. Safford MM, Allison JJ, Kiefe CI, et al. Patient complexity: More than comorbidity. The vector model of complexity. *J Gen Intern Med* 2007;22:382-90. https://doi.org/10.1007/s11606-007-0307-0
2. Shippee ND, Shah ND, May CR, et al. Cumulative complexity: A functional, patient-centered model of patient complexity can improve research and practice. *J Clin Epidemiol* 2012;65:1041-51. https://doi.org/10.1016/j.jclinepi.2012.05.005
3. Marengoni A, Angleman S, Melis R, et al. Aging with multimorbidity: A systematic review of the literature. *Ageing Res Rev* 2011;10:430-9. https://doi.org/10.1016/j.arr.2011.03.003
4. Violan C, Foguet-Boreu Q, Flores-Mateo G, et al. Prevalence, determinants and patterns of multimorbidity in primary care: A systematic review of observational studies. *PLoS One* 2014;9:e102149. https://doi.org/10.1371/journal.pone.0102149
5. Grant RW, Ashburner JM, Hong CS, et al. Defining patient complexity from the primary care physician's perspective. *Ann Intern Med* 2011;155:797-804. https://doi.org/10.7326/0003-4819-155-12-201112200-00001
6. Tonelli M, Wiebe N, Manns BJ, et al. Comparison of the complexity of patients seen by different medical subspecialists in a universal health care system. *JAMA Netw Open* 2018;1:e184852. https://doi.org/10.1001/jamanetworkopen.2018.4852
7. Aubert CE, Schnipper JL, Fankhauser N, et al. Association of patterns of multimorbidity with length of stay: A multinational observational study. *Medicine (Baltimore)* 2020;99:e21650. https://doi.org/10.1097/MD.0000000000021650
8. Mercer S, Furler J, Moffat K, et al. *Multimorbidity*. Geneva: World Health Organization; 2016.
9. Fortin M, Bravo G, Hudon C, et al. Prevalence of multimorbidity among adults seen in family practice. *Ann Fam Med* 2005;3:223-8. https://doi.org/10.1370/afm.272
10. Allison F, Lisa ML, Kim R. Estimating multimorbidity prevalence with the Canadian Chronic Disease Surveillance System. *Health Promot Chronic Dis Prev Can* 2017;37:215-22.
11. Rochon PA. *Drug use among seniors on public drug programs in Canada, 2012*. Ottawa: Canadian Institute for Health Information; 2012.
12. Townsend NT, Robinson TN. Surgical risk and comorbidity in older urologic patients. *Clin Geriatr Med* 2015;31:591-601. https://doi.org/10.1016/j.cger.2015.06.009
13. Czajkowski S, Lajkosz K, Koziarz A, et al. The rising burden of acute urological disease at an urban, academic hospital network. *Can Urol Assoc J* 2022;16:401-7. https://doi.org/10.5489/cuaj.7909
14. Charlson ME, Pompei P, Ales KL, et al. A new method of classifying prognostic comorbidity in longitudinal studies: Development and validation. *J Chronic Dis* 1987;40:373-83. https://doi.org/10.1016/0021-9681(87)90171-8
15. Tonelli M, Wiebe N, Fortin M, et al. Methods for identifying 30 chronic conditions: Application to administrative data. *BMC Med Inform Decis Mak* 2015;15:31. https://doi.org/10.1186/s12911-015-0155-5
16. Drach GW, Griebling TL. Geriatric urology. *J Am Geriatr Soc* 2003;51. https://doi.org/10.1046/j.1365-2389.2003.51348.x

17. Shinall MC Jr, Arya S, Youk A, et al. Association of preoperative patient frailty and operative stress with postoperative mortality. *JAMA Surg* 2020;155:e194620. https://doi.org/10.1001/jamasurg.2019.4620
18. Petrillo LA, Ritchie CS. The challenges of symptom management for patients with multimorbidity in research and practice: A thematic review. *Prog Palliat Care* 2016;24:262-7. https://doi.org/10.1080/09699260.2016.1192320
19. Tinetti ME, Bogardus ST, Agostini JV. Potential pitfalls of disease-specific guidelines for patients with multiple conditions. *N Engl J Med* 2004;351:2870-4. https://doi.org/10.1056/NEJMsb042458
20. Neville HL, Chevalier B, Daley C, et al. Clinical benefits and economic impact of post-surgical care provided by pharmacists in a Canadian hospital. *Int J Pharm Pract* 2014;22:216-22. https://doi.org/10.1111/ijpp.12058
21. Kelly WN, Ho MJ, Bullers K, et al. Association of pharmacist counseling with adherence, 30-day readmission, and mortality: A systematic review and meta-analysis of randomized trials. *J Am Pharm Assoc* 2021;61:340-50.e5. https://doi.org/10.1016/j.japh.2021.01.028

FIGURES AND TABLES

Table 1. Markers of complexity and characteristics of admission among urologic inpatients from Nova Scotia, Canada, n=300.

	Historic (2006-2007) n= 150	**Contemporary (2019-2020) n= 150**	**p***
Complexity profile			
Age at admission (years)	150, 63/65 (15) [57–74]	150, 65/67 (13) [57–74]	0.077
BMI (kg/m²)	106, 28/28 (4.8) [25–32]	119, 29/28 (6.1) [26–33]	0.049*
# of prescription medications at admission	150, 3.4/3.0 (2.8) [1.0–5.0]	150, 4.3/4.0 (3.4) [1.0–6.0]	0.005*
# of non-urology physician specialists seen in year prior	150, 1.3/1.0 (0.76) [1.0–2.0]	150, 2.0/2.0 (1.3) [1.0–3.0]	<0.001*
# of hospital admissions in the year prior to admission	150, 0.29/0.0 (0.66) [1.0–2.0]	150, 0.61/0.0 (1.2) [1.0–3.0]	0.002*
# of hospital admissions in the month prior admission	150, 0.11/0.0 (0.40) [0.0–0.0]	150, 0.12/0.0 (0.42) [0.0–0.0]	0.4
# chronic disease diagnoses	150, 1.7/2.0 (1.3) [1.0–3.0]	150, 2.04/2.0 (1.7) [1.0–3.0]	0.030*
CCI score	150, 3.5/4.0 (2.3) [2.0–5.0]	150, 4.05/3.0 (2.8) [2.0–5.0]	0.038*
Admission characteristics			
Number of non-uro physician services consulted	150, 0.23/0.0 (0.80) [0.0–0.0]	150, 0.51/0.0 (1.10) [0.0–1.0]]	0.007*
Number of interdisciplinary services consulted	150, 0.25/0.0 (0.55) [0.0–0.0]	150, 0.33/0.0 (0.70) [0.0–0.0]	0.14
LOS (days)	150, 3.7/2.0 (9.0) [1.0–4.0]	150, 4.2/2.0 (7.0) [1.– 4.0]	0.3

Note. Summary statistics are presented as n, mean/median, standard deviation is presented in round brackets, and interquartile range (IQR) is presented in squared brackets, and n (%) for categorical data. *One-sided t test, p<0.05. BMI: body mass index; CCI: Charlson comorbidity index; LOS: length of stay.

Table 2. Logistic regression analysis for markers of medical complexity: Comparison between contemporary and historical cohorts (n=300)				
Marker of complexity	**Odds ratio (95% CI)**	**Historic n (%)**	**Contemporary n (%)**	**p**
Home care prior to admission	5.04 (1.4–18)	3 (2.0%)	14 (9.3%)	0.010*
LTC prior admission	1.0 (0.20–5.04)	3 (2.0%)	3 (2.0%)	1.000
Admission in month prior	1.2 (0.5–2.8)	11 (7.3%)	13 (8.7%)	0.8
Admission in year prior	1.7 (1.0– 2.8)	32 (21%)	47 (31%)	0.049*
Non-urology specialist seen in year prior	1.3 (0.58–2.7)	134 (89%)	137 (91%)	0.7
Therapeutic anticoagulation	0.93 (0.44–2.0)	16 (11%)	15 (10.0%)	1.000

Odds ratios calculated through logistic regression. *2-tailed p-value, $p<0.05$*. CI: confidence interval; LTC: long-term care.

Table 3. Types of interventions performed during admission					
Intervention type	**Historic (2006–2007)**		**Contemporary (2019–2020)**		**Total**
	n	**%**	**n**	**%**	
Transurethral resections	38	25%	34	23%	72
Open abdominal surgery	35	23%	19	13%	54
Cystoscopic procedure (non-resection)	20	13%	23	15%	43
Other open surgery[a]	13	8.7%	8	5.3%	21
Ureteroscopy ± intervention	12	8.0%	12	8.0%	24
None	11	7.3%	17	11%	28
Laparoscopic surgery	10	6.7%	10	6.7%	20
Percutaneous stone surgery	6	4.0%	6	4.0%	12
Other[b]	3	2.0%	11	7.3%	16
IR procedures	2	1.3%	8	5.3%	8
Robotic surgery	0	0.0%	2	1.3%	2
Total	**150**		**150**		**300**

[a]Includes artificial urinary sphincter placement/removal, sling procedures, inguinal, penile, and crotal surgeries. [b]Includes sacroneuromodulator placement, suprapubic catheter placement.

Table 4. Logistic regression analysis for admission characteristics/outcomes: Comparison between contemporary and historical cohorts

Admission characteristic	**Odds ratio (95% CI)**	**Historic n (%)**	**Contemporary n (%)**	**p**
Unplanned OR	1.3 (0.47–3.6)	7 (4.7%)	9 (6.0%)	0.4
Unplanned IR	2.06 (0.61–7.0)	4 (2.7%)	8 (5.3%)	0.19
Escalation of care	1.7 (0.40–7.2)	3 (2.0%)	5 (3.3%)	0.4
Non-urology service consult	2.9 (1.6–5.2)	20 (13%)	46 (31%)	<0.001*
Interdisciplinary consult	1.04 (0.60–1.8)	33 (22%)	34 (29%)	0.5
[a]Simple discharge home	0.31 (0.15–0.62)	138 (92%)	117 (78%)	<0.001*

Odds ratios calculated through logistic regression. *2-tailed p-value, $p<0.05$. [a]Simple discharge home = discharged directly from hospital to place of prior residence without the establishment of new home care resources. CI: confidence interval.

Table 5. Multiple linear regression for drivers of length of stay among urologic inpatients									
Factor	**Unstandardized coefficients**		**Standardized coefficients**	**t**	**Sig.**	**95% CI for B**		**Collinearity statistics**	
	B	**Std. Error**	**Beta**			**Lower bound**	**Upper bound**	**Tolerance**	**VIF**
(Constant)	2.9	1.7	–	1.7	0.092	-0.47	6.3	–	–
Cohort	-0.29	0.69	-0.018	-0.41	0.7	-1.7	1.08	0.89	1.1
Open abdominal surgery (yes/no)	4.1	0.90	0.20	4.5	<0.001*	2.3	5.9	0.90	1.1
Age at admission	-0.028	0.030	-0.050	-0.93	0.4	-0.088	0.032	0.57	1.8
# of prescription Rx at admission	0.55	0.12	0.22	4.7	<0.001*	0.32	0.78	0.80	1.3
# of physician specialists seen in the year prior	-0.80	0.33	-0.11	-2.4	0.016*	-1.4	-0.15	0.76	1.3
CCI	-0.15	0.18	-0.048	-0.84	0.4	-0.49	0.20	0.52	1.9
# of inpatient physician services consulted during admission	5.4	0.37	0.65	15	<0.001*	4.7	6.2	0.85	1.2

Dependent variable = length of stay (days). CCI: Charleson comorbidity index; CI: confidence interval.