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Using the AHRQ PSIs to Detect Post-Discharge Adverse Events in the Veterans Health Administration

Hillary J. Mull, PhD, MPP^{1,2}, Ann M. Borzecki, MD, MPH^{3,4,5}, Qi Chen, MD, PhD¹, Marlena H. Shin, JD, MPH¹, and Amy K. Rosen, PhD^{1,2}

Hillary J. Mull: hillary.mull@va.gov; Ann M. Borzecki: amb@bu.edu; Qi Chen: qc2112@bu.edu; Marlena H. Shin: marlena.shin@va.gov; Amy K. Rosen: akrosen@bu.edu

¹Center for Organization, Leadership, and Management Research, VA Boston Healthcare System, Boston, MA

²Department of Surgery, Boston University School of Medicine, Boston, MA

³Boston University School of Medicine, Boston, MA

⁴Department of Health Policy and Management, Boston University School of Public Health, Boston, MA

⁵Center for Health Quality, Outcomes and Economic Research, Bedford VAMC, Bedford, MA

Abstract

Background—PSIs use inpatient administrative data to flag cases with potentially preventable adverse events (AEs) attributable to hospital care. We explored how many AEs the PSIs identified in the 30 days post-discharge.

Methods—We ran the PSI software (version 3.1a) on VA 2003–2007 administrative data for ten recently validated PSIs. Among PSI-eligible index hospitalizations not flagged with an AE, we evaluated how many AEs occurred within 1–14 and 15–30 days post-discharge using inpatient and outpatient administrative data.

Results—Considering all PSI-eligible index hospitalizations, we identified 11,141 post-discharge AEs, compared to 40,578 inpatient-flagged AEs. More than 60% of post-discharge AEs

Reprint requests may be sent to: Hillary J. Mull, PhD, MPP, Center for Organization, Leadership, and Management Research (COLMR), VA Boston Healthcare System, 150 S. Huntington Ave. (152M), Boston, MA 02130, Telephone number (857) 364-2766; Fax number (857) 364-4438, hillary.mull@va.gov.

Hillary J. Mull, PhD, MPP, Center for Organization, Leadership, and Management Research (COLMR), VA Boston Healthcare System, 150 S. Huntington Ave. (152M), Boston, MA 02130, Telephone number (857) 364-2766; Fax number (857) 364-4438

Ann M. Borzecki, MD, MPH, Center for Health Quality, Outcomes and Economic Research (CHQOER), Bedford VAMC, 200 Springs Road, Bedford, MA 01730, Telephone number (781) 687-2870; Fax number (781) 687-3106

Qi Chen, MD, PhD, Center for Organization, Leadership and Management Research, 150 S. Huntington Avenue, Boston, MA 02130, Telephone number (857) 364-2764; Fax number (857) 364-4438

Marlena H. Shin, JD, MPH, Center for Organization, Leadership and Management Research, 150 S. Huntington Avenue, Boston, MA 02130, Telephone number (857) 364-2767; Fax number (857) 364-4438

Amy K. Rosen, PhD, Center for Organization, Leadership and Management Research, 150 S. Huntington Avenue, Boston, MA 02130, Telephone number (857) 364-6823; Fax number (857) 364-4438

Conflict of Interest Declaration

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were detected within 14 days of discharge. The majority of post-discharge AEs were decubitus ulcers and postoperative pulmonary embolisms or deep vein thromboses.

Conclusions—Extending PSI algorithms to the post-discharge period may provide a more complete picture of hospital quality. Future work should use chart review to validate post-discharge PSI events.

Background

Numerous studies have shown that the negative effects of poor hospital quality of care can extend beyond discharge. The consequences of hospital adverse events (AEs) include unplanned outpatient encounters, emergency room visits or hospital readmissions.^{1–4} Additionally, hospital performance measures limited to AE detection during the index hospitalization may misidentify high and low performing hospitals.⁵ These studies highlight the need to examine post-discharge data in order to provide a more complete picture of hospital quality and safety performance.

Existing hospital quality measures include 30-day mortality and readmissions,^{6,7} but there are no endorsed measures to our knowledge that focus explicitly on post-discharge morbidity. The Agency for Healthcare Research and Quality (AHRQ) Patient Safety Indicators (PSIs) are standardized algorithms that use inpatient administrative data to flag cases with potentially preventable inpatient AEs attributable to hospital care.⁸ Although the PSIs were developed to detect AEs based on administrative data collected during the hospitalization, three previous studies adapted three of the PSIs to detect AEs in the 30 days post-discharge. These studies used post-discharge inpatient data from the state of New York and found that the number of AEs detected increased by 9–20% beyond the PSIs identified during the index hospitalization.^{9–11}

Our study expands upon this previous work by evaluating post-discharge AE detection among a wider set of ten PSIs that was recently validated in the Veterans Health Administration (VA).¹² Additionally, we explore the number of AEs detected in outpatient encounters, an area of patient safety research that has received little attention. The objective of this paper is to examine the feasibility of applying PSI criteria to detect AEs in the 30-day post-discharge period using both VA inpatient and outpatient administrative data. The VA is an ideal setting for conducting this study because of the comprehensive administrative data available for VA patients that includes inpatient and outpatient encounters, allowing linkage of episodes of care.

Methods

Data Source

We obtained Fiscal Year (FY) 2003–2007 VA inpatient data from the Patient Treatment File (PTF) (n=2,343,088 hospitalizations) and outpatient data from the Outpatient Care File (OPC) (n=3,513,455 visits).¹³ We linked the two datasets across years by patient identifiers (i.e., scrambled social security numbers).

AHRQ Patient Safety Indicators

AHRQ spearheaded the development of the PSIs shortly after the Institute of Medicine (IOM) report charged the country to address AEs in healthcare.¹⁴ The PSIs were specifically designed to detect hospital AEs using International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) diagnosis and procedure codes.¹⁵ Since the PSI algorithms favor specificity over sensitivity (i.e., they are set up to maximize identification of true events), they search for diagnoses and procedures coded in secondary inpatient data fields to avoid labeling an AE that was present-on-admission (POA) as a hospital safety event. (Although with increasing implementation of POA codes, the most recent software does include principal diagnoses that are not POA¹⁶).

Of the 18 hospital-level AHRQ PSIs, we analyzed ten that were both endorsed by the National Quality Forum (NQF)¹⁷ and previously validated in the VA:^{18–24} Decubitus Ulcer (“Ulcer”), Iatrogenic Pneumothorax (“Pneumothorax”), Central Venous Catheter-Related Bloodstream Infections (“Infections”), Postoperative Hemorrhage or Hematoma (“Hemorrhage/Hematoma”), Postoperative Physiologic and Metabolic Derangement (“Derangement”), Postoperative Respiratory Failure (“Respiratory Failure”), Postoperative Pulmonary Embolism/Deep Vein Thrombosis (“PE/DVT”), Postoperative Sepsis (“Sepsis”), Postoperative Wound Dehiscence (“Dehiscence”), and Accidental Puncture or Laceration (“Puncture/Laceration”).

Identification of Inpatient PSI Events

We applied the AHRQ PSI software version 3.1a to FY03-07 inpatient data to identify hospitalizations that met the criteria for each PSI numerator (i.e., PSI events that occur in the hospitalization) and denominator (i.e., hospitalizations eligible for the PSI) criteria. We calculated PSI observed rates for the index hospitalization according to the PSI guidelines.¹⁵

Identification of Post-discharge PSI Events

To estimate the number of PSI events that occurred in the post-discharge period, we limited our PSI denominator to hospitalizations eligible for the PSI that were not flagged for an inpatient PSI event (i.e., the PSI denominator minus the PSI numerator from the index hospitalization). We used scrambled social security numbers to link those hospitalizations eligible for post-discharge PSIs to inpatient and outpatient encounters that occurred within the 30-day post-discharge window. While 30 days is a commonly accepted timeframe for examining post-discharge effects,^{5,7} we also examined how many PSI events occurred within 1–14 days of discharge to determine whether the majority of AEs occurred shortly after discharge.

We developed the post-discharge AE numerator criteria based on modifications of the PSI criteria used in the index hospitalization. Specifically, our revised numerators looked for principal, not secondary, diagnosis codes in order to identify the primary reason for the inpatient or outpatient encounter. If the PSI numerator was based only on ICD-9-CM diagnoses codes, our revised PSI numerator criteria searched for the presence of these codes only in the principal diagnosis field in the post-discharge inpatient and outpatient

administrative data. This rule applied to the following six PSIs: Ulcer, Pneumothorax, Infections, PE/DVT, Sepsis, and Puncture/Laceration.

If the PSI numerator also included ICD-9-CM procedure codes, our modifications were more complex. ICD-9-CM procedure codes are limited to inpatient data, whereas procedures performed in outpatient encounters are coded using the Current Procedural Terminology (CPT).²⁵ We relied on the previous literature and clinical input to crosswalk ICD-9-CM procedure codes to appropriate CPT codes. For Dehiscence and Derangement, which include a limited number of procedure codes in the numerator criteria, we identified matching CPT codes.²⁶ The Derangement PSI includes both diabetes and acute renal failure components; we focused on detecting evidence of post-discharge acute renal failure only. (From our previous work, we found that the diabetes component was rare and had a very low positive predictive value at 13%.)¹⁸ For Hemorrhage/Hematoma, the PSI algorithm includes 27 different procedure codes; in prior work we found that several of these codes were relatively non-specific for a postoperative bleeding event, e.g., 8604, “other incision with drainage of skin and subcutaneous tissue.”²⁷ Thus, we were concerned that many of the cross-walked CPT codes would similarly not be suitably specific, so we did not account for procedure codes when looking for outpatient events. For Respiratory Failure, the algorithm specifies either an acute respiratory failure secondary diagnosis code or an appropriately timed intubation/ventilation procedure in reference to an index procedure. We felt we would be more likely to pick up true post-discharge events based on a principal diagnosis of acute respiratory failure; we were concerned that there would be too many clinically unrelated reasons for intubation/ventilation codes. As a result, we did not incorporate these procedure codes into our post-discharge PSI numerator (see Table 1 for the final algorithms).

Results

Our merged dataset included 1,196,014 unique patients with at least one hospitalization between FY03-07. There were 40,578 PSI events detected during the index hospitalization and 11,141 (27%) additional PSI events that occurred post-discharge over the five-year period. The observed rates for post-discharge PSI events ranged from 0.07 for Puncture/Laceration to 8.48 for PE/DVT per 1,000. Compared to the PSI events identified in the index hospitalization, using administrative data from post-discharge inpatient and outpatient encounters enabled us to capture from 2% (Puncture/Laceration) to 77% (Hemorrhage/Hematoma) additional events (see Table 2).

We found that for all PSIs, post-discharge events were more likely to be detected within 1–14 days of discharge than within 15–30 days, e.g., 2.32 versus 0.70 per 1,000 for Hemorrhage/Hematoma, respectively, and 4.62 versus 0.55 per 1,000 for Derangement (see Table 3). There was also variation in where the PSI event was detected post-discharge. For example, PSI events such as Ulcer, Hemorrhage/Hematoma, PE/DVT, and Sepsis, were more frequently detected in outpatient encounters (3.17 vs. 0.13, 2.57 vs. 0.55, 7.68 vs. 1.81, and 0.74 vs. 0.22 per 1,000, respectively), while other events, such as Pneumothorax, Infection, Derangement, and Dehiscence, were more often found in subsequent hospitalizations (0.09 vs. 0.05, 0.51 vs. 0.29, 3.88 vs. 1.85, and 0.75 vs. 0.16 per 1,000, respectively).

Discussion

We found it was feasible to modify PSI algorithms to detect AEs in the post-discharge period. In fact, applying PSI algorithms to post-discharge data enabled us to identify nearly 30% more safety events that may be attributable to care received during the index hospitalization. These events were more likely to occur within the first 14 days of discharge. With respect to the setting where post-discharge PSIs were detected, this varied across the PSIs. With some exceptions, AEs detected in inpatient encounters likely reflect the greater severity and acuity of the complication.

Our research builds on recent evidence that some inpatient safety events may be the result of care received in the previous hospitalization.²⁸ Earlier studies of the PSIs found 9%, 20% and 25% more cases of Hemorrhage/Hematoma, PE/DVT, and Infection, respectively, using data from post-discharge inpatient encounters.^{9–11} When we limited our post-discharge analysis to inpatient data, we had similar findings (14%, 15% and 25% respectively). However, by including both inpatient and outpatient encounters in our study, we found 77%, 40% and 72%, more AEs respectively for these PSIs. This highlights the importance of incorporating outpatient data into post-discharge AE detection.

Our study also expands on the literature by examining two post-discharge time periods. Although a 30-day period is commonly used as the cut-point in post-discharge hospital quality measures (e.g., readmissions), it is likely that the ideal window in which to capture post-discharge AEs varies according to the nature and severity of the complication. We found that most PSIs occurred shortly after discharge with many fewer events detected more than two weeks later. However, Ulcer and Puncture/Laceration had nearly as many events detected in the second half of the 30-day window as in the first. There is evidence that decubitus ulcers may manifest over a longer period of time,²⁹ such that a post-discharge window beyond 30 days may be appropriate. In the case of Puncture/Laceration, one would expect this complication to manifest during or shortly after the index procedure. Thus, it is possible that the higher frequency of these events in the 15–30 day timeframe is the result of intervening episodes of care, indicating that a shorter post-discharge window may be more appropriate. Future studies may want to explore additional time periods to detect post-discharge AEs attributable to the index hospitalization.

As expected, many of the AEs that would be considered as more severe complications were more likely to be detected in post-discharge inpatient encounters (e.g., Dehiscence and Derangement); however, we found at least one exception to this rule. We were surprised to find more cases of Sepsis in the outpatient setting. (On the whole, there were relatively few cases in either setting.) It is possible that these outpatient cases were misdiagnosed, miscoded, or more likely to be diagnosed in a VA setting without inpatient acute care – in this scenario, the patient would have been sent to closest acute inpatient care facility for treatment, which in many areas is a non-VA hospital. Additionally, although many post-operative hemorrhages and hematomas may be treated in an outpatient setting, it is possible that many of the Hemorrhage/Hematoma outpatient cases may not reflect true AEs. As a result of poor CPT to ICD-9-CM procedure code matching, the algorithm we applied to outpatient data was not as specific as the original PSI algorithm. In the case of Sepsis,

merging post-discharge VA with non-VA data may provide a more comprehensive and clearer picture of VA care. In the case of Hemorrhage/Hematoma, a nationally-validated ICD-9-CM and CPT crosswalk would greatly facilitate the application of PSI algorithms to outpatient data. For all PSIs, chart review would also confirm the reliability of outpatient coding and determine whether the PSI algorithms may be further adapted to detect events in outpatient data.

Our study has several strengths. We used a large sample of linked inpatient and outpatient administrative data, enabling us to track patients over time. We also developed and applied numerator criteria to test seven PSI algorithms for post-discharge safety events that had not previously been explored in the literature. Finally, we measured the extent to which problems resulting from inpatient care could potentially be detected in post-discharge outpatient encounters, an important area for future research.

This study also has a few limitations. Some of the post-discharge PSI events we detected may be false positives (previous work examining the validity of selected PSIs found that after accounting for POA, the positive predictive values ranged from 46–90%).¹² Thus, we may have overestimated the yield of true events that can be detected by applying modified PSI criteria to post-discharge data. We suggest that future studies use chart review to validate the post-discharge PSIs. On the other hand, we also limited our study to VA data only despite the fact that 30% of Veterans also have Medicare coverage.³⁰ As a result, our study may have underestimated AEs if post-discharge care occurred in Medicare-reimbursed hospital settings. Finally, we could not always crosswalk exact ICD-9-CM procedure codes with CPT codes, resulting in somewhat imperfect matches between the inpatient and post-discharge PSI algorithms; however, this would have only affected the specificity of one of the PSIs we evaluated (Hemorrhage/Hematoma).

Since the PSIs are a reasonably valid and cost-efficient means of identifying AEs,¹² policymakers may consider using the PSI algorithms to measure post-discharge morbidity associated with hospital quality. Unlike 30-day readmissions, the PSIs identify specific complications associated with hospital care. A better understanding of safety events and where they are detected can help hospitals target quality improvement efforts. Additionally, the PSIs are increasingly being used for hospital profiling with respect to public reporting and pay-for-performance initiatives.^{17,31} If the modified post-discharge PSIs detect true patient safety events, they may increase the yield of hospital-associated AEs and provide a more accurate picture of hospital performance. Future research should evaluate the predictive validity of the post-discharge PSIs, as well as whether the inclusion of post-discharge events alters hospital profiles.

Conclusion

Although the PSIs were designed to detect AEs that specifically occurred in the inpatient setting, by modifying the PSI numerator criteria, we identified many more events that occurred post-discharge. These post-discharge PSIs may represent a unique opportunity to widen AE detection beyond the index hospitalization period, particularly because they use standardized algorithms that can be applied across diverse settings of care. We demonstrated

the feasibility of using the PSIs to detect post-discharge AEs; evaluating all AEs associated with inpatient care may provide a more complete picture of hospital quality. Future work should refine the post-discharge PSI algorithms and use chart review to validate the PSI events detected in the post-discharge period.

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Table 1

Original Patient Safety Indicator (PSI) Numerator Specifications (Version 3.1a) and Revised PSI Numerators for Select Post-Discharge Events

Indicator	Original PSI Numerator for Index Admission	Revised PSI Numerator for Post-Discharge Events
Decubitus Ulcer (DU)	Discharges with ICD-9-CM code of decubitus ulcer in any secondary diagnosis field.	Subsequent admissions OR outpatient visits with ICD-9-CM code of decubitus ulcer in any principal diagnosis field.
Iatrogenic Pneumothorax (IP)	Discharges with ICD-9-CM code of 512.1 in any secondary diagnosis field.	Subsequent admissions OR outpatient visits in the post-discharge period with ICD-9-CM code of 512.1 in any principal diagnosis field.
Selected Medical Infection due to Medical Care (SMI)	Discharges with selected infections defined by specific ICD-9-CM codes any secondary diagnosis field.	Subsequent admissions OR outpatient visits in the post-discharge period with ICD-9-CM codes for selected medical infections in any principal diagnosis field.
Postoperative Hemorrhage or Hematoma (PHH)	Discharges with either of the following: <ul style="list-style-type: none"> • ICD-9-CM codes for postoperative hemorrhage in any secondary diagnosis field and a code for drainage of hematoma in any procedure code field; • ICD-9-CM codes for postoperative hematoma in any secondary diagnosis field and a code for postoperative control of hemorrhage in any procedure code field. 	Subsequent admissions with ICD-9-CM codes for postoperative hemorrhage or hematoma in the principal diagnosis field, and a corresponding postoperative drainage of hematoma or control of hemorrhage in any procedure code field. OR, subsequent outpatient visits with a principal diagnosis of postoperative hemorrhage or hematoma.
Postoperative Physiologic and Metabolic Derangement (PPMD)	Discharges with either of the following: <ul style="list-style-type: none"> • ICD-9-CM codes for physiologic and metabolic derangements in any secondary diagnosis field; • ICD-9-CM codes for acute renal failure accompanied by a procedure code for dialysis (3995, 5498). 	Subsequent admissions OR outpatient visits in the post-discharge period with an ICD-9-CM procedure code or CPT for dialysis among cases with acute renal failure in the index admission.
Postoperative Respiratory Failure (PRF)	Discharges with either of the following: <ul style="list-style-type: none"> • ICD-9-CM codes for acute respiratory failure (518.81 or 518.84) in any secondary diagnosis field; • ICD-9-CM codes for reintubation procedure that meet the PSI numerator timing criteria. 	Subsequent admissions OR outpatient visits in the post-discharge period with ICD-9-CM codes for acute respiratory failure in any principal diagnosis field.
Postoperative Pulmonary Embolism or Deep Vein Thrombosis (PPE/DVT)	Discharges with ICD-9-CM codes for PE or DVT in any secondary diagnosis field.	Subsequent admissions OR outpatient visits in the post-discharge period with ICD-9-CM codes for PE or DVT in any principal diagnosis field.
Postoperative Sepsis (PS)	Discharges with ICD-9-CM code for sepsis in any secondary diagnosis field.	Subsequent admissions OR outpatient visits in the post-discharge period with ICD-9-CM codes for sepsis in any principal diagnosis field.

Indicator	Original PSI Numerator for Index Admission	Revised PSI Numerator for Post-Discharge Events
Postoperative Wound Dehiscence (PWD)	Discharges with ICD-9-CM code for reclosure of postoperative disruption of abdominal wall (54.61) in any procedure field.	Either: <ul style="list-style-type: none"> Subsequent admissions with ICD-9-CM code 54.61 in any procedure field; Subsequent outpatient visits with CPT codes for wound closure (499.00, 131.60) in the first procedure field.
Accidental Puncture or Laceration (APL)	Discharges with ICD-9-CM code denoting technical difficulty (e.g., accidental cut, puncture, perforation, or laceration) in any secondary diagnosis field.	Subsequent admissions OR outpatient visits in the post-discharge period with ICD-9-CM codes for accidental puncture or laceration in any principal diagnosis field.

NOTES:

Detailed information about each PSI, including denominator criteria, can be found in the version 3.1a PSI Guide on the AHRQ website: http://www.qualityindicators.ahrq.gov/downloads/psi/psi_guide_v31.pdf

Table 2
Rates of Inpatient PSI Events and Post-Discharge PSI Events Identified in the VA during Fiscal Year 2003–2007

PSI	AEs Identified During the Index Admission			AEs Identified During the 30-day Post-Discharge Period			% of Additional PSIs Detected in Post-Discharge Data
	Eligible Hospitalizations (Denominator)	PSI Events (Numerator)	Observed Rate of Inpatient PSI Events per 1,000	Eligible Hospitalizations (Denominator)*	PSI Events (Numerator)	Observed Rate of Post-Discharge PSI Events per 1,000	
Ulcer	999,594	16,399	16.41	983,195	3,216	3.27	20%
Pneumothorax	2,203,365	1,402	0.64	2,201,963	290	0.13	21%
Infections	1,695,634	3,349	1.98	1,692,285	1,324	0.78	40%
Hemorrhage/ Hematoma	513,841	1,998	3.89	511,843	1,545	3.02	77%
Derangement	269,130	578	2.15	5,406	28	5.18	5%
Respiratory Failure	201,192	2,850	14.17	198,342	55	0.28	2%
PE/DVT	512,527	6,080	11.86	506,447	4,348	8.59	72%
Sepsis	101,564	677	6.67	100,887	93	0.92	14%
Dehiscence	100,285	620	6.18	99,665	84	0.84	14%
Puncture/ Laceration	2,341,976	7,203	3.08	2,334,773	158	0.07	2%

NOTES:

Ulcer: PSI #3 Decubitus Ulcer.

Pneumothorax: PSI #6 Iatrogenic Pneumothorax.

Infections: PSI #7 Central Venous Catheter-related Blood Stream Infections.

Hemorrhage/Hematoma: PSI #9 Postoperative Hemorrhage or Hematoma.

Derangement: PSI #10 Postoperative Physiologic and Metabolic Derangement.

Respiratory Failure: PSI #11 Postoperative Respiratory Failure.

PE/DVT: PSI #12 Postoperative Pulmonary Embolism/Deep Vein Thrombosis.

Sepsis: PSI #13 Postoperative Sepsis.

Dehiscence: PSI #14 Postoperative Wound Dehiscence.

Puncture/Laceration: PSI #15 Accidental Puncture or Laceration.

*The denominator for events detected in the post-discharge period is equal to the number of hospitalizations eligible for the original PSI less the number of PSI events detected during the index hospitalization. We have one exception to this rule: for Derangement we focused on the dialysis component of the PSI numerator and we restricted the sample of PSI-eligible hospitalizations in the discharge period to those that had acute renal failure during the index hospitalization.

Table 3

Post-Discharge Patient Safety Indicator (PSI) Events by Timing (1–14 Days of Discharge) and Setting (Inpatient versus Outpatient)

PSI	Hospitalizations Eligible for Post- Discharge PSIs (n)	PSI Events Detected from 1–14 Days of Discharge n (rate per 1,000)			PSI Events Detected from 15–30 Days of Discharge n (rate per 1,000)			Total Post-Discharge PSI Events Detected within 30 Days of Discharge n (rate per 1,000)		
		Inpatient	Outpatient	Either	Inpatient	Outpatient	Either	Inpatient	Outpatient	Either
Ulcer	983,195	62 (0.06)	1,681 (1.71)	1,730 (1.76)	70 (0.07)	1,432 (1.46)	1,486 (1.51)	132 (0.13)	3,113 (3.17)	3,216 (3.27)
Pneumothorax	2,201,963	114 (0.05)	66 (0.03)	168 (0.08)	87 (0.04)	47 (0.02)	122 (0.06)	201 (0.09)	113 (0.05)	290 (0.13)
Infections	1,692,285	509 (0.30)	312 (0.18)	812 (0.48)	351 (0.21)	171 (0.10)	512 (0.30)	860 (0.51)	483 (0.29)	1,324 (0.78)
Hemorrhage/ Hematoma	511,843	207 (0.40)	1,018 (1.99)	1,189 (2.32)	75 (0.15)	295 (0.58)	356 (0.70)	282 (0.55)	1,313 (2.57)	1,545 (3.02)
Derangement	5,406	19 (3.51)	8 (1.48)	25 (4.62)	2 (0.37)	2 (0.37)	3 (0.55)	21 (3.88)	10 (1.85)	28 (5.18)
Respiratory Failure	198,342	23 (0.12)	20 (0.10)	39 (0.20)	12 (0.06)	5 (0.03)	16 (0.08)	35 (0.18)	25 (0.13)	55 (0.28)
PE/DVT	506,447	569 (1.12)	2,445 (4.83)	2,791 (5.51)	348 (0.69)	1,447 (2.86)	1,557 (3.07)	917 (1.81)	3,892 (7.68)	4,348 (8.59)
Sepsis	100,887	14 (0.14)	49 (0.49)	61 (0.60)	8 (0.08)	26 (0.26)	32 (0.32)	22 (0.22)	75 (0.74)	93 (0.92)
Dehiscence	99,665	70 (0.70)	12 (0.12)	76 (0.76)	5 (0.05)	4 (0.04)	8 (0.08)	75 (0.75)	16 (0.16)	84 (0.84)
Puncture/ Laceration	2,334,773	48 (0.02)	51 (0.02)	99 (0.04)	23 (0.01)	36 (0.02)	59 (0.03)	71 (0.03)	87 (0.04)	158 (0.07)

NOTES:

Ulcer: PSI #3 Decubitus Ulcer.

Pneumothorax: PSI #6 Iatrogenic Pneumothorax.

Infections: PSI #7 Central Venous Catheter-related Blood Stream Infections.

Hemorrhage/Hematoma: PSI #9 Postoperative Hemorrhage or Hematoma.

Derangement: PSI #10 Postoperative Physiologic and Metabolic Derangement.

Respiratory Failure: PSI #11 Postoperative Respiratory Failure.

PE/DVT: PSI #12 Postoperative Pulmonary Embolism/Deep Vein Thrombosis.

Sepsis: PSI #13 Postoperative Sepsis.

Dehiscence: PSI #14 Postoperative Wound Dehiscence.

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