

Patient Safety Trends in 2021:

An Analysis of 288,882 Serious Events and Incidents From the Nation's Largest Event Reporting Database

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Background: Pennsylvania is the only state that requires acute care facilities to report all events of harm or potential for harm. With over 4.2 million acute care event reports, the Pennsylvania Patient Safety Reporting System (PA-PSRS) is the largest repository of patient safety data in the United States and one of the largest in the world. This study examines patient safety event reports submitted to the PA-PSRS acute care database in 2021.

Methods: We queried PA-PSRS for all event reports submitted by Pennsylvania acute care facilities during calendar year 2021. We also obtained the most current data from the Pennsylvania Health Care Cost Containment Council (PHC4) to calculate rates based on patient days for hospitals and surgical encounters for ambulatory surgical facilities (ASFs). For the Other (specify) subtype within the Other/Miscellaneous event type, we identified the words occurring most frequently in the required free-text response field and calculated the increase in associated reports for each of the words from 2020 to 2021.

Results: Of the 288,882 patient safety event reports submitted by Pennsylvania's acute care facilities in 2021, 96.8% were from hospitals and 3.1% were from ASFs. The remaining 0.1% were from birthing centers and abortion facilities. The vast majority of the 2021 reports were

Incidents (96.9%) rather than Serious Events (3.1%). For each of the past five years, the most frequently reported event type was Error Related to Procedure/Treatment/Test, accounting for 31.3% of all submitted acute care event reports in 2021. The second, third, and fourth most frequently reported event types were Medication Error, Complication of Procedure/Treatment/Test, and Fall, accounting for 16.9%, 15.3%, and 12.3% of submitted reports in 2021, respectively. The reporting rate for hospitals in 2021 (Q1 and Q2) was 30.9 reports per 1,000 patient days. For ASFs, the reporting rate in 2021 (Q1 and Q2) was 8.6 reports per 1,000 surgical encounters.

Conclusions: There was an increase in the total number of patient safety event reports submitted in 2021, yet the percentage of high harm reports remained steady. Four event types—Error Related to Procedure/Treatment/Test, Medication Error, Complication of Procedure/Treatment/Test, and Fall—accounted for more than three-quarters of all reports submitted to PA-PSRS in 2021. Readers can use the longitudinal and categorical insights shared in this article to focus patient safety improvement efforts.

Keywords: *acute care, patient safety, event reports, annual report, incidents, serious events, reporting rates, fall rates, COVID-19*

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Introduction

Pennsylvania is the only state that requires health-care facilities to report all events that cause harm or have the potential to cause harm to a patient. These patient safety events are reported to the Pennsylvania Patient Safety Reporting System (PA-PSRS)^a, which is the largest repository of patient safety data in the United States and one of the largest in the world, with over 4.2 million acute care records.

This article provides details from the PA-PSRS acute care reports submitted in 2021, along with longitudinal and categorical insights that can be used to improve patient safety.

Definitions

Terms describing patient safety occurrences, including “serious event,” “medical error,” “adverse event,” “harm,” and “incident,” are often used interchangeably. However, within the context of this manuscript they have distinct meanings and indications for whether they must be reported to PA-PSRS in accordance with the Medical Care Availability and Reduction of Error (MCARE) Act (Act 13 of 2002).¹ An “incident” is defined as “an event, occurrence, or situation involving the clinical care of a patient in a medical facility which could have injured the patient but did not either cause an unanticipated injury or require the delivery of additional healthcare services to the patient.”¹ A “serious event” is defined as “an event, occurrence, or situation involving the clinical care of a patient in a medical facility that results in death or compromises patient safety and results in an unanticipated injury requiring the delivery of additional healthcare services to the patient.”¹

Each event report includes a harm score—assigned by the reporting facility—that describes the potential or actual harm to the patient resulting from the event. **Table 1** lists the definition for each harm score, along with harm score groupings for incidents, serious events, and high harm events.

Methods

We extracted reports from PA-PSRS on January 18, 2022, to include all reports submitted during calendar year 2021. We also obtained data from the Pennsylvania Health Care Cost Containment Council (PHC4)^b to calculate rates based

on patient days for hospitals and surgical encounters for ambulatory surgical facilities (ASFs). The most current data from PHC4 was for Q2 2021, which allowed us to calculate 2021 reporting rates using half of the year’s data.

We performed a descriptive analysis based on information provided in the structured and unstructured data fields of the PA-PSRS reports. For the Other (specify) subtype within the Other/Miscellaneous event type, we looked at the words occurring most frequently in the required free-text response field. From there, we calculated the increase in associated reports for each of the words from 2020 to 2021. Specifically, the 5,000 most frequent words were passed back through the data to determine how many reports were affected, as one report could have had several occurrences of the same word. Excluded from the final analysis were entries of punctuation with no words (e.g., “...”) and uninformative common words—often referred to as stop words—such as a, an, on, the, and up. In addition, if a single facility made up 50% or more of the increase in number of reports from 2020 to 2021 for a particular word, the word was excluded due to concerns of overrepresentation.

For our analysis related to the effects of the COVID-19 pandemic, there are two monthly charts showing report counts based on event date instead of submission date. We chose to use the event date to show when events were occurring relative to pandemic peaks, rather than when reports were submitted. We performed this extract on April 13, 2022, to ensure capture of the most current and complete data prior to publication.

Results

A total of 288,882 reports were submitted by Pennsylvania acute care facilities in 2021, of which 9,042 were serious events, and of those serious events, 442 were classified as high harm (see **Figure 1**). The numbers of total reports, serious events, and high harm events increased in 2021 compared to 2020, with increases of 3.7%, 8.1%, and 6.0%, respectively.

Incidents and serious events expressed as a percentage of reports are shown in **Figure 2**. Consistently, incidents comprise approximately 97% of reports and serious events comprise approximately 3%.

^aPA-PSRS is a secure, web-based system through which Pennsylvania hospitals, ambulatory surgical facilities, abortion facilities, and birthing centers submit reports of patient safety-related incidents and serious events in accordance with mandatory reporting laws outlined in the Medical Care Availability and Reduction of Error (MCARE) Act (Act 13 of 2002).¹ All reports submitted through PA-PSRS are confidential and no information about individual facilities or providers is made public.

^bThe Pennsylvania Health Care Cost Containment Council (PHC4) is an independent state agency responsible for addressing the problem of escalating health costs, ensuring the quality of healthcare, and increasing access to healthcare for all citizens regardless of ability to pay. PHC4 has provided data to this entity in an effort to further PHC4’s mission of educating the public and containing healthcare costs in Pennsylvania. PHC4, its agents, and its staff have made no representation, guarantee, or warranty, express or implied, that the data—financial-, patient-, payor-, and physician-specific information—provided to this entity are error-free, or that the use of the data will avoid differences of opinion or interpretation. This analysis was not prepared by PHC4. This analysis was done by the Patient Safety Authority. PHC4, its agents, and its staff bear no responsibility or liability for the results of the analysis, which are solely the opinion of this entity.

Table 1. PA-PSRS Harm Scores

	Harm Score	Definition
Incidents	A	Circumstances that could cause adverse events
	B1	An event occurred but it did not reach the individual
	B2	An event occurred but it did not reach the individual because of active recovery efforts by caregivers
	C	An event occurred that reached the individual but did not cause harm and did not require increased monitoring
	D	An event occurred that required monitoring to confirm that it resulted in no harm and/or required intervention to prevent harm
Serious Events	E	An event occurred that contributed to or resulted in temporary harm and required treatment or intervention
	F	An event occurred that contributed to or resulted in temporary harm and required initial or prolonged hospitalization
	High Harm	G
H		An event occurred that resulted in a near-death event (e.g., required ICU care or other intervention necessary to sustain life)
I		An event occurred that contributed to or resulted in death

Figure 1. Total Reports, Serious Events, and High Harm Events Submitted to PA-PSRS

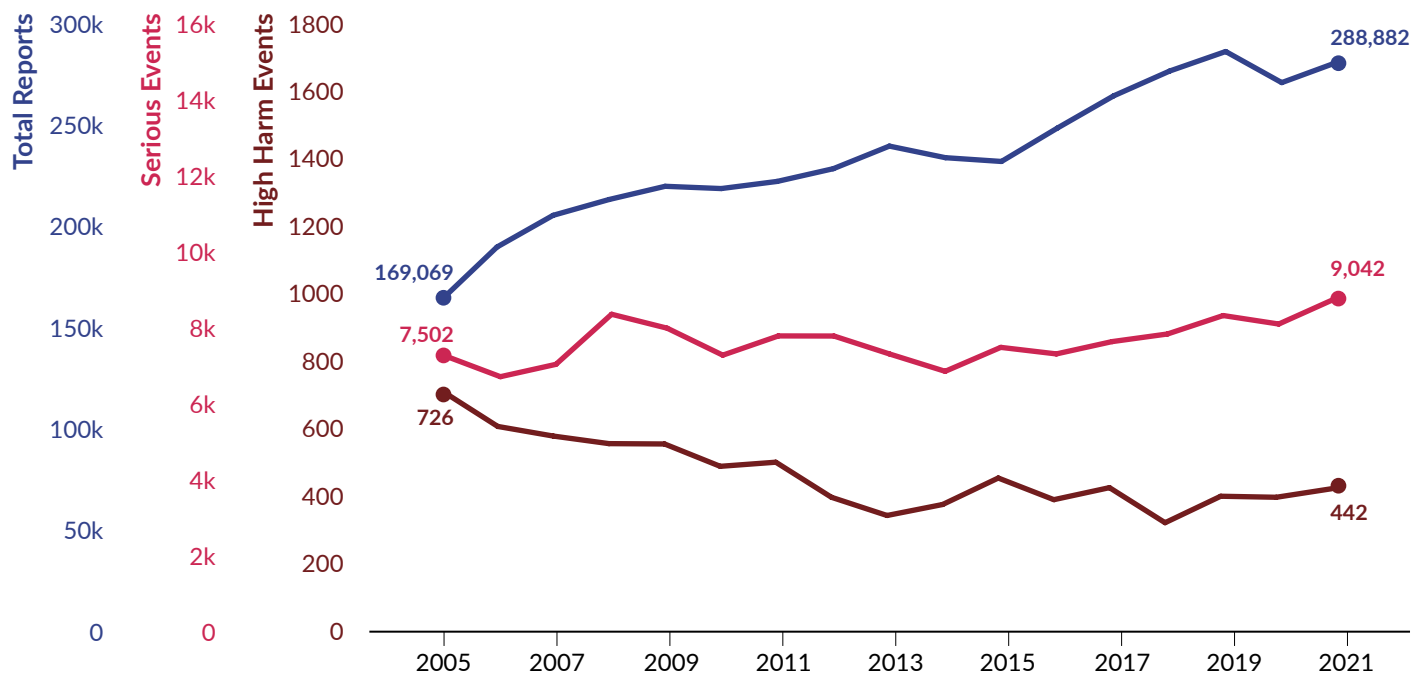


Figure 2. Incidents and Serious Events as a Percentage of Total Submitted PA-PSRS Reports

% of Total Reports



Table 2. Number and Percentage of Reports Submitted to PA-PSRS by Facility Type and Event Classification

Facility Type	Event Classification	Number of Reports			% of Total Reports		
		2019	2020	2021	2019	2020	2021
Hospital	Incident	278,213	263,997	272,469	94.6%	94.8%	94.3%
	Serious Event	6,698	6,726	7,109	2.3%	2.4%	2.5%
	Subtotal	284,911	270,723	279,578	96.9%	97.2%	96.8%
Other Acute Care Facilities	Incident	7,367	6,169	7,371	2.5%	2.2%	2.6%
	Serious Event	1,897	1,638	1,933	0.6%	0.6%	0.7%
	Subtotal	9,264	7,807	9,304	3.1%	2.8%	3.2%
Totals	Incident	285,580	270,166	279,840	97.1%	97.0%	96.9%
	Serious Event	8,595	8,364	9,042	2.9%	3.0%	3.1%
	Total	294,175	278,530	288,882	100.0%	100.0%	100.0%

Note: Other Acute Care Facilities include ambulatory surgical facilities, birthing centers, and abortion facilities. Also, numbers shown for prior years may differ from previously published numbers due to subsequent report deletions or classification changes made by reporting facilities.

Table 3. Number and Percentage of Reports Submitted to PA-PSRS by Harm Score With Change in Reports From 2020 to 2021

Harm Score	Number of Reports			% of Total Reports			Change in Reports 2020–2021	
	2019	2020	2021	2019	2020	2021	Number	Percent
A	26,930	27,563	28,003	9.2%	9.9%	9.7%	440	1.6%
B1	3,835	2,803	2,772	1.3%	1.0%	1.0%	-31	-1.1%
B2	39,208	34,100	35,874	13.3%	12.2%	12.4%	1,774	5.2%
C	119,728	112,976	113,685	40.7%	40.6%	39.4%	709	0.6%
D	95,879	92,724	99,506	32.6%	33.3%	34.4%	6,782	7.3%
Incidents - Subtotal	285,580	270,166	279,840	97.1%	97.0%	96.9%	9,674	3.6%
E	5,846	5,863	6,330	2.0%	2.1%	2.2%	467	8.0%
F	2,329	2,084	2,270	0.8%	0.7%	0.8%	186	8.9%
G	57	56	66	0.0%	0.0%	0.0%	10	17.9%
H	116	115	143	0.0%	0.0%	0.0%	28	24.3%
I	247	246	233	0.1%	0.1%	0.1%	-13	-5.3%
Serious Events - Subtotal	8,595	8,364	9,042	2.9%	3.0%	3.1%	678	8.1%
Total	294,175	278,530	288,882	100.0%	100.0%	100.0%	10,352	3.7%

Note: Numbers shown for prior years may differ from previously published numbers due to subsequent report deletions or harm score changes made by reporting facilities.

Table 2 shows a breakdown of Incidents and Serious Events by facility type from the past three years. Hospitals and the group of other acute care facilities (ASFs, birthing centers [BRCs], and abortion facilities [ABFs]) had increases in the number of reports submitted in 2021 compared to 2020. The proportion of reports from other acute care facilities increased from 2.8% in 2020 to 3.2% in 2021.

The distribution of reports by harm score submitted during years 2019–2021 is shown in **Table 3**. Consistently, the most frequent harm score is C (39.4% in 2021), followed by harm scores D, B2, and A. Serious events comprised 3.1% of all reports in 2021, with harm scores E and F being reported most frequently. Also, while serious events increased from 2020 to 2021 by 8.1%, harm score I (indicating a patient death) decreased by 5.3%.

Reporting Rates

In addition to examining increases or decreases in the number of reports, we can use normalized data (e.g., rates) to assess changes in reporting based on patient days for hospitals and surgical encounters for ASFs. **Figure 3** shows that the 2021 reporting rate for hospitals through Q2 2021 dropped below the rates for 2019 and 2020; for ASFs, the 2021 reporting rate through Q2 2021 is similar to the rate in 2020 (8.6 and 8.8, respectively).

Event Types

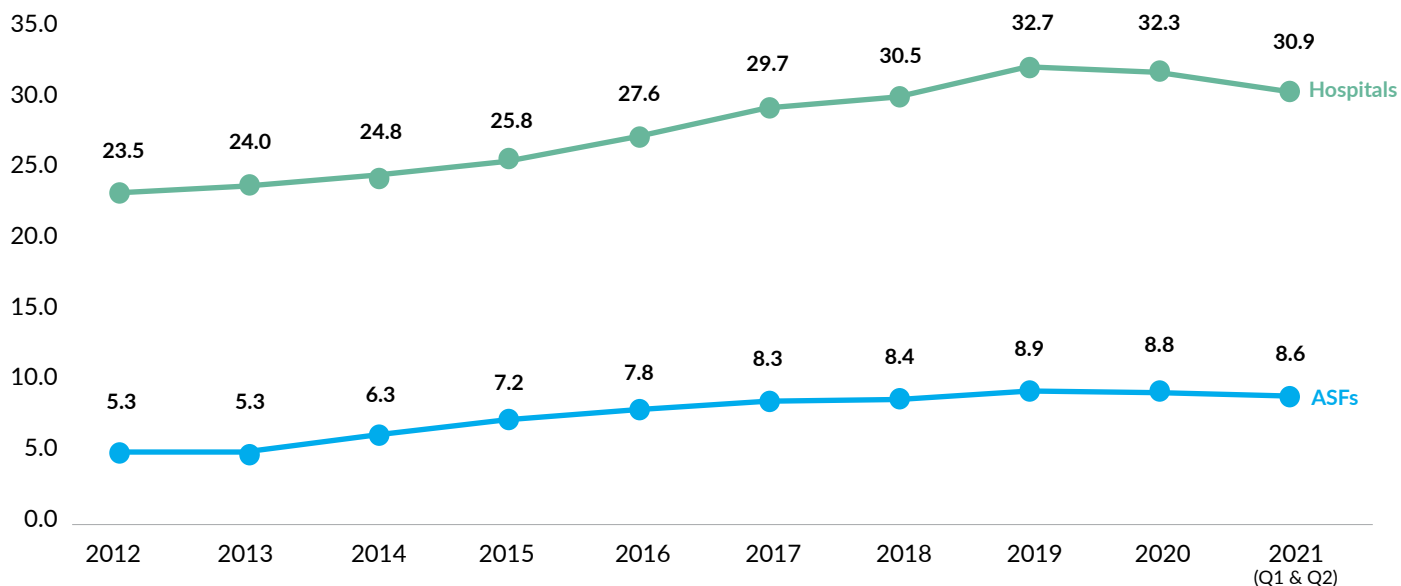
Each PA-PSRS report includes an event type and subtype(s) that are assigned by the reporting facility. The reporting taxonomy for incidents and serious events provides for 10 main event types, with 228 possible combinations of event type and subtype(s). **Table 4** shows the number of reports for each event type over the past five years. For each of the past five years, the top four most frequently reported event types have remained consistent: Error Related to Procedure/Treatment/Test (P/T/T), Medication Error, Complication of P/T/T, and Fall. In 2021, Error Related to P/T/T accounted for 31.3% of all reports, while Medication Error, Complication of P/T/T, and Fall accounted for 16.9%, 15.3%, and 12.3%, respectively.

From a distribution perspective, the greatest increase in percentage of reports in 2021 compared to 2020 occurred with event type Other/Miscellaneous, which increased by 1.3 percentage points, from 8.3% of reports in 2020 to 9.6% in 2021. The second greatest increase occurred with event type Fall, which represented 11.8% of reports in 2020 and 12.3% in 2021, an increase of 0.5 percentage points.

The greatest decrease in percentage of reports in 2021 compared to 2020 occurred with event type Complication of P/T/T, going from 16.2% in 2020 to 15.3% in 2021. The second greatest decrease occurred with event type Error Related to P/T/T, which went from 32.1% of reports in 2020 to 31.3% in 2021.

Figure 3. PA-PSRS Reporting Rates for Hospitals (Reports per 1,000 Patient Days) and ASFs (Reports per 1,000 Surgical Encounters)

Reporting Rate



Note: The 2021 reporting rate is based on Q1 and Q2 only, due to lagged data related to patient days and surgical encounters. Also, rates for prior years may differ from previously published rates due to subsequent changes made by reporting facilities.

Table 4. Number and Percentage of Reports Submitted to PA-PSRS by Event Type in Descending Order by 2021 Frequency

Event Type	Number of Reports					% of Total Reports				
	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021
Error Related to P/T/T	80,103	89,154	96,440	89,335	90,452	29.5%	31.4%	32.8%	32.1%	31.3%
Medication Error	48,546	51,979	52,884	46,559	48,715	17.9%	18.3%	18.0%	16.7%	16.9%
Complication of P/T/T	40,661	43,202	46,691	45,180	44,132	15.0%	15.2%	15.9%	16.2%	15.3%
Fall	34,041	33,657	31,978	32,775	35,602	12.5%	11.8%	10.9%	11.8%	12.3%
Other/Miscellaneous	24,467	23,139	22,761	23,190	27,707	9.0%	8.1%	7.7%	8.3%	9.6%
Skin Integrity	24,131	21,752	20,546	19,697	20,601	8.9%	7.6%	7.0%	7.1%	7.1%
Equipment/Supplies/Devices	7,092	7,805	8,792	8,062	7,806	2.6%	2.7%	3.0%	2.9%	2.7%
Adverse Drug Reaction	5,669	5,958	5,700	5,624	5,868	2.1%	2.1%	1.9%	2.0%	2.0%
Transfusion	5,017	5,264	6,195	5,779	5,648	1.8%	1.9%	2.1%	2.1%	2.0%
Patient Self-Harm	2,136	2,439	2,188	2,329	2,351	0.8%	0.9%	0.7%	0.8%	0.8%
Total	271,863	284,349	294,175	278,530	288,882	100%	100%	100%	100%	100%

Note: Numbers shown for prior years may differ from previously published numbers due to subsequent report deletions or event type changes made by reporting facilities.

Table 5. Number and Percentage of Serious Events Submitted to PA-PSRS by Event Type in Descending Order by 2021 Frequency

Event Type	Number of Serious Events					% of Total Serious Events				
	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021
Complication of P/T/T	4,138	4,183	4,529	4,577	4,905	52.5%	51.7%	52.7%	54.7%	54.2%
Fall	945	961	932	940	1,045	12.0%	11.9%	10.8%	11.2%	11.6%
Other/Miscellaneous	818	799	983	708	848	10.4%	9.9%	11.4%	8.5%	9.4%
Error Related to P/T/T	688	705	768	753	730	8.7%	8.7%	8.9%	9.0%	8.1%
Skin Integrity	607	779	654	575	612	7.7%	9.6%	7.6%	6.9%	6.8%
Adverse Drug Reaction	243	217	241	344	430	3.1%	2.7%	2.8%	4.1%	4.8%
Medication Error	201	188	182	166	172	2.5%	2.3%	2.1%	2.0%	1.9%
Patient Self-Harm	163	189	176	166	171	2.1%	2.3%	2.0%	2.0%	1.9%
Equipment/Supplies/Devices	65	56	78	77	96	0.8%	0.7%	0.9%	0.9%	1.1%
Transfusion	18	17	52	58	33	0.2%	0.2%	0.6%	0.7%	0.4%
Total	7,886	8,094	8,595	8,364	9,042	100%	100%	100%	100%	100%

Note: Numbers shown for prior years may differ from previously published numbers due to subsequent report deletions or event type changes made by reporting facilities.

Serious Events

The number and percentage of serious events submitted for each event type for the past five years are shown in **Table 5**. In 2021, Complication of P/T/T represented 15.3% of reports, yet it accounted for the majority (54.2%) of serious events. Similar to its increase in percentage of all reports, Other/Miscellaneous also showed the greatest increase in percentage of serious events from 2020 to 2021, increasing from 8.5% in 2020 to 9.4% in 2021.

Event Subtypes

Each of the 10 event types has between 6 and 13 subtypes to further classify the event. The total number of reports and serious events, as well as their associated percentage distributions, are shown in **Table 6**. This is a detailed accounting of reports submitted in 2021 by the first level of subtype for each event type. The event types in the left column are listed in descending order by the number of reports (i.e., the same ordering as **Table 4**). Within each event type, the subtypes are listed in descending order as well.

Subtype Distribution Changes for All Reports

The event subtype Other (specify) within the Other/Miscellaneous event type had the largest increase in its percentage of reports, going from 5.2% in 2020 to 6.3% in 2021. This event subtype also had the largest increase in number of reports from 2020 to 2021, with an increase of 3,863.

Subtype Distribution Changes for Serious Events

The Healthcare-Associated Infection subtype of Complication of P/T/T had the greatest increase in its representative percentage of serious events from 2020 to 2021, going from 5.1% in 2020 to 6.2% in 2021. The greatest decrease in percentage was the IV site complication (phlebitis, bruising, infiltration) subtype of Complication of P/T/T, which went from 4.3% of all serious events in 2020 to 3.3% of all serious events in 2021.

Other/Miscellaneous - Other

The most undefined portion of the event type taxonomy is the Other (specify) subtype within the Other/Miscellaneous event type. As shown in **Table 6**, this event subtype accounted for 18,231 of 288,882 (6.3%) reports in 2021. Also, as mentioned above, this subtype had the greatest increase in its representative percentage of all reports from 2020 to 2021. Therefore, it is important to investigate this event type and subtype combination.

We performed a word frequency tabulation based on responses in the mandatory free-text field used to describe reports submitted using the Other (specify) event subtype. As described in our methods, we excluded words that were inherently uninformative or that were overrepresented by a single facility. This process was completed for 2020 and 2021, and the increase in number of reports was calculated. **Table 7** shows the top 20 words with respect to increase in associated reports from 2020 to 2021. The words “response” and “delay” had the largest increase from 2020 to 2021.

Table 6. Number and Percentage of Total Reports and Serious Events Submitted to PA-PSRS by Event Type and Subtype in Descending Order by 2021 Frequency

Event Type	Event Subtype	2020				2021				Change in Reports 2020-2021		
		Number of Reports	% of Total	Number of Serious Events	% of Total Serious Events	Number of Reports	% of Total	Number of Serious Events	% of Total Serious Events	Number	Percent	
Error Related to P/T/T	Laboratory test problem	42,583	15.3%	49	0.6%	41,948	14.5%	28	0.3%	-635	-1.5%	
	Surgery/invasive procedure problem	17,052	6.1%	517	6.2%	19,087	6.6%	516	5.7%	2,035	11.9%	
	Radiology/imaging test problem	7,439	2.7%	54	0.6%	8,158	2.8%	37	0.4%	719	9.7%	
	Referral/consult problem	7,286	2.6%	20	0.2%	7,838	2.7%	17	0.2%	552	7.6%	
	Other (specify)	9,653	3.5%	56	0.7%	7,826	2.7%	57	0.6%	-1,827	-18.9%	
	Respiratory care	3,451	1.2%	49	0.6%	3,419	1.2%	66	0.7%	-32	-0.9%	
	Dietary	1,871	0.7%	8	0.1%	2,176	0.8%	9	0.1%	305	16.3%	
	Wrong	23,895	8.6%	85	1.0%	23,667	8.2%	71	0.8%	-228	-1.0%	
	Other (specify)	10,337	3.7%	24	0.3%	12,244	4.2%	33	0.4%	1,907	18.4%	
	Dose omission	4,526	1.6%	18	0.2%	4,394	1.5%	20	0.2%	-132	-2.9%	
Medication Error	Prescription/refill delayed	2,596	0.9%	6	0.1%	2,951	1.0%	3	0.0%	355	13.7%	
	Monitoring error (includes contraindicated drugs)	1,982	0.7%	9	0.1%	2,108	0.7%	15	0.2%	126	6.4%	
	Extra dose	1,504	0.5%	18	0.2%	1,804	0.6%	21	0.2%	300	19.9%	
	Medication list incorrect	946	0.3%	6	0.1%	743	0.3%	9	0.1%	-203	-21.5%	
	Unauthorized drug	704	0.3%	-	-	737	0.3%	-	-	33	4.7%	
	Inadequate pain management	69	0.0%	-	-	67	0.0%	-	-	-2	-2.9%	
	IV site complication (phlebitis, bruising, infiltration)	11,688	4.2%	357	4.3%	11,896	4.1%	295	3.3%	208	1.8%	
	Other (specify)	6,583	2.4%	390	4.7%	7,312	2.5%	368	4.1%	729	11.1%	
	Complication following surgery or invasive procedure	6,756	2.4%	2,413	28.8%	6,414	2.2%	2,654	29.4%	-342	-5.1%	
	Cardiopulmonary arrest outside of ICU setting	3,635	1.3%	78	0.9%	3,633	1.3%	84	0.9%	-2	-0.1%	
Complication of P/T/T	Catheter or tube problem	3,116	1.1%	235	2.8%	3,206	1.1%	208	2.3%	90	2.9%	
	Neonatal complication	2,456	0.9%	120	1.4%	2,591	0.9%	142	1.6%	135	5.5%	
	Maternal complication	2,351	0.8%	201	2.4%	2,527	0.9%	272	3.0%	176	7.5%	
	Extravasation of drug or radiologic contrast	2,123	0.8%	28	0.3%	2,323	0.8%	27	0.3%	200	9.4%	
	Healthcare-associated infection	1,968	0.7%	427	5.1%	1,184	0.4%	557	6.2%	-784	-39.8%	
	Anesthesia event	1,207	0.4%	234	2.8%	1,142	0.4%	210	2.3%	-65	-5.4%	
	Emergency department	1,263	0.5%	86	1.0%	983	0.3%	80	0.9%	-280	-22.2%	
	Onset of hypoglycemia during care	2,031	0.7%	7	0.1%	918	0.3%	8	0.1%	-1,113	-54.8%	
	Complication following spinal manipulative therapy	3	0.0%	1	0.0%	3	0.0%	-	-	0	0.0%	
	Fall	Found on floor	7,405	2.7%	262	3.1%	8,730	3.0%	328	3.6%	1,325	17.9%
Ambulating		5,114	1.8%	202	2.4%	5,098	1.8%	229	2.5%	-16	-0.3%	
Other/unknown (specify)		5,166	1.9%	96	1.1%	5,000	1.7%	92	1.0%	-166	-3.2%	
Toileting		3,408	1.2%	122	1.5%	3,573	1.2%	149	1.6%	165	4.8%	
Lying in bed		2,564	0.9%	69	0.8%	3,258	1.1%	41	0.5%	694	27.1%	
Sitting in chair/wheelchair		2,817	1.0%	50	0.6%	3,101	1.1%	72	0.8%	284	10.1%	
Assisted fall		2,748	1.0%	22	0.3%	2,923	1.0%	21	0.2%	175	6.4%	

Table 6 (continued).

Event Type	Event Subtype	2020			2021			Change in Reports 2020-2021			
		Number of Reports	% of Total Reports	% of Total Serious Events	Number of Reports	% of Total Reports	% of Total Serious Events	Number	Percent		
Fall (cont.)	Sitting at side of bed	1,069	0.4%	21	0.3%	1,230	0.4%	24	0.3%	161	15.1%
	Transferring	1,056	0.4%	26	0.3%	1,038	0.4%	33	0.4%	-18	-1.7%
	Hallways of facility	499	0.2%	19	0.2%	584	0.2%	11	0.1%	85	17.0%
	From stretcher	306	0.1%	20	0.2%	378	0.1%	22	0.2%	72	23.5%
	In exam room/from exam table	345	0.1%	14	0.2%	356	0.1%	11	0.1%	11	3.2%
	Grounds of facility	278	0.1%	17	0.2%	333	0.1%	12	0.1%	55	19.8%
Other/Miscellaneous	Other (specify)	14,368	5.2%	331	4.0%	18,231	6.3%	381	4.2%	3,863	26.9%
	Unanticipated transfer to higher level of care	7,702	2.8%	314	3.8%	8,205	2.8%	400	4.4%	503	6.5%
	Inappropriate discharge	1,019	0.4%	12	0.1%	1,140	0.4%	11	0.1%	121	11.9%
	Other unexpected death	98	0.0%	49	0.6%	125	0.0%	51	0.6%	27	27.6%
	Death or injury involving restraints	-	-	-	-	3	0.0%	3	0.0%	3	N/A
	Death or injury during inpatient elopement	1	0.0%	1	0.0%	2	0.0%	2	0.0%	1	100%
	Electric shock to patient	1	0.0%	-	-	1	0.0%	-	-	0	0.0%
	Death or injury involving seclusion	1	0.0%	1	0.0%	-	-	-	-	-1	-100.0%
	Pressure injury	7,467	2.7%	447	5.3%	8,085	2.8%	485	0	618	8.3%
	Other (specify)	5,857	2.1%	38	0.5%	6,975	2.4%	40	0	1,118	19.1%
Skin Integrity	Skin tear	4,036	1.4%	17	0.2%	3,507	1.2%	15	0	-529	-13.1%
	Abrasion	987	0.4%	5	0.1%	851	0.3%	3	0	-136	-13.8%
	Blister	620	0.2%	4	0.0%	532	0.2%	5	0	-88	-14.2%
	Laceration	330	0.1%	35	0.4%	292	0.1%	33	0	-38	-11.5%
	Burn (electrical, chemical, thermal)	201	0.1%	27	0.3%	203	0.1%	27	0	2	1.0%
	Rash/hives	189	0.1%	2	0.0%	145	0.1%	4	0	-44	-23.3%
	Venous stasis ulcer	10	0.0%	-	-	11	0.0%	-	-	1	10.0%
	Equipment malfunction	2,518	0.9%	22	0.3%	2,519	0.9%	29	0.3%	1	0.0%
	Equipment not available	964	0.3%	2	0.0%	952	0.3%	4	0.0%	-12	-1.2%
	Other (specify)	878	0.3%	15	0.2%	942	0.3%	12	0.1%	64	7.3%
Equipment/Supplies/Devices	Medical device problem	932	0.3%	12	0.1%	724	0.3%	24	0.3%	-208	-22.3%
	Sterilization problem	669	0.2%	3	0.0%	696	0.2%	4	0.0%	27	4.0%
	Broken item(s)	675	0.2%	14	0.2%	627	0.2%	14	0.2%	-48	-7.1%
	Equipment misuse	289	0.1%	-	-	281	0.1%	2	0.0%	-8	-2.8%
	Equipment safety situation	281	0.1%	2	0.0%	230	0.1%	1	0.0%	-51	-18.1%
	Equipment wrong or inadequate	203	0.1%	2	0.0%	196	0.1%	-	-	-7	-3.4%
	Disconnected	244	0.1%	4	0.0%	190	0.1%	4	0.0%	-54	-22.1%
	Inadequate supplies	171	0.1%	1	0.0%	189	0.1%	2	0.0%	18	10.5%
	Electrical problem	174	0.1%	-	-	165	0.1%	-	-	-9	-5.2%
	Outdated item(s)	64	0.0%	-	-	95	0.0%	-	-	31	48.4%

Table 6 (continued).

Event Type	Event Subtype	2020			2021			Change in Reports 2020-2021			
		Number of Reports	% of Total Reports	% of Total Serious Events	Number of Reports	% of Total Reports	% of Total Serious Events	Number	Percent		
Adverse Drug Reaction	Other (specify)	3,543	1.3%	198	2.4%	3,939	1.4%	216	2.4%	396	11.2%
	Skin reaction (rash, blistering, itching, hives)	1,407	0.5%	86	1.0%	1,289	0.4%	121	1.3%	-118	-8.4%
	Mental status change	210	0.1%	27	0.3%	160	0.1%	34	0.4%	-50	-23.8%
	Hematologic problem	137	0.0%	7	0.1%	130	0.0%	12	0.1%	-7	-5.1%
	Hypotension	123	0.0%	13	0.2%	127	0.0%	30	0.3%	4	3.3%
	Nephrotoxicity	106	0.0%	8	0.1%	125	0.0%	12	0.1%	19	17.9%
	Dizziness	57	0.0%	1	0.0%	67	0.0%	3	0.0%	10	17.5%
	Arrhythmia	41	0.0%	4	0.0%	31	0.0%	2	0.0%	-10	-24.4%
	Other (specify)	1,705	0.6%	3	0.0%	1,674	0.6%	3	0.0%	-31	-1.8%
	Event related to blood product sample collection	1,592	0.6%	-	-	1,470	0.5%	-	-	-122	-7.7%
Transfusion	Event related to blood product administration	915	0.3%	11	0.1%	912	0.3%	5	0.1%	-3	-0.3%
	Apparent transfusion reaction	832	0.3%	42	0.5%	783	0.3%	24	0.3%	-49	-5.9%
	Event related to blood product dispensing or distribution	393	0.1%	-	-	428	0.1%	-	-	35	8.9%
	Consent missing/inadequate	201	0.1%	-	-	259	0.1%	-	-	58	28.9%
	Wrong patient requested	46	0.0%	-	-	48	0.0%	-	-	2	4.3%
	Special product need not requested	16	0.0%	-	-	17	0.0%	1	0.0%	1	6.3%
	Wrong component issued	27	0.0%	2	0.0%	17	0.0%	-	-	-10	-37.0%
	Special product need not issued	25	0.0%	-	-	16	0.0%	-	-	-9	-36.0%
	Mismatched unit	13	0.0%	-	-	11	0.0%	-	-	-2	-15.4%
	Wrong component requested	11	0.0%	-	-	8	0.0%	-	-	-3	-27.3%
Wrong patient transfused	3	0.0%	-	-	5	0.0%	-	-	2	66.7%	
Patient Self-Harm	Other self-harm (specify)	1,231	0.4%	68	0.8%	1,271	0.4%	61	0.7%	40	3.2%
	Self-mutilation	881	0.3%	27	0.3%	827	0.3%	19	0.2%	-54	-6.1%
	Ingestion of foreign object or substance	189	0.1%	44	0.5%	229	0.1%	70	0.8%	40	21.2%
	Suicide attempt - injury	15	0.0%	15	0.2%	17	0.0%	17	0.2%	2	13.3%
	Suicide - death	12	0.0%	12	0.1%	4	0.0%	4	0.0%	-8	-66.7%
Anorexia/bulimia	1	0.0%	-	-	3	0.0%	-	-	2	200.0%	
Total		278,530	100%	8,364	100%	288,882	100%	9,042	100%	10,352	

Table 7. Top 20 Words With Respect to Increase in Associated PA-PSRS Reports Submitted as Other/Miscellaneous, Other (Specify)

Top 20 Words	Number of Reports Containing the Word in 2020	Number of Reports Containing the Word in 2021	Increase in Number of Reports from 2020 to 2021
response	1,063	2,083	1,020
delay	1,323	2,161	838
condition	832	1,474	642
transfer	647	1,269	622
lack	761	1,362	601
care	326	871	545
rapid	232	682	450
failure	1,364	1,771	407
without	208	601	393
procedure	822	1,207	385
higher	82	456	374
level	101	452	351
follow	877	1,197	320
policy	966	1,239	273
followed	528	765	237
cancelled	348	551	203
safety	571	762	191
act	185	317	132
due	197	329	132
family	224	351	127

Cross Tabulations

Event Type and Harm Score

Table 8 displays a cross tabulation of submitted reports distributed by harm score for each of the 10 event types. Colored cells reflect the intersections of event type and harm score that occurred most frequently in 2021, with darker shades representing a higher concentration of reports. For the most frequently reported event type, Error Related to P/T/T, harm score C was reported most frequently; this intersection of event type and harm score was the most common in 2021, with a total of 44,141 reports and representing 15.2% of all reported events. The second most common intersection is with event type Complication of P/T/T and harm score D, with a total of 23,761 events and representing 8.2% of all reported events.

Care Area and Harm Score

The Care Area (i.e., location where an event occurred) can help us determine whether there are patterns or trends in reports of specific patient safety concerns related to the location where care is delivered. Within the acute care data, there are 168 care areas for facilities to identify where events occur. We then place these care areas into one of 23 care area groups to cross tabulate a more manageable number of category elements with other variables of interest.

In **Table 9** we show a cross tabulation of care area group with harm score. The highest concentrations of reports appear in the cross sections of the Med/Surg care area group and harm scores C and D. Also, Surgical Services accounts for a large portion of harm scores E and F.

Table 10 shows a cross tabulation of care area group and event type. The two highest concentrations of reports are at the intersections of Error Related to P/T/T with Surgical Services (18,340) and Emergency (14,314) care area groups. The third highest concentration is seen at the intersection of Fall and Med/Surg (13,301).

Table 8. Number of Reports Submitted to PA-PSRS in 2021 by Event Type and Harm Score in Descending Order by Event Type Frequency

Event Type	Harm Score										Total
	A	B1	B2	C	D	E	F	G	H	I	
Error Related to P/T/T	14,367	1,127	10,843	44,141	19,244	514	160	14	22	20	90,452
Medication Error	3,028	770	19,757	17,275	7,713	131	30	1	6	4	48,715
Complication of P/T/T	2,134	106	837	12,389	23,761	3,123	1,535	38	76	133	44,132
Fall	192	57	248	18,931	15,129	821	207	2	8	7	35,602
Other/Miscellaneous	4,989	527	2,157	8,543	10,643	535	233	5	18	57	27,707
Skin Integrity	614	14	59	4,912	14,390	591	16	3	2	0	20,601
Equipment/Supplies/Devices	1,320	111	1,291	3,412	1,576	70	14	3	4	5	7,806
Adverse Drug Reaction	79	7	20	1,070	4,262	374	50	0	4	2	5,868
Transfusion	1,245	47	622	2,267	1,434	25	7	0	0	1	5,648
Patient Self-Harm	35	6	40	745	1,354	146	18	0	3	4	2,351
Total	28,003	2,772	35,874	113,685	99,506	6,330	2,270	66	143	233	288,882

Table 9. Number of Reports Submitted to PA-PSRS in 2021 by Care Area Group and Harm Score in Descending Order by Care Area Group Frequency

Care Area Group	Harm Score										Total
	A	B1	B2	C	D	E	F	G	H	I	
Med/Surg	5,050	399	3,635	23,476	23,575	952	249	7	16	50	57,409
Surgical Services	4,634	539	4,679	13,422	11,331	2,431	1,381	31	64	51	38,563
Emergency	5,658	274	2,464	12,893	7,104	312	75	3	8	26	28,817
ICU	2,367	142	1,696	8,980	10,722	517	61	4	18	33	24,540
Specialty Unit	1,579	159	1,114	8,060	7,209	298	67	1	11	15	18,513
Imaging/Diagnostic	1,049	150	1,235	6,008	6,983	219	89	6	5	12	15,756
Pediatric	1,014	73	4,983	3,732	1,602	57	17	1	0	5	11,484
Other	1,184	202	1,883	4,150	3,438	195	115	1	3	6	11,177
Laboratory	768	226	1,616	5,830	2,454	22	8	1	0	0	10,925
PICU	766	24	5,794	3,075	740	34	2	0	1	1	10,437
Psychiatric Unit	313	63	311	3,817	4,301	376	31	0	2	8	9,222
Clinic/Outpatient Office	545	86	1,426	3,602	3,136	184	45	2	1	3	9,030
Rehab Unit	344	67	353	3,914	4,142	140	27	2	4	2	8,995
Intermediate Unit	693	100	469	3,318	3,956	101	25	1	2	5	8,670
NICU	483	31	1,803	3,337	1,290	39	3	0	2	2	6,990
Labor and Delivery	338	32	215	1,403	3,597	203	29	4	6	6	5,833
OB/GYN Unit	457	61	410	1,602	1,903	196	32	2	0	3	4,666
Pharmacy	331	103	1,355	1,257	567	7	2	0	0	0	3,622
Rehab Services	135	12	94	1,087	579	21	6	0	0	3	1,937
Nursery	96	6	67	364	698	20	4	0	0	2	1,257
Administration	98	13	230	118	95	4	2	0	0	0	560
Respiratory	101	10	42	240	84	2	0	0	0	0	479
Total	28,003	2,772	35,874	113,685	99,506	6,330	2,270	66	143	233	288,882

Table 10. Number of Reports Submitted to PA-PSRS in 2021 by Care Area Group and Event Type in Descending Order by Care Area Group Frequency

Care Area Group	Event Type										Total
	Error Related to P/T/T	Medication Error	Complication of P/T/T	Fall	Other/Miscellaneous	Skin Integrity	Equipment/Supplies/Devices	Adverse Drug Reaction	Transfusion	Patient Self-Harm	
Med/Surg	10,474	10,119	7,775	13,301	6,965	5,911	716	897	1,156	95	57,409
Surgical Services	18,340	1,720	8,451	594	3,585	1,773	3,265	288	539	8	38,563
Emergency	14,314	3,373	2,633	3,294	3,040	234	394	486	903	146	28,817
ICU	6,880	4,330	3,028	1,252	1,579	5,676	623	325	824	23	24,540
Specialty Unit	3,367	3,506	2,434	3,713	2,487	1,767	218	410	582	29	18,513
Imaging/Diagnostic	6,542	215	5,328	816	862	494	438	1,034	22	5	15,756
Pediatric	1,871	5,783	1,690	509	885	197	357	19	138	35	11,484
Other	3,845	1,844	1,315	1,289	1,409	488	301	467	211	8	11,177
Laboratory	9,970	34	108	98	221	18	38	5	433	0	10,925
PICU	2,254	6,151	1,086	44	251	196	349	6	98	2	10,437
Psychiatric Unit	375	879	170	3,959	1,569	220	22	62	0	1,966	9,222
Clinic/Outpatient	3,227	1,279	992	745	676	198	228	1,475	201	9	9,030
Rehab Unit	834	1,268	717	3,346	946	1,704	67	84	25	4	8,995
Intermediate Unit	1,714	1,233	1,330	1,363	1,410	1,165	143	105	193	14	8,670
NICU	2,728	2,233	927	4	503	166	330	2	97	0	6,990
Labor and Delivery	1,302	323	3,439	139	330	55	95	26	123	1	5,833
OB/GYN Unit	1,387	627	1,793	174	433	63	85	22	79	3	4,666
Pharmacy	59	3,375	10	1	37	0	6	134	0	0	3,622
Rehab Services	146	67	202	919	317	243	33	3	6	1	1,937
Nursery	435	63	638	8	65	13	30	1	4	0	1,257
Administration	162	226	31	20	63	6	22	15	14	1	560
Respiratory	226	67	35	14	74	14	46	2	0	1	479
Total	90,452	48,715	44,132	35,602	27,707	20,601	7,806	5,868	5,648	2,351	288,882

Other Acute Care Facilities

Considering that the acute care data predominately reflects reports from hospitals, it is important to separately analyze data from the other acute care facilities that report to PA-PSRS (comprised mostly of ASFs, along with BRCs and ABFs). **Table 11** shows the distribution of reports submitted by other acute care facilities across the 10 event types. These facilities show a different distribution compared to the overall data in **Table 4**. In 2021, other acute care facilities reported medication error and fall events less frequently than other event types when compared to the overall data (see **Tables 4** and **11**). The three event types reported most frequently by other acute care facilities were Error Related to P/T/T, Complication of P/T/T, and Other/Miscellaneous, which together account for 90.6% of all reports submitted by other acute care facilities in 2021.

For other acute care facilities, the Complication of P/T/T event type accounted for 71.0% of all serious events submitted in 2021 (see **Table 12**).

COVID-19

Effect on the Number of Event Occurrences

For purposes of this section, data were analyzed based on the date on which the event occurred (“event occurrence”). **Figure 4** shows the number of event occurrences during the COVID-19 pandemic in 2020 and 2021.

Effect on the Rate of Falls

The COVID pandemic has created challenging conditions that impact healthcare providers’ ability to respond to patient needs in a timely manner.² **Figure 5** shows the rates for falls through Q2 2021—the latest calendar quarter for which we have patient day and surgery count data. **Figure 6** reflects the number of falls based on event occurrence date by month. Based on data from PA-PSRS reports, the largest number of falls occurred in December 2020.

Table 11. Number and Percentage of Reports Submitted to PA-PSRS by Other Acute Care Facilities (ASF, BRC, ABF) by Event Type in Descending Order by 2021 Frequency

Event Type	Number of Reports					% of Total Reports				
	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021
Error Related to P/T/T	2,804	3,092	3,538	3,048	3,333	32.8%	35.5%	38.2%	39.0%	35.8%
Complication of P/T/T	2,420	2,426	2,478	2,265	2,816	28.3%	27.9%	26.7%	29.0%	30.3%
Other/Miscellaneous	2,543	2,504	2,417	1,766	2,283	29.7%	28.8%	26.1%	22.6%	24.5%
Skin Integrity	233	209	246	206	245	2.7%	2.4%	2.7%	2.6%	2.6%
Fall	156	141	150	161	222	1.8%	1.6%	1.6%	2.1%	2.4%
Equipment/Supplies/ Devices	162	133	180	145	160	1.9%	1.5%	1.9%	1.9%	1.7%
Medication Error	163	104	173	129	137	1.9%	1.2%	1.9%	1.7%	1.5%
Adverse Drug Reaction	63	84	79	77	100	0.7%	1.0%	0.9%	1.0%	1.1%
Patient Self-Harm	4	6	2	10	5	0.0%	0.1%	0.0%	0.1%	0.1%
Transfusion	-	3	1	-	3	0.0%	0.0%	0.0%	0.0%	0.0%
Total	8,548	8,702	9,264	7,807	9,304	100%	100%	100%	100%	100%

Note: Numbers shown for prior years may differ from previously published numbers due to subsequent report deletions or event type changes made by reporting facilities.

Table 12. Number and Percentage of Serious Events Submitted to PA-PSRS by Other Acute Care Facilities (ASF, BRC, ABF) by Event Type in Descending Order by 2021 Frequency

Event Type	Number of Reports					% of Total Reports				
	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021
Complication of P/T/T	1,223	1,198	1,272	1,179	1,372	67.2%	68.2%	67.1%	72.0%	71.0%
Other/Miscellaneous	463	434	478	300	416	25.4%	24.7%	25.2%	18.3%	21.5%
Error Related to P/T/T	65	54	57	74	55	3.6%	3.1%	3.0%	4.5%	2.8%
Fall	27	18	17	18	29	1.5%	1.0%	0.9%	1.1%	1.5%
Skin Integrity	15	23	30	23	21	0.8%	1.3%	1.6%	1.4%	1.1%
Adverse Drug Reaction	12	17	17	24	17	0.7%	1.0%	0.9%	1.5%	0.9%
Equipment/Supplies/ Devices	6	5	10	10	13	0.3%	0.3%	0.5%	0.6%	0.7%
Medication Error	8	5	14	5	8	0.4%	0.3%	0.7%	0.3%	0.4%
Transfusion	-	1	1	-	1	0.0%	0.1%	0.1%	0.0%	0.1%
Patient Self-Harm	1	1	1	5	1	0.1%	0.1%	0.1%	0.3%	0.1%
Total	1,820	1,756	1,897	1,638	1,933	100%	100%	100%	100%	100%

Note: Numbers shown for prior years may differ from previously published numbers due to subsequent report deletions or event type changes made by reporting facilities.

Figure 4. PA-PSRS Reports From Hospitals and Other Acute Care Facilities Based on Event Occurrence Date by Month

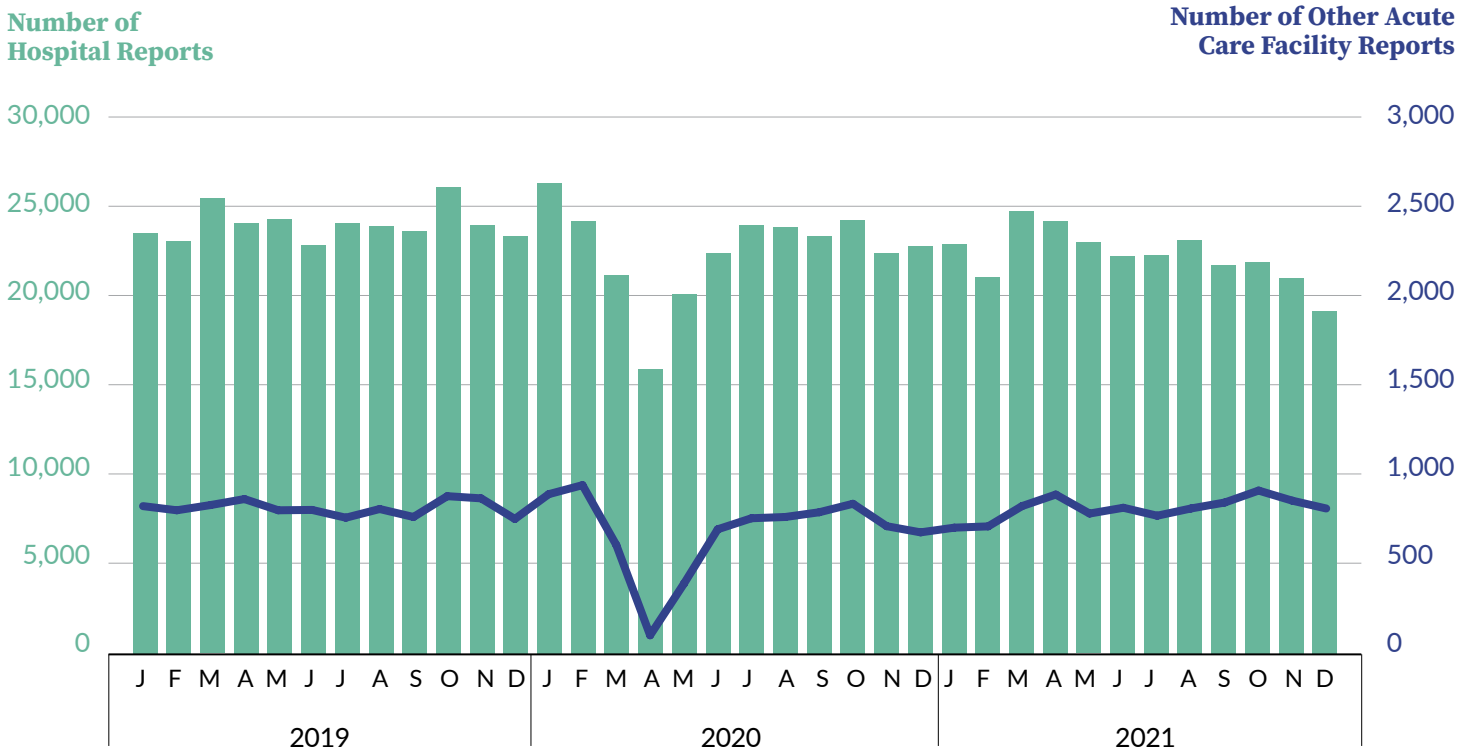


Figure 5. Rates of Falls at Hospitals and ASFs Based on Fall Occurrence Date in PA-PSRS per 1,000 Patient Days (Hospitals) or 1,000 Surgical Encounters (ASFs)

Fall Rate

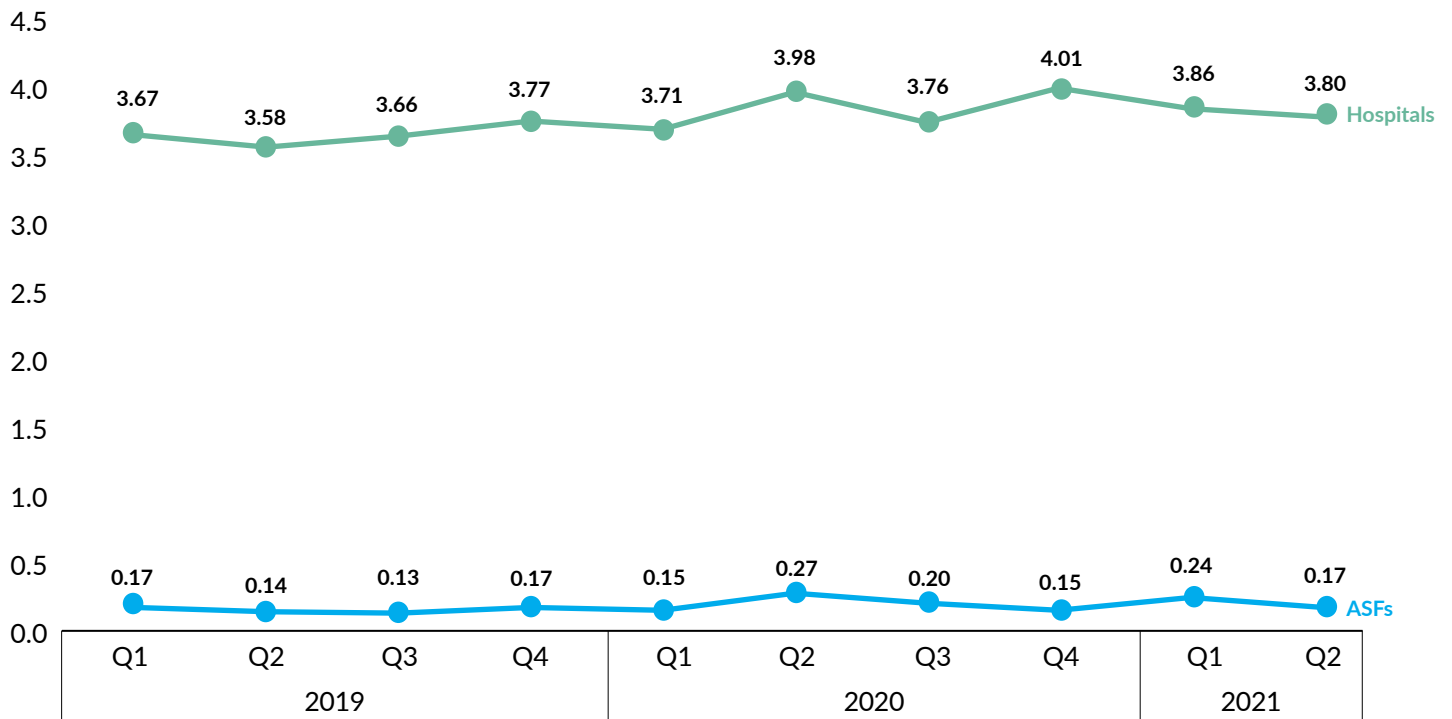
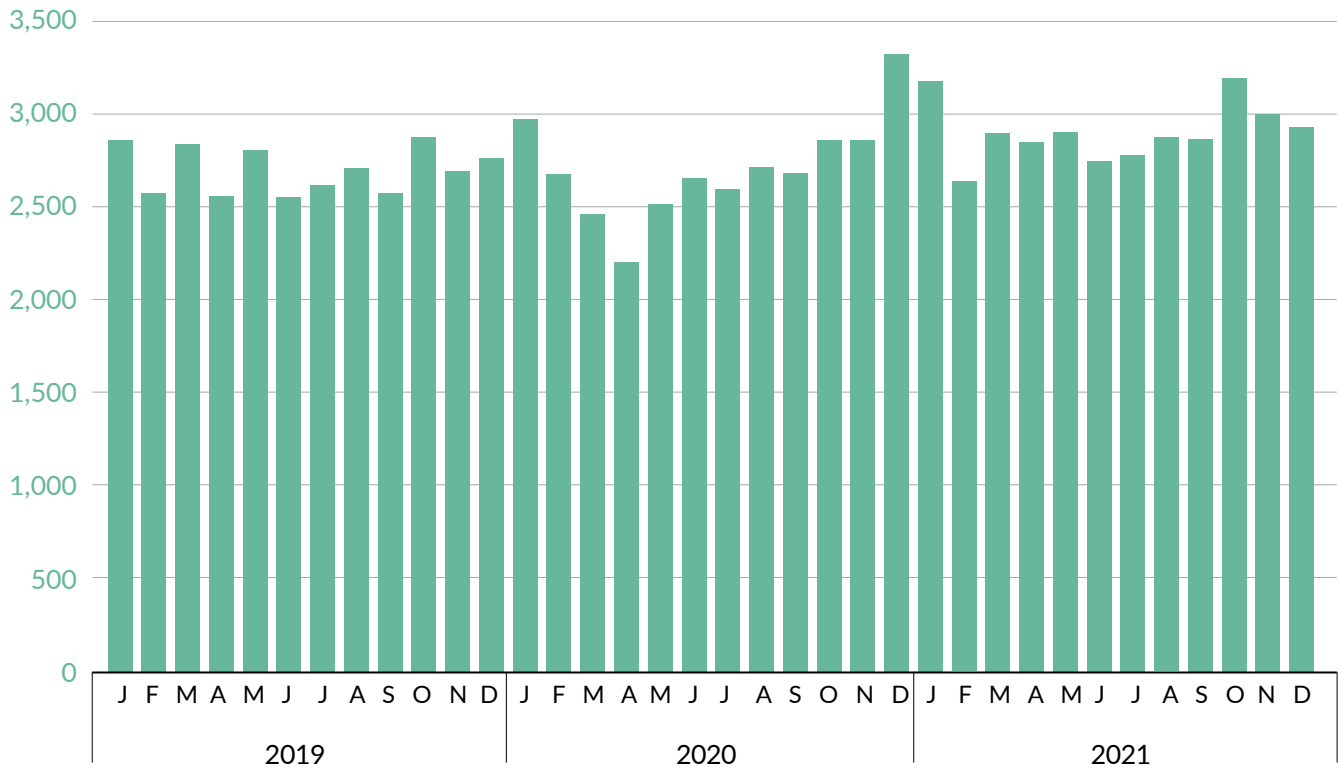


Figure 6. PA-PSRS Fall Reports Based on Event Occurrence Date by Month

Number of Reports



Conclusion

There were 288,882 acute care events reported in PA-PSRS during 2021, representing a 3.7% increase from 2020. The number of reported high harm events has decreased from 726 in 2005 to 442 in 2021. The 442 high harm events submitted in 2021 was a 6.0% increase over the 417 submitted in 2020; however, the proportion of high harm events remained steady at 0.15%, and very close to the average of 0.16% over the past 10 years.

The top four event types, accounting for more than three-quarters of the acute event reports in 2021, were Error Related to P/T/T, Medication Error, Complication of P/T/T, and Fall. The Other (specify) event subtype within the Other/Miscellaneous event type had the largest increase in representative percentage of all reports from 2020 to 2021, increasing from 5.2% to 6.3% of all reports.

Based on our analysis of PA-PSRS reports, the COVID-19 pandemic appears to have had an impact on patient safety in 2021, with hospital fall rates increasing during pandemic peaks in Q2 2020 and Q4 2020, followed by declines in Q1 and Q2 2021.

Note

This analysis was exempted from review by the Advarra Institutional Review Board.

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