Unscheduled Clinical Encounters in the Postoperative Period After Adult and Pediatric Urologic Surgery

Nicholas C. Arpey[#], Matthew J. Sloan[#], Amy E. Hahn, Philip M. Polgreen, and Bradley A. Erickson

OBJECTIVE To qualify and quantify unscheduled clinical encounters (UCEs) in postoperative urologic patients and to identify patient and procedural risk factors for UCEs.

MATERIALS AND METHODS All UCEs, including phone calls, emails, patient portal messages, clinic visits, ER visits, and hospital readmissions, were analyzed, including the reason for the interaction (eg, pain, infection, etc) were assessed retrospectively for consecutive surgical patients over a 3-month period. Demographic and perioperative data for each patient and surgery was recorded and risk factors for UCE were determined using uni- and multivariate analyses.

RESULTS Approximately 40% of adult and pediatric patients experienced a UCE, the most common being phone calls (adult-68.2%, pediatric-90.0%) for new medical concerns (adult-67.7%, pediatric-58.1%). Risk factors for UCE in the adult population included lower BMI, living closer to the surgical hospital, discharge with catheter/wound packing, higher discharge pain, and open (vs endoscopic) surgery. In the pediatric population, surgery on the urethra/ureter and discharge with catheters predicted for UCE. UCEs led to changes in clinical management (17%, 21%), unplanned clinic visits (12%, 20%), and hospital readmissions (6%, 3%) for both adult and pediatric patients, respectively.

CONCLUSION Nearly 40% of both adult and pediatric patients experienced an unplanned need for the healthcare system in the postoperative period. The effect that UCEs have on overall costs and patient satisfaction, as well as ways to decrease UCEs, require further study. UROLOGY 124: 113–119, 2019. © 2018 Elsevier Inc.

As more surgical procedures are being performed on an outpatient basis or with shortened hospital stays, the emphasis on hospital readmissions as a marker of surgical quality and outcomes has increased.[1] In 2014, it was estimated that readmissions cost Medicare $17 billion annually.[2] In order to help mitigate these costs, efforts to pair readmission rates with reimbursement are now in place.[3] While many have argued that readmissions have little to do with quality of surgical care[4,5] and more to do with patient factors that are not easy to modify, it is unlikely that this payment structure will fundamentally change in the near future. Thus, a greater emphasis is being made in surgical departments and hospitals to prevent readmissions, though effective methods to reduce these rates are not entirely clear.

A primary reason for utilizing readmissions as a marker of quality is the ease by which these data can be collected. While current data regarding readmissions lack the granularity that can fully assess quality, satisfaction, and outcomes, these data have been shown to directly correlate with increased mortality and, importantly, high financial cost.[6,7] As a result, significant research has been conducted on readmission rates following urologic surgery.[8,9]

However, not all patients experience postoperative problems that warrant readmission. Instead, these patients utilize the healthcare system in ways that are not tied to reimbursement and therefore typically not assessed: phone calls, emails, emergency room visits, etc, all of which lead to an increased utilization of healthcare resources and decreased patient satisfaction.[10] Thus, little research is available on the true rate of unscheduled clinical encounters (UCEs) in the postoperative period. Having data on these interactions would therefore complement readmission data and allow healthcare providers, administrators, and policy makers to have a more complete understanding of how and why postoperative patients are utilizing the healthcare system prior to their scheduled follow-up appointment. Additionally, the identification of such data would allow for the development of methods to minimize such interactions in the future, leading to improved patient care and allocation of healthcare resources.

[#] *Denotes equal contribution.*

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From the Carver College of Medicine, University of Iowa, Iowa City, IA

Address correspondence to: Bradley A. Erickson, Carver College of Medicine, University of Iowa, 3233 RCP, 200 Hawkins Dr, Iowa City, IA 52242.

E-mail: brad-erickson@uiowa.edu

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The purpose of this study is to analyze the postoperative period between discharge and first scheduled postoperative visit for evidence of, and risk factors for, UCEs. We hypothesize that these rates will be significantly higher than readmission rates, and that patient, procedure, and perioperative factors will be identified as independent risk factors for UCEs that can eventually be used as a basis for future targeted interventions aimed at minimizing unnecessary post operative healthcare utilization by addressing anticipated patient concerns and complications.

MATERIALS/METHODS

After obtaining IRB approval, we conducted a retrospective review of 488 adult and 202 pediatric patients who underwent urologic surgery at a single institution over a consecutive three-month time period. Demographic information, surgical details, and perioperative factors for each patient was collected by trained reviewers and their electronic medical record was followed until their first scheduled postoperative visit after discharge. Any unplanned healthcare event that occurred during this time frame was considered to be a UCE, defined as any interaction with the healthcare system initiated by the patient that would be considered outside the normal standard of care and/or not explicitly mentioned in the patient's postoperative discharge instructions (eg, calling to report drain outputs). This included phone calls, emails, patient portal messages (eg, EPIC), clinic and emergency room visits, and hospital readmission both at our home institution and other institutions when available.

Each UCE was then analyzed to determine if it (1) led to an unplanned in-person visit, (2) a hospital readmission, both at our institution or outside institution, or (3) a change in the postoperative clinical management (eg, additional pain medications and/or antibiotics prescribed).

UCE characteristics were reported using descriptive statistics. Comparisons were then made between patients with and without a UCE, with continuous variables being analyzed using nonparametric Wilcoxon-Mann-Whitney test due to non-normality of data, and categorical variables analyzed with a chi-squared analysis or Fisher's exact test for those variables with low counts. Univariate analyses were performed to identify patient, preoperative, intraoperative, and postoperative variables associated with UCE. A multivariate analysis using generalized estimating equations grouped on patient was then performed using variables with a P value of <.01 on the univariate, with age and sex being forced into the model. Final model selection was performed by QIC. A P value of <.05 was considered significant. Notably the working correlation matrix showed negligible correlation between UCE and the patient for both adult (Table 3) and pediatric patients (Table 3). Low correlation values tell us returning for an unplanned follow-up is not just due to certain patients tendencies, but can be accounted for by the variables in the model. Data were stored in an IRB approved centralized REDCap database.

RESULTS

Adult Unplanned Healthcare Utilization

There were 488 adult patients that underwent 527 urologic surgeries by 10 surgeons over the study period. Surgical categories included benign endoscopic (34%), benign incisional (29%), oncologic endoscopic (15%), and oncologic incisional (22%). Four patients were ultimately excluded due to death in the postoperative period. Of the 484 patients included, 197 of them (40.7%) combined for a total of 427 UCEs (Table 1), with a median of 3 (IQR 2,6) per patient, of which the most common was a telephone call (68.2%), followed by emergency room visits (9.0%) and visits to outside medical centers (9.0%). The UCE occurred an median of 7 (IQR 3, 12) days after discharge and 9 (7, 14) days after surgery. The most common reason for the UCE was for medical reasons (68.0%), including pain (22.3%), wound concerns (15.0%), and postoperative voiding complaints (13.0%). The initial UCE led to 53 (12.4%) previously unscheduled clinic visits, and altered clinical management 71 times (16.6%). UCEs (n = 427 in 197 patients) were significantly more common than readmissions (n = 27 in 5.6% of total patients) (P <.0001).

Comparison of patients with an UCE vs those without is shown in Table 2. Patient characteristics associated with UCE included lower BMI (median 30.27 (IQR 25.87, 35.63) vs 28.28 (24.93, 33.52) P = .0067) and living closer to the hospital at which the surgery was performed (median 83.1; IQR (36.20, 111.70) vs (65.9; 34.4, 95.7) miles; P = .0079). Surgical characteristics associated with UCEs included incisional vs endoscopic surgeries (46.9% vs 37.1%; P = .01), longer operative times (median 69 (IQR 39, 191.75) vs 49; IQR (27, 100) minute; P <.001), median discharge pain (2 (IQR 0,4) vs 2 (IQR 0,3)), discharge with a drain in place (11.3% vs 2.6%; P <.001), and discharge with wound that requires management (eg, packing) (23.4% vs 15.0%; P = .02). On multivariate analysis, only BMI (OR 0.9713; ie, for every point increase in BMI, odds of UCE decreased 3%), distance from hospital (OR 0.9964; ie, for every 10 miles away from hospital, odds of UCE decreased 5%), operation time (OR 1.0031), discharge pain (OR 1.012), and being discharged with drains (OR 3.3216) were significant (Table 3).

Pediatric Unplanned Healthcare Utilization

There were 202 pediatric patients who underwent 209 urologic surgeries by three surgeons (benign incisional 78%; benign endoscopic 22%; oncologic <1%), of which 74 (36.6%) experienced an UCE, with a median of 1 (IQR 2,6) interactions per patient, the most common being phone calls (90.0%), followed by visits to outside medical facilities (6.9%) (Table 1). Median time to initial interaction was 7 (IQR 3, 16) days after discharge and 7 (IQR 3, 15) days after surgery. The most common reason for the UCE was for medical reasons (58.1%), primarily wound concerns (20.0%), pain (16.1%), and fevers (12.3%). The initial UCE led to 26 (19.9%) previously unscheduled clinic visits, 4 (3.1%) readmissions, and altered clinical management 27 times (20.6%).

Comparison of pediatric patients with a UCE vs those without is shown in Table 4. There were no patient factors that were statistically significant for predicting a UCE. Surgical characteristics associated with pediatric UCEs were surgery on the ureter, with 23 of 45 (51.1%, P = .053) ureteral reimplants resulting in a UCE, longer operative times (median 44 (IQR 20, 86.5) vs 31 (16, 48) minute; P = .004) and being discharged with a catheter (20.2% vs 3.1%; P = .0001). On multivariate analysis, only being discharged with a catheter in placed increased the odds of UCEs (OR 8.34; the odds of a UCE were eight times higher in those sent home with a catheter vs those without independent of surgery type) (Table 3).

Table 1. Descriptive characteristics of unscheduled clinical encounters for adult and pediatric postoperative urologic patients.

	Unplanned Adult Utilizations $n = 427$	Unplanned Pediatric Utilizations $n = 131$
Interactions, median (IQR)	3 (2, 6)	1 (1, 2)
Days after surgery, median (IQR)	9 (7, 14)	7 (3, 16)*
Days after discharge, median (IQR)	7 (3, 12)	7 (3, 15)*
Type of interaction, *n* (%)		
Telephone calls	291 (68.15)	117 (89.31)
ER visit	38 (8.90)	4 (3.05)
EPIC MyChart message	35 (8.20)	1 (0.76)
Email message	1 (0.23)	0 (0.00)
Unscheduled clinic visit	23 (5.39)	0 (0.00)
Outside medical	39 (9.13)	9 (6.87)
Telephone answered by, *n* (%)		
Nurse	182 (62.54)	68 (62.39)
Resident	105 (36.08)	42 (41.03)
Staff	4 (1.37)	7 (7.69)
Reason for interaction, *n* (%)		
Medication	38 (8.90)	12 (7.74)
Catheter/Drain	57 (13.35)	2 (1.29)
Appointment	18 (4.22)	6 (3.87)
Medical	289 (67.68)	90 (58.06)
Fevers	10 (2.34)	19 (12.26)
Gastrointestinal	49 (11.48)	15 (9.68)
Hematuria	47 (11.01)	5 (3.23)
Infection	17 (3.98)	7 (4.52)
Integument	7 (1.64)	5 (3.23)
Other	22 (5.15)	2 (1.29)
Pain	95 (22.25)	25 (16.13)
Voiding complaints	55 (12.88)	13 (8.39)
Wound	64 (14.99)	31 (20.00)
Other	45 (10.53)	11 (7.10)
Interaction leads to acute-in-person visit, *n* (%)	53 (12.41)	26 (19.85)
Interaction leads to admission to hospital, *n* (%)	27 (6.32)	4 (3.05)
Interaction leads to change in clinical management, *n* (%)	71 (16.63)	27 (20.61)

* Missing values removed ($n = 2$).

DISCUSSION

The purpose of the current study was to evaluate unscheduled clinical encounters (UCEs) after adult and pediatric urologic surgeries. We hypothesized that UCEs would be significantly higher than readmission rates (ie, most UCEs will not lead to readmission) and, furthermore, that UCEs could be predicted, and therefore potentially prevented, by both patient and procedural factors. Our hypotheses were mostly supported, with 40.7% of all adult patients requiring at least 1 UCE (vs an overall 5.6% readmission rate) and 36.6% of pediatric patients (vs an overall 2.0% readmission rate). In adults, while nearly all types of patients and procedures had UCEs, we identified several patient and procedural factors that are associated with higher rate of UCEs including lower BMI, shorter distance of home from surgical hospital, operation time, discharge pain, and being discharged with drain. We identified fewer independently significant factors in children with sending the patient home with a catheter being the risk factor most associated with calls (notably, most of these cases came from hypospadias and ureteral reimplantation cases).

The United States' postoperative hospital stays are some of the shortest in the world, the primary reason likely being the emphasis on cost reductions necessary for making the bundled payment model profitable.[12] Interestingly, it has been presumed that while shorter stays may decrease costs in the short-term, the higher rate of readmissions would make the emphasis on quicker discharges less profitable in the long-term. However, a recent *JAMA Surgery* article seemed to dispel that notion, showing that an earlier discharge did not lead to higher direct costs, as measured by hospital readmission rates and other measurable healthcare utilization.[13] However, we strongly believe that utilizing claims and billing data alone does not do an adequate job of capturing the entirety of the postoperative experience, especially for nonreimbursable events such as phone calls, early clinic visits (especially when still within the surgical global period), and electronic communications. As we demonstrated in this

Table 2. Descriptive characteristics of adult population and corresponding procedures stratified according to no unplanned healthcare system utilization vs unplanned healthcare system utilization.

	Patients $n = 484$	No Unplanned Healthcare System Interactions $n = 287$	Unplanned Healthcare System Interactions $n = 197$	*P* Value
Age, yr Median (IQR)	61.16 (46.82, 70.74)	61.01 (47.16, 69.66)	61.36 (45.47, 72.66)	.9945
Sex, *n* (%)				
Male	329 (67.98)	202 (70.38)	127 (64.47)	.1839
Female	155 (32.02)	84 (29.27)	70 (35.53)	
Race, *n* (%)				
White	446 (92.15)	263 (91.64)	183 (92.89)	.5634
Black	23 (4.75)	16 (5.57)	7 (3.55)	
Hispanic	7 (1.45)	5 (1.74)	2 (1.02)	
Other	7 (1.45)	3 (1.05)	4 (2.03)	
Marital status, *n* (%)				
Single	121 (25.00)	74 (25.78)	47 (23.86)	.1438
Married	285 (58.88)	159 (55.40)	126 (63.96)	
Divorced	45 (9.30)	32 (11.15)	13 (6.60)	
Widowed	32 (6.61)	22 (7.67)	10 (5.08)	
BMI, kg/m^2 median (IQR)	29.44 (25.53, 34.92)	30.27 (25.87, 35.63)	28.28 (24.93, 33.52)	.0067
Smoking, *n* (%)				
Current	68 (14.05)	42 (14.63)	26 (13.20)	.1104
Former	194 (40.08)	104 (36.24)	90 (45.69)	
Never	222 (45.87)	141 (49.13)	81 (41.12)	
Alcohol, *n* (%)				
None	260 (53.72)	153 (53.31)	107 (54.31)	.3521
<2 per day	213 (44.01)	125 (43.55)	88 (44.67)	
>2 per day	11 (2.27)	9 (3.14)	2 (1.02)	
Insurance, *n* (%)				
Medicaid	63 (13.02)	38 (13.24)	25 (12.69)	.7994
Medicare	207 (42.77)	119 (41.46)	88 (44.67)	
Private	213 (44.01)	129 (44.95)	84 (42.64)	
Distance from hospital, miles median (IQR)	75.15 (35.28, 103.98)	83.1 (36.20, 111.70)	65.90 (34.40, 95.70)	.0079
	Procedures $n = 527$	No unplanned healthcare system interactions $n = 305$	Unplanned healthcare system interactions $n = 222$	*P* value
Procedure, *n* (%)				
Endoscopic	255 (48.39)	162 (53.11)	93 (41.89)	.0140
Surgical incision	272 (51.61)	143 (46.89)	129 (58.11)	
Primary organ system, *n* (%)				.0729
Bladder	167 (31.69)	92 (30.16)	75 (33.78)	
Colon	1 (0.19)	0 (0.00)	1 (0.45)	
Kidney	108 (20.49)	56 (18.36)	52 (23.42)	
Penis	39 (7.40)	24 (7.87)	15 (6.76)	
Prostate	73 (13.85)	50 (16.39)	23 (10.36)	
Testicles	25 (4.74)	17 (5.57)	8 (3.60)	
Ureter	55 (10.44)	30 (9.84)	25 (11.26)	
Urethra	38 (7.21)	25 (8.20)	13 (5.86)	
Vagina	11 (2.09)	3 (0.98)	8 (3.60)	
Vas deferens	10 (1.90)	8 (2.62)	2 (0.90)	
Charleston comorbidity index, median (IQR)	90.15 (90.15, 98.30)	90.15 (77.48, 98.30)	90.15 (90.15, 98.30)	.7507
ASA classification, *n* (%)				
1-2	277 (52.56)	157 (51.48)	120 (54.05)	.6192
3-5	250 (47.44)	148 (48.52)	102 (45.95)	
Operation time, min median (IQR)	56 (30, 145)	49 (27, 100)	69 (39, 191.75)	<.0001
Discharge pain, median (IQR)	2 (0, 4)	2 (0, 3)	2 (0, 4)	.0013
Days in hospital, median (IQR)	0 (0, 2)	0 (0, 1)	1 (0, 2)	<.0001
Discharge day of the week, *n* (%)				
Monday	75 (14.23)	52 (17.05)	23 (10.36)	.0119
Tuesday	101 (19.17)	56 (18.36)	45 (20.27)	
Wednesday	84 (15.94)	58 (19.02)	26 (11.71)	
Thursday	98 (18.60)	56 (18.36)	42 (18.92)	

Continued

Table 2. Continued

	Patients $n = 484$	No Unplanned Healthcare System Interactions $n = 287$	Unplanned Healthcare System Interactions $n = 197$	*P* Value
Friday	109 (20.68)	56 (18.36)	53 (23.87)	
Saturday	39 (7.40)	20 (6.55)	19 (8.56)	
Sunday	21 (3.98)	7 (2.30)	14 (6.31)	
Discharge with catheter, *n* (%)	155 (29.41)	84 (27.54)	71 (31.98)	.3135
Discharge with drains, *n* (%)	33 (6.26)	8 (2.62)	25 (11.26)	<.0001
Discharge with wound packing and/or active management, *n* (%)	97 (18.41)	45 (14.75)	52 (23.42)	.0154

manuscript, much happens in the "black-box" of time between discharge and the first clinical follow-up that will never be captured in administrative data.

To our knowledge, only 1 other group has attempted to characterize the entirety of the postoperative period following urologic surgery.[10] A retrospective cohort study analyzed postoperative radical cystectomy patients to assess all communications with the health care system after hospital discharge based. Their primary outcome was hospital readmission within 30 days after discharge and the purpose of the study was to determine how early communications in the postoperative period affected readmission risk. The researchers found that patients requiring readmission were significantly more likely to report infection and failure to thrive concerns as well as more likely to use the emergency room for their initial concerns. They also found that patients who waited longer to first communicate their concerns or those who were able to tolerate their symptoms longer were less likely to be readmitted.

While our study looked at similar descriptive characteristics, we believe it to be unique in a number of ways. First, our primary goal was not to predict 30-day readmissions, but rather to quantify/qualify all UCEs, acknowledging that while readmissions are perhaps the most important metric, every call or communication by a patient might potentially be the result of poor communication, patient frustration and/or medical concerns that may be modifiable and/or preventable. Second, we broadened our study to capture data on patients who underwent any urologic surgery during the 3-month window at our institution, which allowed us to understand the entire scope of the problem (though admittedly, prevents us from making specific recommendations for certain disease processes). Third, our study included both adult and pediatric populations, acknowledging that while these groups are often analyzed separately, from a departmental, administrative, and resource standpoint, from whom the call comes matters very little for most departments that share resources. Last, though our data will need to be replicated in a prospective fashion, we did find statistically significant correlations between UCEs and a number of patient and surgical variables. This is meaningful as prior studies have shown no predictive value between demographic/clinical characteristics and readmission[10,11]—though as stated, we believe these studies did not capture the entire postoperative experience. Our study would therefore provide the data necessary for future risk stratification

Table 3. Multivariate analysis of factors associated with postoperative unplanned clinical encounters (UCE).

Adult		Odds Ratio	OR Confidence Interval	*P* Value
Sex (baseline = female)		0.74	(0.50, 1.10)	.1965
BMI		0.97	(0.95, 0.99)	.0126
Distance from hospital		1.00	(0.99, 1.00)	.0017
Operation time		1.00	(1.00, 1.00)	.0009
Discharge pain		1.01	(1.00, 1.02)	.0045
Discharge with drains		3.32	(1.45, 7.60)	.0004
PEDIATRIC		**Odds Ratio**	**OR Confidence Interval**	***P* Value**
Primary organ (baseline = kidney, vagina)	Bladder	2.99	(0.49, 18.11)	.2338
	Penis	0.99	(0.23, 4.27)	.9868
	Testicles	0.78	(0.17, 3.53)	.7519
	Ureter	1.95	(0.44, 8.71)	.3812
	Urethra	1.58	(0.20, 12.64)	.6638
Discharge with catheter		8.34	(2.27, 30.70)	.0014

Table 4. Descriptive characteristics of pediatric patients stratified according to no unplanned healthcare system utilization vs unplanned healthcare system utilization.

	Overall $n = 202$	No Unplanned Healthcare System Interactions $n = 128$	Unplanned Healthcare System Interactions $n = 74$	*P* Value
Age, yr, median (IQR)	4.11 (1.30, 10.46)	4.60 (1.28, 10.38)	3.64 (1.35, 10.34)	.9811
Sex, *n* (%)				
Male	162 (80.20)	106 (82.81)	56 (75.68)	.2969
Female	40 (19.80)	22 (17.19)	18 (24.32)	
Race, *n* (%)				
White	148 (73.27)	91 (71.09)	57 (77.03)	.8032
Black	19 (9.41)	12 (9.38)	7 (9.46)	
Hispanic	6 (2.97)	5 (3.91)	1 (1.35)	
Other	17 (8.42)	11 (8.59)	6 (8.11)	
No comment	12 (5.94)	9 (7.03)	3 (4.05)	
BMI, kg/m^2 median (IQR)	17.76 (15.90, 21.25)	17.6 (15.86, 21.82)	18.15 (16.05, 20.58)	.7891 .8451
Insurance, *n* (%)				
Medicaid	86 (42.57)	58 (45.31)	28 (37.84)	.1265
Medicare	2 (0.99)	0 (0.00)	2 (2.70)	
Private	114 (56.44)	70 (54.69)	44 (59.46)	
Distance from UIHC, miles median (IQR)	66.95 (29.93, 103.38)	62.8 (30.08, 97.83)	78 (27.95,113.63)	.4041
	Overall $n = 209$	No Unplanned Healthcare System Interactions $n = 130$	Unplanned Healthcare System Interactions $n = 79$	*P* Value
Procedure, *n* (%)				
Endoscopic	39 (18.66)	22 (16.92)	17 (21.52)	.5197
Surgical incision	170 (81.34)	108 (83.08)	62 (78.48)	
Primary organ, *n* (%)				
Bladder	12 (5.74)	6 (4.62)	6 (7.59)	.0053
Kidney	4 (1.91)	4 (3.08)	0 (0.00)	
Penis	73 (34.93)	47 (36.16)	26 (32.91)	
Testicles	60 (28.71)	46 (35.38)	14 (17.72)	
Ureter	45 (21.53)	22 (16.92)	23 (29.11)	
Urethra	10 (4.78)	3 (2.31)	7 (8.86)	
Vagina	5 (2.39)	2 (1.54)	3 (3.80)	
Charleston comorbidity index, median (IQR)	98.3 (98.3, 98.3)	98.3 (98.3, 98.3)	98.3 (98.3, 98.3)	.8171
ASA classification, *n* (%)				
1-2	186 (89.00)	114 (87.69)	72 (91.14)	.5863
3-5	23 (11.00)	16 (12.31)	7 (8.86)	
Operation time, minutes Median (IQR)	34.00 (17.75, 65.00)*	31.00 (16.00, 48.00)*	44.00 (20.00, 86.50)	.0040
Discharge pain, median (IQR)	0 (0, 1)	0 (0, 0)	0 (0, 1.5)	.4040
Days in hospital, median (IQR)	0 (0, 0)*	0 (0, 0)*	0 (0, 0.5)	.1350
Discharge day of the week, *n* (%)				
Monday	11 (5.26)	5 (3.85)	6 (7.59)	.4601
Tuesday	40 (19.14)	22 (16.92)	18 (22.78)	
Wednesday	51 (24.40)	31 (23.85)	20 (25.32)	
Thursday	61 (29.19)	41 (31.54)	20 (25.32)	
Friday	36 (17.22)	26 (20.00)	10 (12.66)	
Saturday	5 (2.39)	3 (2.31)	2 (2.52)	
Sunday	5 (2.39)	2 (1.54)	3 (3.80)	
Discharge with catheter, *n* (%)	20 (9.57)	4 (3.08)	16 (20.25)	.0001
Discharge with drains, *n* (%)	2 (0.96)	2 (1.54)	0 (0.00)	.5275
Discharge with wound packing and/or active management, *n* (%)	82 (39.23)	50 (38.46)	32 (40.51)	.8828

* Missing values removed ($n = 1$).

and identification of those patient's potentially requiring earlier intervention.

One of the most encouraging aspects of our results is that the inventions and potential action items needed to decrease UCEs seem to be easily within reach of most care providers and healthcare systems. By improving our ability to risk stratify patients utilizing the data collected from this study, the logical next step is to tailor discharge instructions

to a patient's risk profiles. For example, patients discharged with drains do not currently receive specialized discharge instructions at our institution, other than basic drain management information—but clearly could benefit from more intense follow-up instructions, potentially with photo examples of what is normal and abnormal. Another example might be discharging patients that report high pain levels with more intense pain management algorithms that do not depend solely on narcotics. Indeed, prospective studies that utilize text messaging platforms and smart phone applications to accomplish better postoperative communications are currently underway at our institution. These baseline data will serve to determine if future interventions make an impact.

There are limitations to the study that deserve further mention. First, because of the retrospective design, it is likely that some of the unplanned clinical events went undocumented. For example, patient emails sent directly to the physician are not always transcribed into the online medical record. In addition, we are not always aware of the outside medical care received locally if this is not mentioned explicitly by the patient and/or documented by the physician. Second, without cost or satisfaction data being linked to these phone calls, the story of the postoperative period remains incomplete. Cost analyses using these data are underway and prospective studies will attempt to determine if the need to make phone calls to providers hurts or even potentially helps with overall patient reported satisfaction. Third, while we believe our discharge routines are similar to other institutions, it is likely that if this study was performed at other institutions both lower and higher rates of UCE would found based simply on different discharge routines. Finally, though BMI and day of discharge were noted to be predictors of UCE on multivariate analysis, we were unable to determine an explanation plausible enough for the BMI association to include in the discussion, and the day of discharge association is likely more related to which surgeons operate on which days (and which surgeries they perform) than that specific day. A larger sample size will be required to determine the effects of individual surgeons.

CONCLUSION

Nearly 40% of adult and pediatric urologic patients experienced an unplanned clinical event after their surgery. Many of these events did not lead to readmission to the hospital, and thus would not have been captured if one only looked at administrative or billing data, but nonetheless, are presumed to be associated with higher healthcare expenditures and patient satisfaction. Risk factors for UCEs were identified in both populations that may serve to guide future studies that aim to decrease UCEs.

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