

2021

Annual Report



CHPSO

*Eliminating preventable harm
and improving the quality of
health care delivery*

Collaborative Healthcare Patient Safety Organization

A DIVISION OF THE HOSPITAL QUALITY INSTITUTE



About Us

CHPSO Mission

Eliminating preventable harm and improving the quality of health care delivery

CHPSO Vision

CHPSO's members will lead the nation in providing the safest and highest quality health care

PARTICIPATE

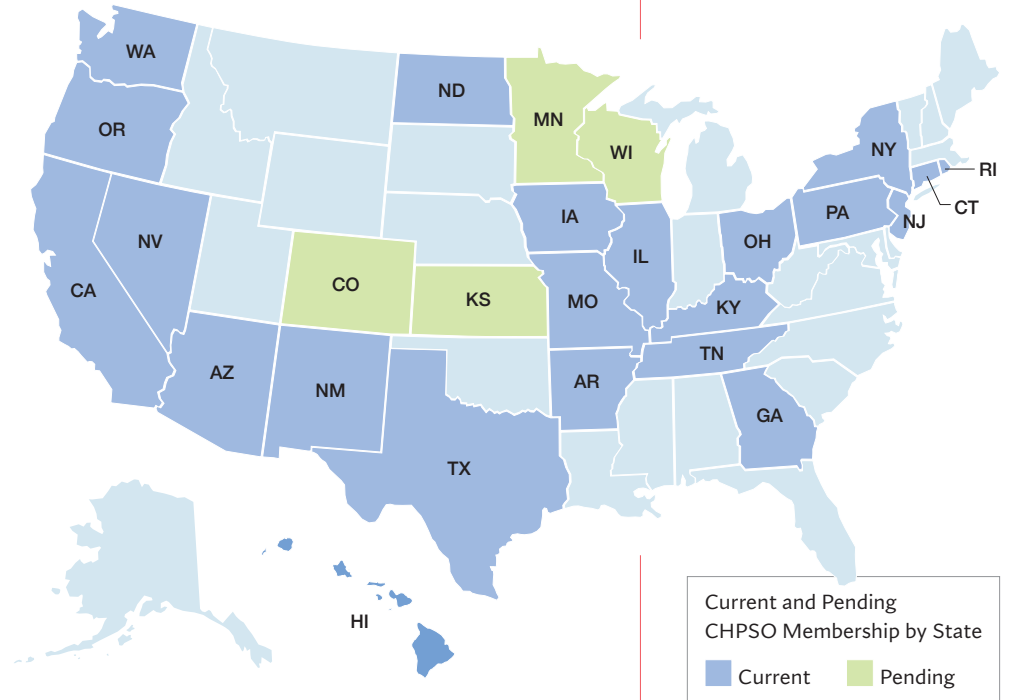
CHPSO works with members to facilitate and streamline the data submission process. CHPSO engages with data solutions partners to allow members to submit data to the CHPSO database, saving hospitals the cost of specialized solutions.

Under this approach, members can generate and submit an Excel spreadsheet or plain text report delimited by commas or other characters.

For more information, contact CHPSO at info@chpso.org or visit the [CHPSO website](https://www.chpso.org).

BENEFITS

- Patient Safety Work Product privilege
- Collaboration and problem solving with other providers
- Periodic safety event evaluations
- Bi-weekly Safe Table meetings
- Custom research requests
- Event feedback and consultation
- Educational webinars
- Alerts and quarterly newsletters
- Legal counsel discussion group
- Job board



CHPSO membership remained steady in 2021 with more than 485 members in 21 states: Arizona, Arkansas, California, Connecticut, Georgia, Hawaii, Illinois, Iowa, Kentucky, Missouri, Nevada, New Jersey, New Mexico, New York, Ohio, Oregon, Pennsylvania, Rhode Island, Tennessee, Texas, and Washington. A total of 72 new facilities/organizations from seven states are pending or in progress. These members contributed to a growing database of more than 3.5 million safety events.

■ President's Message

At CHPSO, patient safety and awareness are at the heart of what we do.

We are dedicated to advancing discussions about these important topics as we continue the movement to improve the safety of the health care system — for patients and the workforce. We strive to provide programs and resources that benefit hospitals to bolster patient safety and quality improvement.

This **2021 CHPSO Annual Report** covers Jan. 1 to Dec. 31, 2021, and details our activities on your behalf.

Highlights from the report include:

- A detailed article about staffing and supply line issues related to COVID-19. To fully grasp the impact of staffing issues and supply chain demands on health care organizations during the COVID-19 pandemic, CHPSO conducted an analytical deep dive to examine event data to uncover insights on staffing shortages and the ripple effect on patient safety.
- A recap of Safe Table and webinars from the past year. Safe Tables are opportunities for members to discuss cases on pre-selected topics in a confidential and privileged setting, while webinars provide an opportunity to engage in a collaborative learning environment that is inclusive for non-members.
- A look at safety event reporting. We explore the percentage of patient safety events reported in 2021 as classified by CHPSO members, according to Agency for Healthcare Research and Quality's (AHRQ) Event Category, analyze the time lag and submission frequency of patient safety events reported, and offer suggestions to help members improve their data reporting quality.
- The persistent problem of "Other" CHPSO safety events and what CHPSO has done to rectify it

These are but a few of the many topics we explore. I encourage you to not only read the report in its entirety, but also to share with your co-workers.

We look forward to continued collaboration with members this year and for many years to come. If you have questions about the data or information included in the report or would like to learn more about CHPSO or any of our programs, email info@chpso.org.



A handwritten signature in black ink that reads "Robert Imhoff". The signature is fluid and cursive.

Robert Imhoff
President
HOSPITAL QUALITY INSTITUTE

Health Care and Workforce

EXAMINING COVID-19-ASSOCIATED STAFFING SHORTAGES

To fully grasp the impact of staffing issues and supply chain demands on health care organizations during the COVID-19 pandemic, CHPSO conducted an analytical deep dive to examine event data to uncover insights on staffing shortages and the ripple effect on patient safety.

Event Sampling Method

In a query of the CHPSO database from January 2020 to December 2021, 4,088 event reports were returned that contained the words “burnout,” “understaffed,” “overworked,” “staffing,” “short staffed,” “RN turnover,” “overtime,” “extra shifts,” “acuity level,” “nursing ratio,” “high acuity,” “patient ratio,” “missed breaks,” “shortage,” “morale,” “retention of staff,” “staff retention,” or “mentally draining.”

There were 2,081 event reports in 2020 and 2,007 in 2021. Of the 4,088 event reports, 528 were randomly sampled and reviewed to facilitate analyses.

It’s important to emphasize that the volume of patient safety reports submitted is not necessarily indicative of actual prevalence by year or by facility, but more accurately reflects an organization’s choice to submit certain event types based on its safety culture and risk management practices. Not all events collected by member organizations’ patient safety event systems are submitted to CHPSO and some choose not to submit event reports at all. Likewise, submitted events may have fields that members purposely exclude. Therefore, inferences about comparisons of event volumes are difficult, especially when event reports are submitted on a voluntary basis.¹ Lastly, since there are currently no minimum data set requirements for data submitted to CHPSO, data quality is inconsistent across health systems and hospitals. Nevertheless, the sampled data may still provide valuable lessons learned about patient care management challenges experienced in acute care hospitals and other free-standing entities during the COVID-19 pandemic.

Demographic and Reporting Characteristics of Sampled Events

The distribution of selected demographic and reporting characteristics of the sampled event reports is shown in Table 1. The patients covered in the sampled event reports ranged in age from 0 to 97, with an average age of 54. Although over half of the sampled events were reported as having reached the patient (50.7%), most patients for whom the Harm Level was known were nonetheless not harmed (48.3%). Harm Level in cases for which an adverse event or incident reached the patient remains a field with a disproportionately high null value (43%). As a result, it’s difficult to identify trends and establish correlations to variables such as age, gender, and medications when events were so frequently missing Harm Level data. CHPSO’s utility for systematically analyzing patient safety trends is deeply dependent upon the quality and timeliness of the data submitted. As such, drilldown analysis focused on the sampled event reports with populated Harm Level and Report Type data.

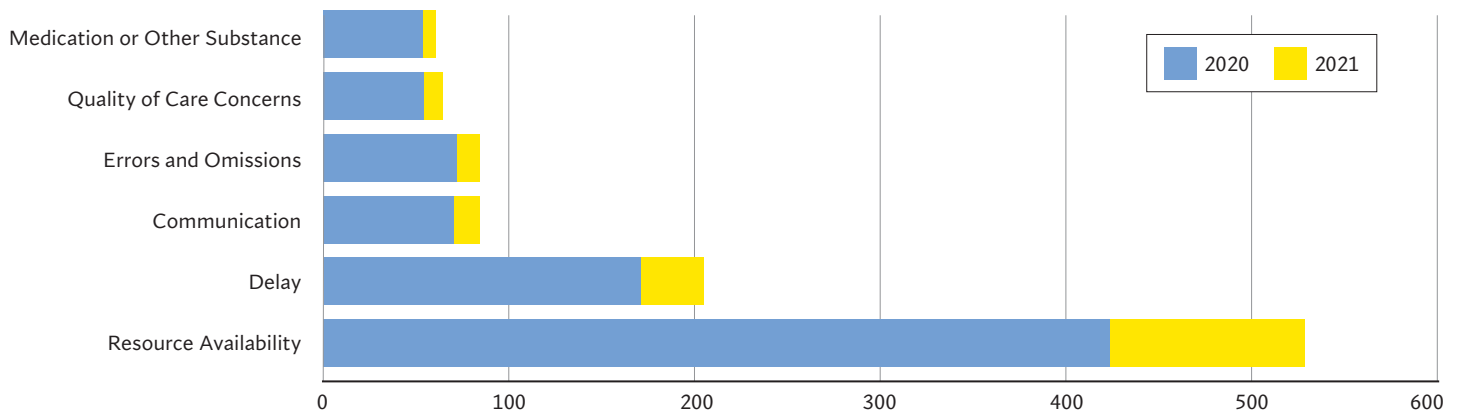
Table 1. Demographic and Reporting Characteristics Among Sampled CHPSO Event Reports

Gender	n	%	Report Type	n	%	Harm Level	n	%
Male	155	29.4	Patient	268	50.7	No Harm	255	48.3
Female	160	30.3	Near Miss	50	9.5	Mild Harm	37	7
			Unsafe Condition	154	29.2	Moderate Harm	8	1.5
						Severe Harm	1	0.2
Null	213	40.3	Null	56	10.6	Null	227	43
Total	528	100	Total	528	100	Total	528	100

¹ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4147750/>

Figure 1 shows the top six event types by year of the sampled event reports. Identifying “Resource Availability” to be the largest event type is not unexpected given the search terms used to identify the sampling frame. These six categories constitute roughly 65% of the sampled events. The volume of 2020 (n = 424) events far exceeded events in 2021 (n = 104), even though the sample was randomly selected across both years. Despite the large volume difference between the two years, the interrelationship between resource availability and the other five event types is where we can procure lessons learned. Aggregating events in this manner may help identify patterns and experiences commonly associated with unfavorable outcomes and provide guidance for correcting systemic barriers and improving patient safety.

Figure 1. Top Six Event Types of Sampled CHPSO Safety Event Reports

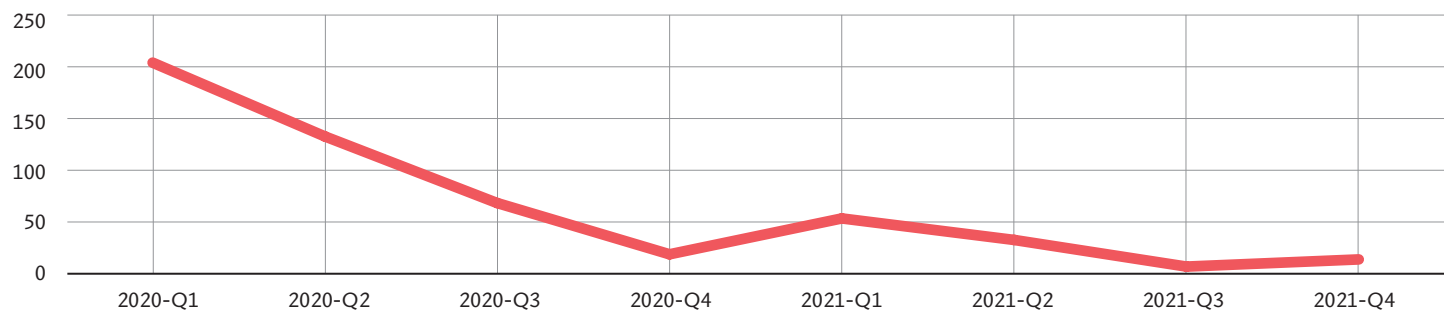


Staffing-Related Events

CHPSO follows [AHRQ’s Common Formats](#) for defining, collecting, and reporting patient safety events. In addition, CHPSO complements this schema with an enhanced Event Type Taxonomy used to reduce the considerably large number of events categorized as “Other.” The use of this enhanced taxonomy provides for the classification of reports into more meaningful categories.

“Resource Availability” refers to events associated with the allocation of capital such as staff, supplies, beds, etc. Among the 528 sampled reports, 472 (89%) were classified as Resource Availability events (shown in Figure 2 by quarter), contextually referred to as “staffing” issues in the following discussion. For these analyses, the Report Type² was limited to Unsafe Condition, Near Miss, or Patient; the latter refers to an adverse event that reached the patient and may or may not have caused harm.

Figure 2. Staffing-Related Events among Sampled CHPSO Safety Event Reports by Quarter



² 11% report types were null and were excluded from the staffing-related events analysis.

Health Care and Workforce

Figure 3 displays the top five staffing related event categories by year and quarter: Staffing, Delays, Errors and Omissions, Quality of Care, and Communication. Except for Communication, all the event classifications monotonically decreased from the first quarter of 2020 to the fourth quarter of 2020. However, in the first quarter of 2021 Staffing, Delays, Errors and Omissions, and Communication increased, following a spike in COVID-19 incident cases³ (as illustrated in Figure 4).

Figure 3. Top Five Staffing-Related Events by Quarter

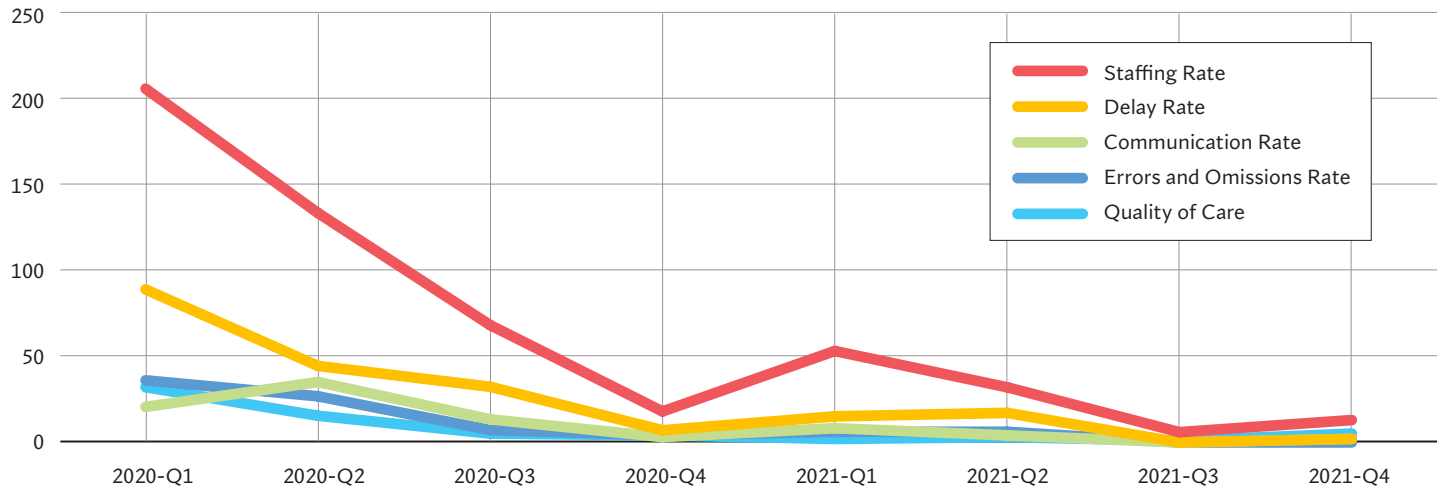
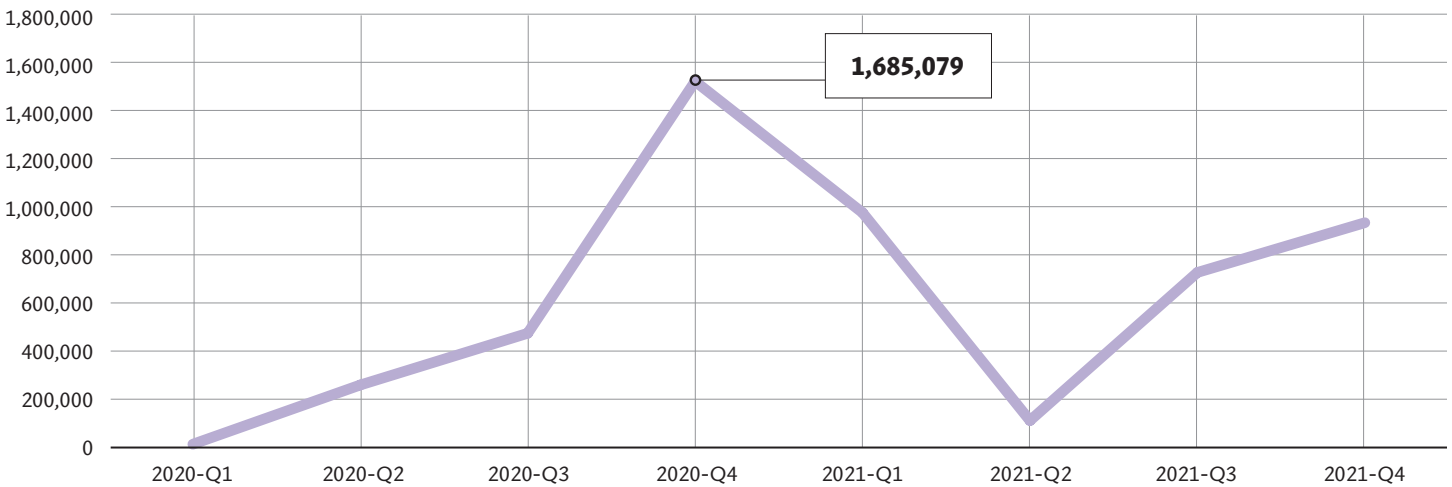


Figure 4. California Incident, COVID-19 Cases by Quarter



To further examine these event patterns and establish statistical significance, the 2020-21 event reports were aggregated by year and quarter for each of the top five staffing-related event categories, as shown in Table 2. After adjusting for overall changes in report submissions, it was established that the categories all significantly decreased over time, except for Communication and Errors and Omissions. The largest absolute reduction was Resource Availability/Staffing (-14.0 per 10,000 Event Reports), Delay (-6.4), Errors and Omissions (-2.5), and finally Quality of Care (-2.3). The largest percentage reductions were Quality of Care (-80%), Delays (-78%), Errors and Omissions (-77%), and Resource Availability/Staffing (-73%).

³ <https://data.chhs.ca.gov/dataset/covid-19-time-series-metrics-by-county-and-state>

Table 2. Staffing-Related Event Report Rates by Quarter Among Sampled CHPSO Event Reports

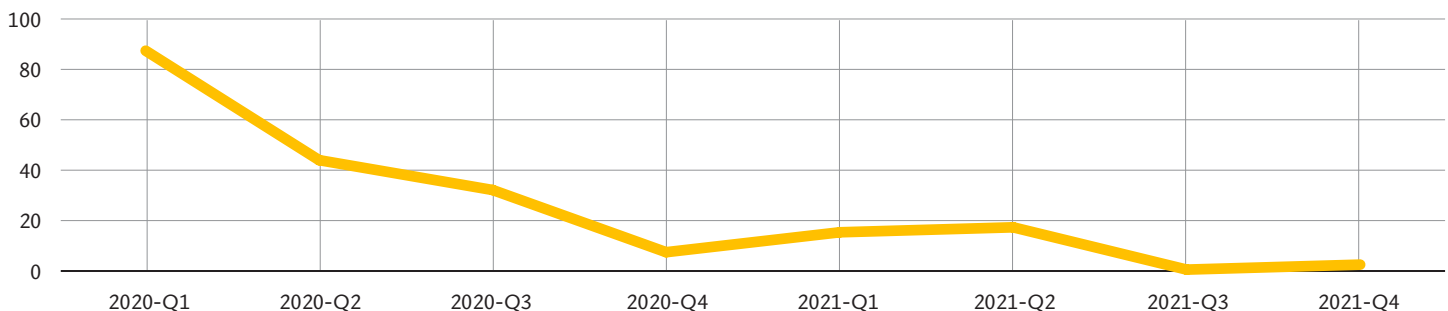
Time	Total Events	Staffing	Delay	Communication	Errors and Omissions	Quality of Care
2020-Q1	107,620	19.05	8.18	1.86	3.25	2.88
2020-Q2	87,135	15.26	5.05	3.90	2.98	1.72
2020-Q3	104,959	6.48	3.05	1.24	0.67	0.48
2020-Q4	100,586	1.79	0.70	0.30	0.40	0.40
2021-Q1	93,335	5.68	1.61	0.86	0.64	0.21
2021-Q2	84,837	3.77	0.20	0.47	0.71	0.35
2021-Q3	95,829	0.63	0.00	0.00	0.00	0.10
2021-Q4	90,657	1.43	0.22	0.22	0.00	0.55
Change per 10,000 Event Reports		-14.0	-6.4	-0.861	-2.5	-2.3
Sig		.040*	.016*	.571	.063	.007*
% Change		-73%	-78%	-46%	-77%	-80%

*p < .05.

Hospitals and other health care delivery organizations were challenged with the arrival of the fall-winter COVID-19 surge in the fourth quarter of 2020, when the number of incident cases reached 16.9 million. It’s possible that the physical and mental health assault on front-line workers contributed to a steady decline of staffing-related safety event submissions through the fourth quarter of 2020. In parallel, as larger numbers of travel nurses were activated to address the staffing crises, it may have further escalated the reduction in report submissions.

The percentage of all staffing-related events that involved delays is shown in Figure 5. Proportionally, **Delay** events represented the second-highest category of Staffing/Resource Availability events. About 40% of the staffing-related events included a delay or lack of response such as procedure lags in hemodialysis (delayed by several days to nearly a week in one case), bronchoscopies, surgeries, emergent intubation, and even rapid response events. For example, several cases reported a COVID-19-positive pregnant patient newly admitted with orders and never evaluated by a respiratory therapist during the entire shift. Furthermore, remedial, diagnostic, and therapeutic services such as PICC line insertions, EKG, and physical therapy were sometimes not available or non-existent as some institutions lacked weekend staffing for these services. Patient transport was another highly impacted service that affected all service lines. Some cases reported average wait times for transfers between units and other departments, including discharges, of an hour or more. This created bottlenecks in service delivery.

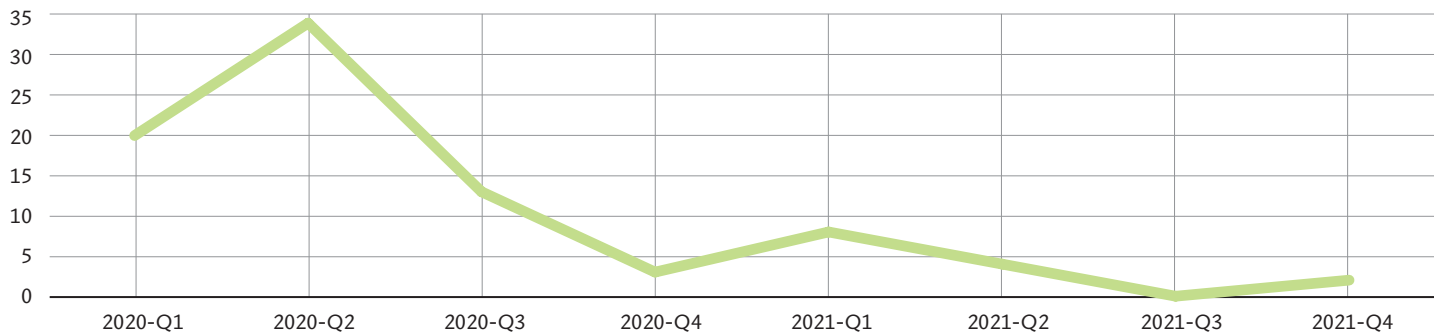
Figure 5. Percentage of Delay Events Among Staffing-Related Event Reports by Quarter



Multiple studies indicate a causal link between ineffective communication and patient harm. A review by The Joint Commission revealed “that communication failures were at the root of over 70 percent of sentinel events.”⁴ **Communication** events were the next most frequent event category identified in the staffing-related reports. The pattern of these events over time differed in comparison to the other events (Figure 6). The spikes in Communication events during the second quarter of 2020 and the first quarter of 2021 may be indicative of other complex variables at play beyond staffing issues. Although it’s unknown at this time what other contributing factors might be in the calculus, it’s worth noting that this event category did not significantly decrease over time (Table 2).

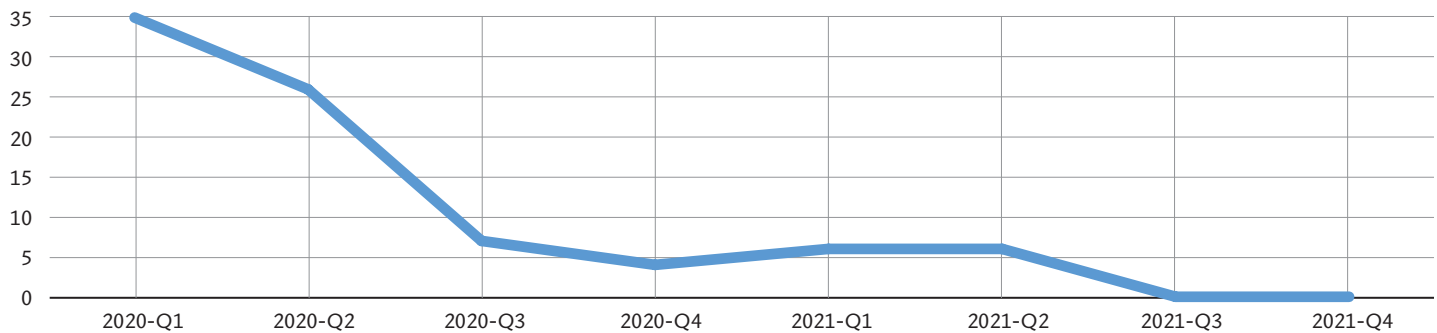
Approximately 16% of the staffing-related events involved a communication issue. Many of these event types were associated with handoffs or communication failures. For example, one event details how a newborn did not receive the proper workup for sepsis and treatment of syphilis because there was no communication follow through with the physician. In another case, a patient was transported to the operating room, but after three hours they were informed that the procedure was canceled because there was no operating room circulator. Other events both inside and outside the laboratory revealed patterns of miscommunication such as phlebotomy time-sensitive draws for blood cultures and peak/trough levels related to antibiotic administration. These all have a direct impact on patient outcomes.

Figure 6. Percentage of Communication Events Among Staffing-Related Event Reports by Quarter



Unlike the other events categories, the percentage of **Errors and Omissions** seemed to flatten out during the last quarter of 2021 (Figure 7). Interestingly, it still follows a similar pattern, including a dip in the fourth quarter of 2020 when COVID-19 cases peaked (Figure 4). About 14% of staffing-related reports indicated an error or omission event. Examples from several reports include albuterol treatments not being administered; lab orders not being completed during a shift; unmonitored patients being placed in a hallway, observation room, or waiting area for several hours and later found in a decompensated state; pharmacy dispensing and compounding errors; and failures to follow standard protocols.

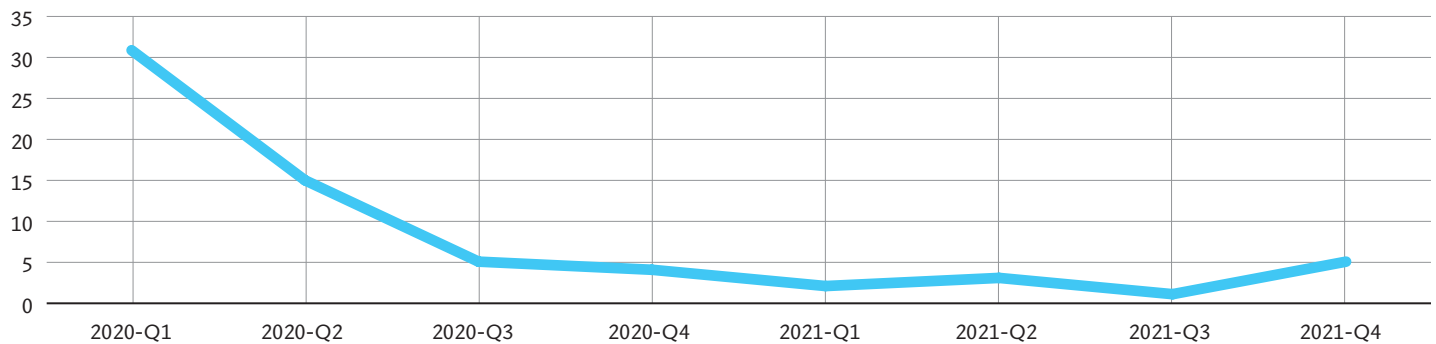
Figure 7. Percentage of Error and Omission Events Among Staffing-Related Event Reports by Quarter



⁴ <https://blog.cureatr.com/5-ways-that-communication-and-patient-safety-go-hand-in-hand>

The majority of **Quality of Care** events involved reports where staff expressed concerns about the potential for patient harm. About 12% of staffing-related issues were associated with quality of care concerns. The percentage trend line (shown in Figure 8) is similar to the other event categories and may be indicative of a positive correlation with staffing patterns. Analogous to manufacturing, high productivity areas like a laboratory can be quickly overwhelmed when bottlenecks occur alongside time sensitive orders and high-volume routine orders. Many of the event reports described concerns about patient outcomes related to delays in things such as sepsis hourly bundle elements and blood culture draws. Several other cases involved nurses who floated to high-acuity COVID-19 floors and received no training on how to care for COVID-19-positive patients. Lastly, there were many reports with safety concerns surrounding the lack of 1:1 sitters. The event reports described patient falls, dementia due to COVID-19 or other conditions, and violent behaviors and aggression that created an unsafe environment for both patients and staff.

Figure 8. *Percentage of Quality of Care Events Among Staffing-Related Event Reports by Quarter*



As hospitals re-evaluate their current systems against the backdrop of the COVID-19 pandemic and existing patient care protocols, supply chain disruption, facilities management, and staffing, the goal of eliminating preventable harm and improving the quality of health care delivery must be pursued with new insight. Investing in strategies to mitigate unexpected conditions must become a central focus.

Revising operational plans and updating existing processes — where necessary based on reported events — might include infrastructure and remote technologies expansion. Many hospitals have already launched capacity building efforts and other tactics to mobilize resources. Given that future outbreaks are imminent, the health and safety of our communities and workforce requires defining not only blueprints for resource allocation during crises mode, but contingency plans for infection control.

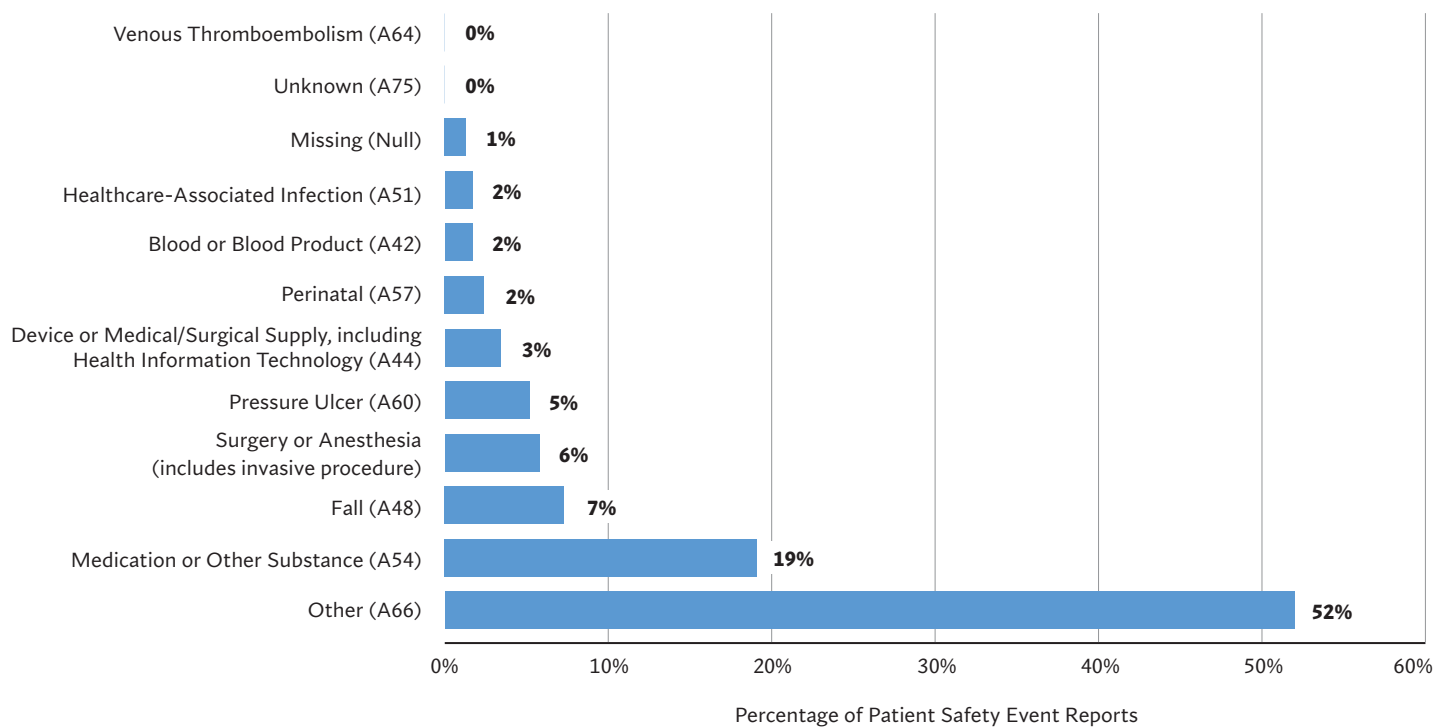
CHPSO remains steadfast in its mission to improve health care delivery. In so doing, frequent data submissions (i.e., monthly, if feasible), are encouraged to cultivate a high reliability culture and subsequently mitigate risk. Timeliness of submission is also vital to facilitate organizations to act on unidentified concerns and could result in fewer future adverse events, including near misses and other unsafe conditions. Key variables such as gender, age or date of birth, harm level, report type, race, and ethnicity are essential data elements for targeting emerging patient safety trends and patterns. CHPSO will continue to provide these types of analyses to catalog opportunities for improvement. Perhaps this will stimulate more patient safety and quality improvement initiatives. With timely and more complete submissions, CHPSO can effectively leverage the use of predictive analytics and machine learning to support actionable insight across the care continuum.

■ Event Categories

TYPES OF SAFETY EVENTS IN 2021

Figure 1 shows the percentage of patient safety events reported in 2021 as classified by CHPSO members, according to AHRQ Event Category (DE21). As was the case in prior years, the most frequent Event Type category reported in 2021 was the omnibus “Other” category at 52%. Given that this broad category is of limited use for identifying emerging trends in patient safety events, CHPSO developed an Enhanced Event Type Classification Taxonomy and artificial intelligence algorithm using natural language processing to re-categorize patient safety events with much more fidelity than is afforded by the basic AHRQ Event Categories. More detail about the enhanced taxonomy is presented later in this report.

Figure 1. *Percentage of Patient Safety Events in 2021 Classified by AHRQ Event Category (DE21)*



■ Data Reporting Quality and Timeliness

COMPLETENESS OF SAFETY EVENTS IN 2021

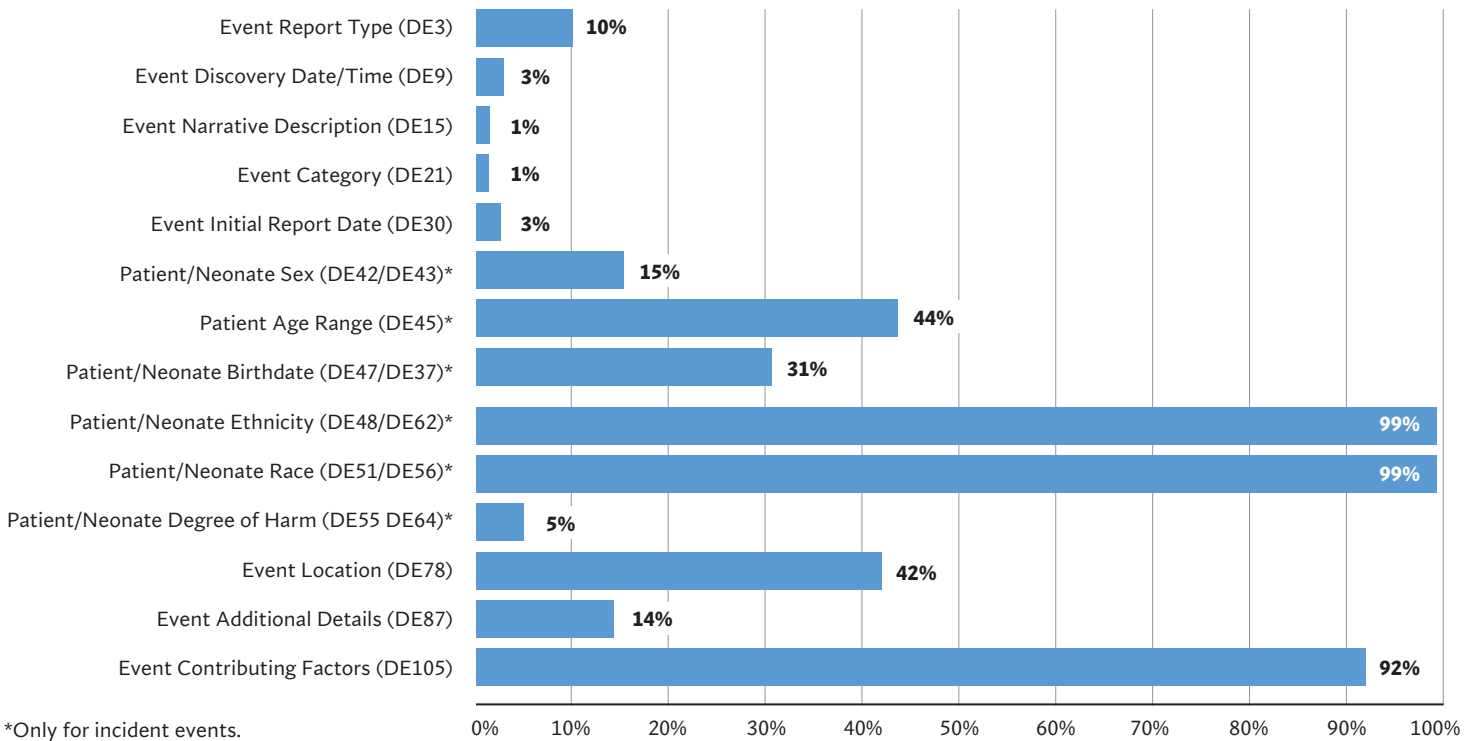
Although all data elements in the AHRQ Common Formats for Data Reporting aid members and CHPSO in understanding the meaning and context of patient safety events, there are 16 core data elements for which it is especially important that comprehensive data be reported. Two of these elements are generated automatically when members upload data (Provider ID and Event ID), but the other 14 require conscientious member effort to improve their completeness:

- 1. Event Report Type (DE3):** The type of event reported (i.e., incident, near miss, unsafe condition)
- 2. Event Discovery Date/Time (DE9):** The date/time the event was discovered
- 3. Event Narrative Description (DE15):** A free-text narrative description of the event
- 4. Event Category (DE21):** The category(ies) of the event (e.g., anesthesia, blood or blood product, device or medical, fall, etc.)
- 5. Event Initial Report Date (DE30):** The date of the initial event report
- 6. Patient/Neonate Gender (DE42/43):** Patient gender/sex (for incidents)
- 7. Patient Age Range (DE45):** Patient age range (for incidents)
- 8. Patient/Neonate Birthdate (DE47/DE37):** Patient date of birth (for incidents)
- 9. Patient/Neonate Ethnicity (DE48/DE62):** Patient ethnicity (Hispanic/Latino; for incidents)
- 10. Patient/Neonate Race (DE51/DE56):** Patient race (for incidents)
- 11. Patient/Neonate Degree of Harm (DE55/DE64):** Patient degree of harm (e.g., death, severe harm, moderate harm, mild harm, no harm; for incidents)
- 12. Event Location (DE78):** The location of the event, i.e., inpatient general care area (e.g., special care area, labor & delivery, pharmacy, etc.)
- 13. Event Additional Details (DE87):** Free-text additional details about the event
- 14. Event Contributing Factors (DE105):** The specific factor(s) that contributed to the event (e.g., communication, environment, human factors, health information technology, etc.)

Figure 2 shows the percentage of patient safety events reported in 2021 that were missing each of these member-submitted core data elements. Note that the percentage calculations for the data elements required for only incident event reports (e.g., gender, age, birthdate, ethnicity, race, and harm) used total incident events reported as a denominator, whereas the other elements used all events reported as a denominator.

Data Reporting Quality and Timeliness

Figure 2. Percentage of Patient Safety Events in 2021 Missing Each of the 14 Member-Submitted Core Data Elements



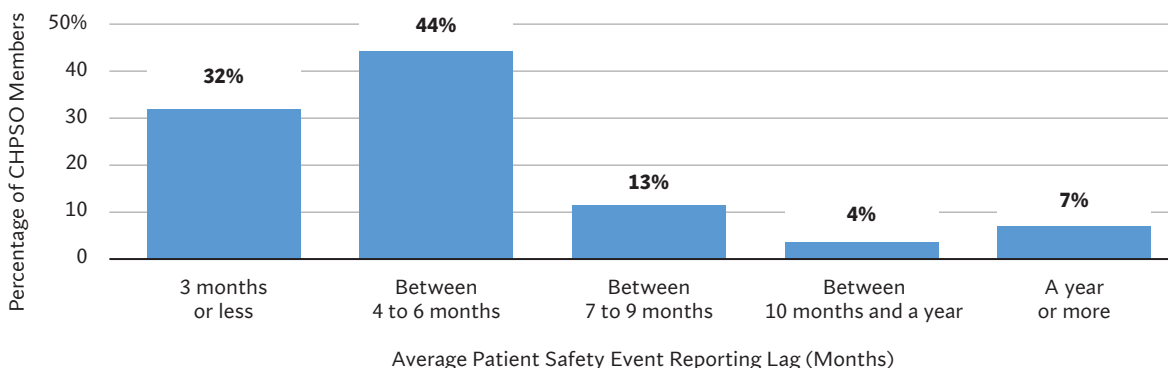
TIMELINESS OF SAFETY EVENT REPORTING IN 2021

Timely reporting of patient safety events by members is crucial for CHPSO's Sentinel Signal Detection System to be able to detect emerging issues and alert members so they can prevent patient harm. Therefore, members are strongly encouraged to submit their patient safety events with minimal data lag — monthly if possible. The following analyses describe the time lag and submission frequency of patient safety events reported by members in 2021.

Time Lag of Safety Event Reporting in 2021

Figure 3 shows the distribution of CHPSO members who reported data in 2021 (n = 332) by their average patient safety event reporting lag time. About 32% of members reported their 2021 data to CHPSO within three months of the initial event report date and 44% reported between four to six months of the initial event report date. Only about one-quarter (24%) had a month or longer data reporting lag.

Figure 3. Distribution of CHPSO Members Who Reported Data in 2021 by Their Average Patient Safety Event Reporting Lag Time

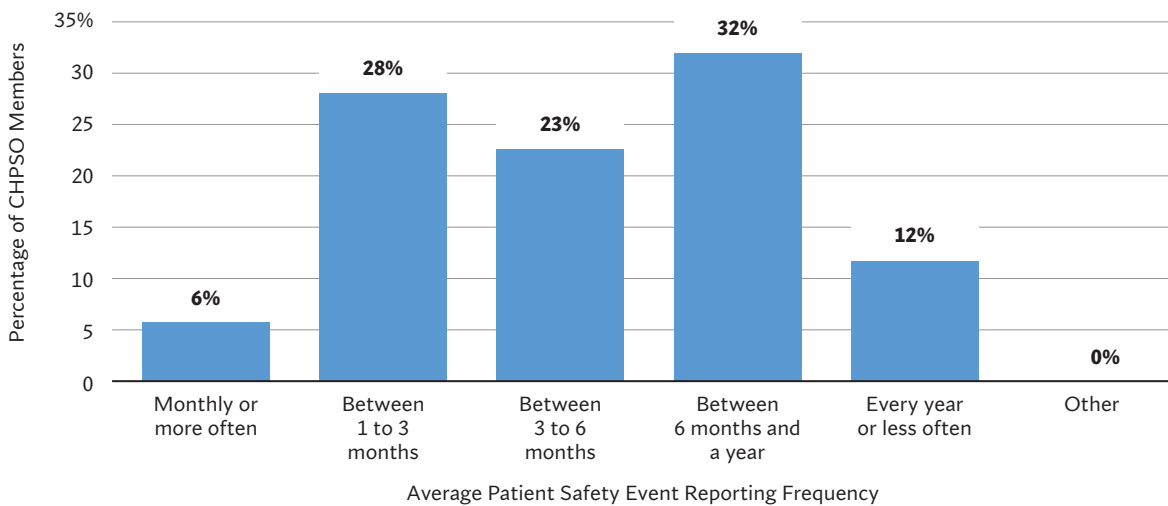


Data Reporting Quality and Timeliness

Submission Frequency of Safety Event Reporting in 2021

Figure 4 shows the distribution of CHPSO members who reported data in 2021 (n = 328) by their average patient safety event reporting submission frequency. Only 6% of members reported their 2021 data to CHPSO monthly, 28% reported their data every one to three months, and 23% reported their data every four to six months. About 44% of members submitted their data infrequently and waited seven months or longer to report to CHPSO.

Figure 4. Distribution of CHPSO Members Who Reported Data in 2021 by Their Average Patient Safety Event Reporting Submission Frequency



SUGGESTIONS TO IMPROVE THE QUALITY OF SAFETY EVENTS

Complete and timely event reports allow CHPSO to provide maximum benefits to our members. The following suggestions will help members improve their data reporting quality and reduce submission lags:

- Identify reporting gaps using the data quality reports in our enhanced analytics system
- Begin reporting all core data elements that are not currently being submitted
- Write detailed and specific event narrative descriptions (DE15)
- Submit event data to CHPSO monthly

■ Patient Safety Events

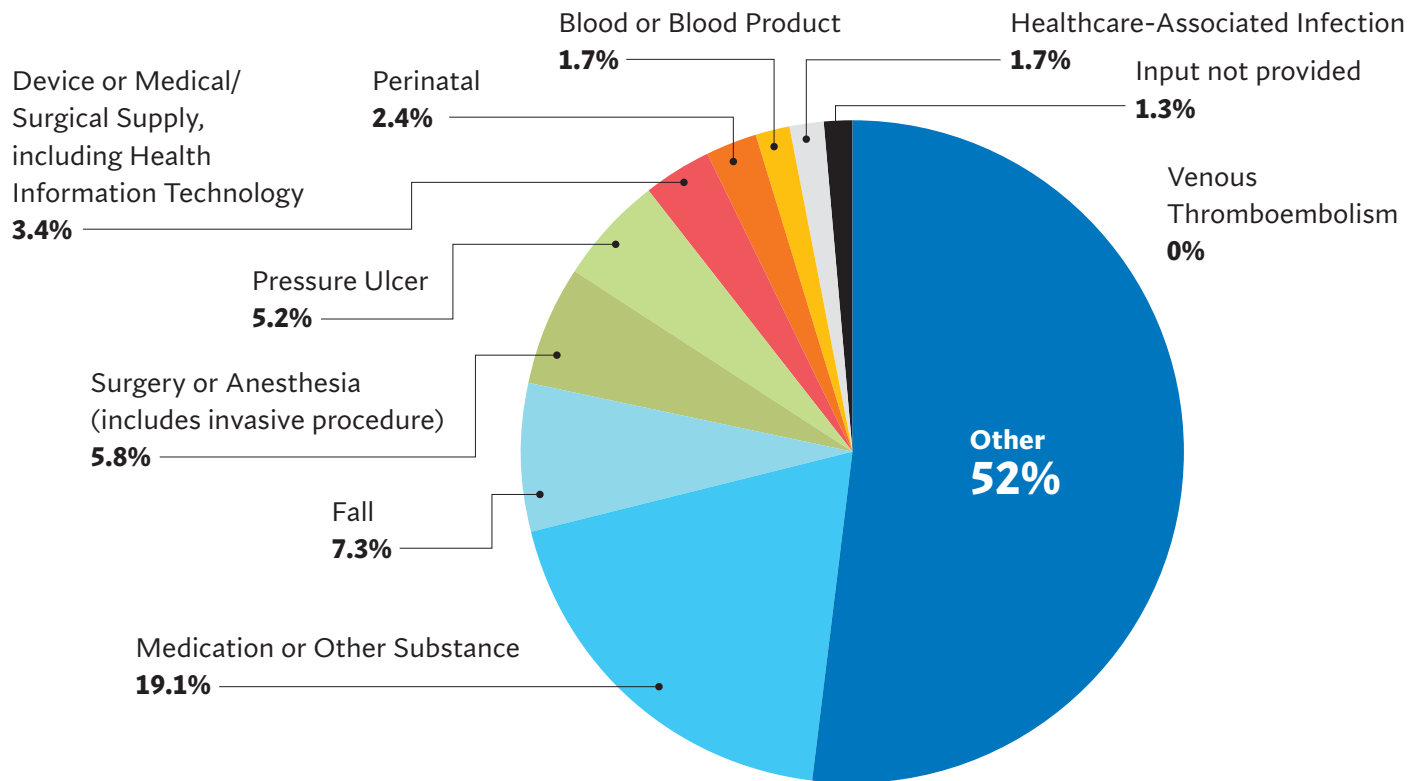
THE PERSISTENT PROBLEM OF ‘OTHER’ CHPSO SAFETY EVENTS

The 2018 CHPSO Annual Report presented the results of a content analysis of sampled patient safety events that members had classified into the Agency for Healthcare Research and Quality’s (AHRQ) “Other: Please Specify” event category (A66). This nebulous category was intended to be the realm of infrequent events that do not otherwise fit into one of the nine specific AHRQ Event Categories (DE21) delineated in the [AHRQ Common Formats for Data Reporting](#):

- | | |
|-------------------------------------------------------------------------------|---------------------------------------------------------|
| 1. Blood or Blood Product | 6. Perinatal |
| 2. Device or Medical/Surgical Supply, Including Health Information Technology | 7. Pressure Ulcer |
| 3. Fall | 8. Surgery or Anesthesia (Including Invasive Procedure) |
| 4. Healthcare-Associated Infection | 9. Venous Thromboembolism |
| 5. Medication or Other Substance | |

Although the uninitiated might reason that CHPSO members rarely classify their safety events into “Other,” the distribution of AHRQ Event Categories for 2021 CHPSO safety events shown in Figure 1 demonstrates that contrarily “Other” is the most common event category in CHPSO.

Figure 1. Distribution of AHRQ Event Categories for 2021 CHPSO Safety Events



Over half (52%) of all 2021 CHPSO safety events were classified into the “Other” AHRQ Event Category, which has been a recalcitrant issue in recent years (e.g., 65.9% in 2019 and 51.5% in 2020). This ersatz category continues to be a frustrating hodgepodge of misclassified content, which in turn reduces the fidelity of the CHPSO database and hinders the important task of identifying emerging risks.

PRIOR EFFORT: CONTENT ANALYSIS OF ‘OTHER’ SAFETY EVENTS

The original 2018 effort to analyze and reduce “Other” CHPSO safety events consisted of having clinical staff laboriously review, catalog, and try to classify a sample of over 30,000 “Other” CHPSO safety events from early 2018. This monumental effort required clinical experts to analyze the content of the free-text event narrative descriptions (DE15) for the sample and subsequently develop, revise, and classify the “Other” events into ad hoc event classification categories. Table 1 shows the four most prevalent ad hoc event classification categories that emerged during the 2018 content analysis effort. These four categories accounted for over half (51%) of all the “Other” CHPSO safety events sampled.

Table 1. Four Most Prevalent Ad Hoc Event Classification Categories That Emerged During the 2018 Content Analysis Effort to Reduce “Other” CHPSO Safety Events

Rank	Ad Hoc Event Classification Category	“Other” CHPSO Safety Events (%)
1	Workplace violence	14.6
2	Rapid response team calls	13.2
3	Leaving AMA*	11.8
4	Delay or lack of response	11.4

*AMA = Against medical advice

NEW METHODOLOGY FOR CLASSIFYING ‘OTHER’ SAFETY EVENTS

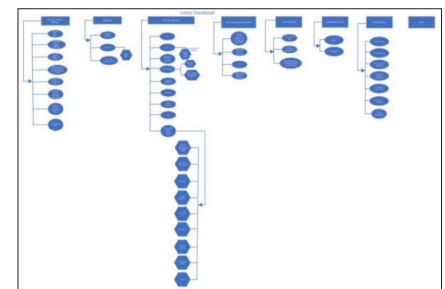
CHPSO developed a new, efficient, and scalable methodology to rectify the problem of “Other” safety events by classifying existing and future “Other” events into meaningful event categories that are part of a comprehensive Enhanced Event Classification Taxonomy. The new methodology uses automated modern artificial intelligence (AI) and natural language processing (NLP) algorithms to accomplish this goal, thereby minimizing the necessity of slow and costly clinical expert reviews.

Description of New Methodology for Classifying ‘Other’ Safety Events

To be specific, the new methodology leverages artificial intelligence/natural language processing (AI/NLP) algorithms to repeatedly “read” from a large sample of existing CHPSO safety events (~120,000). These “training” events were previously reviewed by clinical experts who authoritatively classified them into one or more of over 40 meaningful quality and safety of care topical categories. These categories were also developed by clinical experts (past and present) and organized into a comprehensive Enhanced Event Classification Taxonomy (see Figure 2).

The automated NLP algorithms scan the AHRQ free-text event narrative descriptions (DE15) for each training event and discern relationships between characteristics of the narrative descriptions (e.g., a word pair like “lost balance”) and the authoritatively classified taxonomy categories for those events (e.g., tends to occur more often in fall events). The resulting “trained models” capture these narrative-category relationships. Because the models were trained to categorize events based on authoritatively valid narrative-category relationships as established by the clinical experts, and because these relationships are succinctly captured in the models, these trained AI models can then be automated to accurately categorize novel safety event data to which they are applied.

Figure 2. CHPSO Enhanced Event Classification Taxonomy



This image is purposely blurred because CHPSO taxonomy is a licensed product and requires users to pay a royalty fee in order to access the information.

Two Approaches of New Methodology for Classifying ‘Other’ Safety Events

When classification models are used, it is important to consider whether the goal is to identify the *single* most relevant factor for an event (e.g., the primary cause of death) or to identify *multiple* contributing relevant factors for an event (e.g., both primary and secondary causes of death). In our case, safety events may have *multiple* causal antecedents (e.g., a staffing shortage leads to a delay in care and results in patients leaving against medical advice (AMA)). Nonetheless, the modeling goal may be to identify the *primary* cause (e.g., the staffing shortage was the prime cause of the chain of events in the prior example).

The new AI/NLP models used for classifying the “Other” events generate output that can be used to identify both the single most relevant factor — sometimes called the “Top 1” approach — as well as *multiple* contributing relevant factors. In our case we allow up to three multiple contributing factors, so we call the latter the “Top 3” approach. Both approaches offer unique perspectives and insights into the data. The “Top 1” approach tends to highlight the primary contributing factor to safety events. On the other hand, the “Top 3” classification approach provides insight into potential *secondary* factors contributing to safety events. Together, these approaches provide robust information for understanding the range of likely potential factors associated with “Other” safety events.

Efficiency of New Methodology for Classifying ‘Other’ Safety Events

As with any modeling effort, the accuracy of the classification is never perfect. One advantage of leveraging the AI/NLP models is that software-automated classification capabilities can be used rather than relying on labor-intensive manual clinical expert reviews. Another advantage is that the efficiency gained using software instead of clinical experts to classify events allows for rapid-cycle replication after adjusting the model parameters or data inputs and leads to rapidly increasing event classification accuracy, more flexibility to add or change taxonomy characteristics, and the opportunity to develop a robust training data set by continually oversampling cases representing rarer event categories.

Accuracy of New Methodology for Classifying ‘Other’ Safety Events

To establish the accuracy of the new AI/NLP models used for classifying the “Other” events, they were applied to classify the “training” events that had been reviewed by clinical experts and classified into one or more of over 40 Enhanced Event Classification Taxonomy categories. The “Top 1” accuracy of the new classification methodology was 60.4%. This statistic means that the AI/NLP models perfectly identified the *single most relevant* Enhanced Event Classification Taxonomy category, according to the clinical experts, for about 60% of “Other” events. The accuracy of the new classification methodology increased to 82.7% based on the “Top 3” approach. This statistic means that the *single most relevant* Enhanced Event Classification Taxonomy category was among the *three most relevant* taxonomy categories selected by the AI/NLP models for about 83% of “Other” events. Together these statistics suggest that the new classification methodology has good-to-high accuracy for classifying high-volume event data, particularly under the “Top 3” approach, but caution is warranted with small datasets or individual events until further testing establishes accuracy under those conditions.

Results of New Methodology for Classifying Novel ‘Other’ Safety Events

Given the accuracy demonstrated for the training events, along with the broad efficiencies afforded by classifying events using inexpensive and fast AI/NLP algorithms instead of costlier and slower clinical expert reviews, we decided to “go big” and use the new methodology to classify four full years (January 1, 2018, to December 31, 2021) of novel “Other” safety events from the CHPSO database into the Enhanced Event Classification Taxonomy categories. This time frame allowed us to include a balanced split of two years of data before and two years after the start of the COVID-19 pandemic for the classification effort. The 10 most prevalent Enhanced Event Classification Taxonomy categories that emerged from using the “Top 1” and “Top 3” classification approaches to reclassify the 2018-21 novel “Other” CHPSO safety events are shown in Table 2 and Table 3, respectively.

Table 2. Most Prevalent Enhanced Event Classification Taxonomy Categories that Emerged from Using the “Top 1” Approach to Reclassify 2018-21 Novel “Other” CHPSO Safety Events

Rank	Enhanced Event Classification Taxonomy Category	“Other” CHPSO Safety Events (%)
1	Behavior/workplace violence	13.0
2	AMA/Elopement/LWBS*	9.7
3	Delay or lack of response	8.3
4	Rapid response	7.4
5	Laboratory*	7.2
6	Bed flow & resource availability	5.8
7	Errors & Omission or care without orders	5.5
8	Quality of care concerns	4.5
9	Unexpected clinical event	4.2
10	Lines/tubes/drains*	3.6

Note: AMA = Against medical advice. LWBS = Left without being seen. The denominator for the percentages is the total number of events. *Taxonomy category not in “Top 3” table.

Table 3. Most Prevalent Enhanced Event Classification Taxonomy Categories that Emerged from Using the “Top 3” Approach to Reclassify 2018-21 Novel “Other” CHPSO Safety Events

Rank	Enhanced Event Classification Taxonomy Category	“Other” CHPSO Safety Events (%)
1	Behavior/workplace violence	10.7
2	Delay or lack of response	9.7
3	Errors & Omission or care without orders	9.4
4	Bed flow & resource availability	7.4
5	Communication*	5.6
6	AMA/Elopement/LWBS	5.5
7	Unexpected clinical event	5.3
8	Quality of care concerns	5.0
9	Medical surgical supplies and/or equipment/instruments	4.3
10	Rapid response	3.9

Note: AMA = Against medical advice. LWBS = Left without being seen. The denominator for the percentages is the total number of predicted event categories. *Taxonomy category not in “Top 1” table.

Patient Safety Events

While the percentage of events classified into each category in the tables is generally small (<10%), this is expected given that the Enhanced Event Classification Taxonomy includes over 40 unique subcategories, and hence the percentage of events expected to be classified into any one subcategory will necessarily tend to be lower. For example, assuming 40 taxonomy categories and an equal distribution of events across categories, the expectation would be that 2.5% ($1 / 40 \times 100$) of the “Other” events would fall in each category. Given this, any enthusiasm that might come from observing the low percentages of events classified into particular categories must be tempered. Nonetheless, the results were astonishing.

Applying the new methodology to classify all 2018-21 novel “Other” CHPSO safety events identified all four of the most prevalent ad hoc categories from our original 2018 effort to analyze and reduce “Other” CHPSO safety events by having clinical staff laboriously review, catalog, and classify over 30,000 “Other” CHPSO safety events as presented in the *2018 CHPSO Annual Report*. Specifically, workplace violence, rapid response, leaving AMA, and delay/lack of response from the 2018 effort were all similarly identified as top categories among 2018-21 CHPSO safety events by both the “Top 1” and “Top 3” AI/NLP model classification approaches. The similarity of findings from the two very different efforts provides criterion-related validation of the new methodology for classifying “Other” safety events. This concurrence of findings, in turn, emphasizes that these areas continue to be worthy of focus and attention for reducing harm.

The results are encouraging, but the goal of our reclassification efforts is ultimately to find a solution for reducing the preposterously high percentage of CHPSO events classified by members as “Other: Please Specify” each year. Recall that from 2019-21, 51.5% to 65.9% of all events were classified in this nebulous category, although, this seemingly intractable problem has existed since CHPSO was founded in November 2008. The thoughtful reader may, therefore, wonder what percentage of “Other” events were unable to be classified into one or more of the 40+ Enhanced Event Classification Taxonomy categories by the new methodology. The answer is less than 1% (0.09% to be exact), suggesting that the new classification methodology using AI/NLP models shows great promise for finally solving the persistent problem of “Other” CHPSO safety events.

Caveats about Results Supporting the New Methodology for Classifying ‘Other’ Safety Events

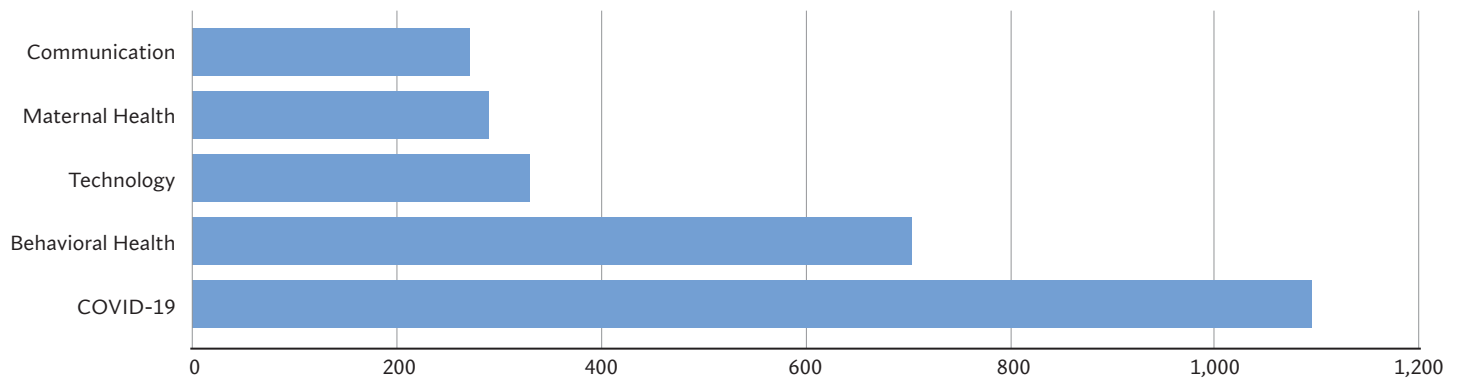
While this juxtaposition of the 2018 and current reports is helpful, there are limits. The most significant is the lack of comparability between analyses when completely different category groupings are used. In the 2018 effort, a series of categories emerged and were confirmed as the analysis took place. That category list differs from the structured taxonomy developed in advance of CHPSO’s recent reclassification effort. And even if CHPSO’s recent effort would have been executed manually as was done in 2018, we would have likely still had materially different category lists. After all, the views of a new expert clinician in a new year will inevitably differ from those brought to the table by a different expert several years ago. Comparisons between analyses that leverage highly similar taxonomies are much more feasible. Our taxonomy does continue to evolve, but it is in large part stabilized, so this type of line-by-line categorical comparison will become a future staple of the *CHPSO Annual Report*.

WHAT’S NEXT REGARDING CLASSIFYING ‘OTHER’ SAFETY EVENTS?

CHPSO is working to make the new classification method available to all CHPSO members in a timely manner by adding the functionality to the CHPSO data analytics platform. Moving forward we will also explore other uses of the new methodology, such as using the AI/NLP models to reclassify *all* CHPSO events, including those coded into one of the nine specific AHRQ Event Categories. To assist with our reclassification efforts, members are encouraged to report detailed event narrative descriptions (DE15) for all CHPSO events, particularly those members who historically have eschewed the reporting of event narratives.

CHPSO Safe Tables and Webinars

TOP FIVE SAFE TABLE AND WEBINAR TOPICS BY ATTENDEE COUNT, 2020-21



During Safe Tables, members discuss cases on pre-selected topics in a confidential and privileged setting. Webinars are also an opportunity to engage in a collaborative learning environment and are inclusive to non-members.⁵ These forums enable attendees to return to their health care organizations with lessons learned and valuable resources. Predictably, COVID-19 was the leading topic, followed by behavioral health. These totals do not include attendance in other CHPSO educational events such as the Root Cause Analysis Innovation Virtual Summit and the HQI Annual Conference.


2021 CHPSO EVENTS

Date	Title
1/21/2021	Delayed Care - The Harmful Impact of COVID on Healthcare
2/17/2021	Diagnostic Error in Medicine What if
3/10/2021	Skin in the Time of COVID
4/21/2021	Skin in the Time of COVID
4/22/2021	An Evolution of Daily Safety Briefs
5/5/2021	Vaccination 2.0: COVID-19 Immunization
5/19/2021	The Shocking Truth Regarding Job-Related Problems Prior to Nurse Suicide
5/20/2021	Infection Prevention and COVID 19 in Oncology Patients
6/10/2021	Breaking the Cycle of Trauma and Violence Within the Healthcare Setting
6/17/2021	Colliding Epidemics: Impact of COVID-19 on Overdose
7/1/2021	Re-engineering Fall Prevention during COVID-19: Observations from the Field
7/22/2021	Multisystem Inflammatory Syndrome in Children (MIS-C) associated with COVID-19
8/24/2021	Tapping into TeamSTEPPS to Prevent Medical Errors: Focus on Retained Objects
9/14/2021	Sentinel Signal Detection Using Natural Language Processing (NLP) & Time Series
9/23/2021	Patient Identification
10/6/2021	Combating Disparities in Clinical Encounters (Part II): Protecting Patients from Social Identity
10/23/2021	CANDOR (Communication and Optimal Resolution)
11/2/2021	Humanizing Patient Safety Stories
11/11/2021	Harnessing the Power of Nursing Practice in Technology: A Different Pathway to Caring
11/17/2021	Patient Safety Act Case Law
12/9/2021	Prescription for Confusion PRN and Non-Specific Frequencies

⁵ Non-members do not receive continuing education units.

In Their Own Words

Here's what some Safe Table participants had to say about how their experiences impacted their work:

 **“What stood out to me** the most was the unprecedented state of burnout that we are experiencing/likely will continue to experience related to the pandemic. I believe this will affect the way I perceive and relate to my colleagues as we navigate health care delivery now and after the pandemic.”

“These discussions raise awareness of real-time issues wherein harm can be prevented before time is taken to research, publish, etc. Tracking and trending within one facility such as was done at our hospital regarding delayed treatment can help prevent the issues at other facilities before they arise.”

“This was a great resource to help drive conversation with other members of the interdisciplinary team to work together to find a solution for existing pressure injury issues during COVID-19. We have room to improve our process and procedures.”

“Our organization conducts daily safety huddles/debriefs. I would like to add the color-coded staffing level. This will help to standardize how we define staffing levels and support consistent follow-up/actions.”

“I like hearing what others have experienced and how their situations were handled — there is always something to learn and examples to take back to managers/co-workers on how others have handled their situations and what we can do or not do should we experience a similar scenario.”

“I thought this presentation was fabulous. The idea of shifting the perspective to what has happened to the individual instead of just reacting to their behavior is important. Developing a rapid response type team is brilliant, however, barriers are financial funding for this type of team. I'm seeing behavioral health security issues being more and more prevalent, I think this approach would be very beneficial.”

“I will share this information with my Quality Department. I found the information related to the stigma and bias and correlation to poor outcomes very interesting, and the focus of reducing trigger cycles for staff and patients/family very helpful.”

“Applicable topic — amazing to hear how other organizations have responded to situations. I am new in my role of quality and patient safety manager so very valuable.”

“I really enjoyed attending the Safe Table Forum discussion because the case summaries/preventions strategies/root cause analyses help our organization identify areas of improvement and/or confirmation our processes are working/successful.”

“Examples of other organizations improving (patient identification) process was helpful so that we can compare our current processes that may need to be improved. I liked the alert that fires when multiple charts are open as to remind the user to ensure they have the correct chart for the order being placed, etc.”

“I appreciate not only the quality of the information shared in CHPSO Safe Table Forums but also the variety of patient safety topics presented.”

Susan Gilpatrick
Manager of healthcare risk operations
SUTTER HEALTH

“As a risk officer for a very large foundation, I get questions all the time about who should contact the patient to start the CANDOR conversation. I think this forum helped frame the process in a way that makes it easier to determine.”

“High-reliability principles have helped our facility to significantly decrease patient harm events. We emphasize that we are a team and working together to keep our patients, staff, and visitors safe.”

“PRN prescription can be very confusing. This was a great webinar and hearing about specific examples of real-life situations can help with what to do to clarify, thus avoiding confusion and errors.”



CHPSO Member Listing

As of December 31, 2021

Company	City	State
Acute Rehabilitation Unit	West Covina	CA
Adventist Health	Roseville	CA
Adventist Health and Rideout	Marysville	CA
Adventist Health Bakersfield	Bakersfield	CA
Adventist Health Castle	Kailua	HI
Adventist Health Clear Lake	Clearlake	CA
Adventist Health Feather River	Paradise	CA
Adventist Health Glendale	Glendale	CA
Adventist Health Hanford	Hanford	CA
Adventist Health Howard Memorial	Willits	CA
Adventist Health Lodi Memorial	Lodi	CA
Adventist Health Mendocino Coast	Fort Bragg	CA
Adventist Health Portland	Portland	OR
Adventist Health Reedley	Reedley	CA
Adventist Health Selma	Selma	CA
Adventist Health Simi Valley	Simi Valley	CA
Adventist Health Sonora	Sonora	CA
Adventist Health St. Helena	St Helena	CA
Adventist Health Tehachapi Valley	Tehachapi	CA
Adventist Health Tillamook	Tillamook	WA
Adventist Health Tulare	Tulare	CA
Adventist Health Ukiah Valley	Ukiah	CA
Adventist Health Vallejo	Vallejo	CA
Adventist Health White Memorial	Los Angeles	CA
AHMC Anaheim Regional Medical Center	Anaheim	CA
AHMC Healthcare, Inc.	Alhambra	CA
Alameda Hospital	Alameda	CA
Alhambra Hospital Medical Center	Alhambra	CA
Alta Bates Summit Medical Center, Alta Bates Campus	Berkeley	CA
Alta Bates Summit Medical Center, Herrick Campus	Berkeley	CA
Alta Bates Summit Medical Center, Summit Campus	Oakland	CA
Alta Bates Summit Medical Center, Summit Campus, Hawthorne	Oakland	CA
Alta Hospitals System, LLC	Culver City	CA
Alvarado Hospital Medical Center	San Diego	CA
Anaheim Global Medical Center	Anaheim	CA
Annadel Medical Group	Santa Rosa	CA
Antelope Valley Health Center	Lancaster	CA
Antelope Valley Hospital	Lancaster	CA
Arizona General Hospital Laveen	Laveen	AZ
Arizona General Hospital Mesa	Mesa	AZ
Arrowhead Regional Medical Center	Colton	CA
Arroyo Grande Community Hospital	Arroyo Grande	CA
Bakersfield Behavioral Healthcare Hospital	Bakersfield	CA
Bakersfield Heart Hospital	Bakersfield	CA
Bakersfield Memorial Hospital	Bakersfield	CA
Ballard Rehabilitation Hospital	San Bernardino	CA
Banner Lassen Medical Center	Susanville	CA
Barlow Respiratory Hospital	Los Angeles	CA
Barton Memorial Hospital	South Lake Tahoe	CA
Bayview Behavioral Health Campus of Paradise Valley Hospital	Chula Vista	CA
Bear Valley Community Hospital	Big Bear Lake	CA
Bellflower Health Center	Bellflower	CA
Brazosport Regional Health System (St. Luke's)	Lake Jackson	TX
Burleson St. Joseph Health Center	Caldwell	TX
Burleson St. Joseph Manor - Caldwell	Caldwell	TX
California Cancer Center	Fresno	CA
California Hospital Medical Center	Los Angeles	CA
California Pacific Medical Center – Mission Bernal Campus	San Francisco	CA
California Pacific Medical Center, California Campus	San Francisco	CA
California Pacific Medical Center, Davies Campus	San Francisco	CA
California Pacific Medical Center, Pacific Campus	San Francisco	CA
Catalina Island Medical Center	Avalon	CA
Cedars-Sinai Marina Del Rey Hospital	Marina Del Rey	CA
Cedars-Sinai Medical Center	Los Angeles	CA
Centinela Hospital Medical Center	Inglewood	CA
Cerner Corporation	Kansas City	MO
Chandler Regional Medical Center	Chandler	AZ
Chapman Global Medical Center	Orange	CA
CHI Memorial Hospital - Chattanooga	Chattanooga	TN
CHI Memorial Hospital - Fort Oglethorpe	Fort Oglethorpe	GA
CHI St. Alexius Health - Bismarck	Bismarck	ND
CHI St. Alexius Health - Garrison	Garrison	ND

Company	City	State
CHI St. Alexius Health - Turtle Lake	Turtle Lake	ND
CHI St. Luke's Health Baylor Med Ctr	Houston	TX
CHI St. Vincent - Morrilton	Morrilton	AR
CHI St. Vincent Health Services - Little Rock	Little Rock	AR
CHI St. Vincent Medical Center North	Sherwood	AR
Children's Hospital Los Angeles	Los Angeles	CA
Children's Hospital of Orange County	Orange	CA
Chinese Hospital	San Francisco	CA
Chino Valley Medical Center	Chino	CA
CHOC Children's at Mission Hospital	Mission Viejo	CA
City Hospital at White Rock	Dallas	TX
City of Hope	Duarte	CA
Clovis Community Medical Center	Clovis	CA
Coast Plaza Hospital	Norwalk	CA
Coastal Health Center Group	Norwalk	CA
College Medical Center	Long Beach	CA
CommonSpirit Health	Chicago	IL
Community Behavioral Health Center	Fresno	CA
Community Health Center - Sierra	Fresno	CA
Community Hospital of Huntington Park	Huntington Park	CA
Community Hospital of San Bernardino	San Bernardino	CA
Community Hospital of the Monterey Peninsula	Monterey	CA
Community Medical Centers	Clovis	CA
Community Memorial Health System	Ventura	CA
Community Memorial Hospital	Ventura	CA
Community Regional Medical Center	Fresno	CA
Community Subacute and Transitional Care Center	Fresno	CA
Continuing Care Hospital - SJH	Lexington	KY
Cottage Health	Santa Barbara	CA
Cottage Rehabilitation Hospital	Santa Barbara	CA
Crozer Chester Medical Center	Upland	PA
Delano Regional Medical Center	Delano	CA
Deran Koligian Ambulatory Care Center	Fresno	CA
Desert Valley Hospital	Victorville	CA
Dignity Health	San Francisco	CA
Dignity Health Medical Foundation	Rancho Cordova	CA
Dollarhide Health Center	Compton	CA
Dominican Hospital	Santa Cruz	CA
East Los Angeles Doctors Hospital	Los Angeles	CA
East Los Angeles Health Center Group	Los Angeles	CA
East Orange General Hospital	East Orange	NJ
Eastern Connecticut Health Network	Manchester	CT
Eastern Connecticut Health Network	Vernon	CT
Eden Medical Center	Castro Valley	CA
Edward R. Roybal Comprehensive Health Center	Los Angeles	CA
Eisenhower Medical Center	Rancho Mirage	CA
El Camino Hospital	Mountain View	CA
El Camino Hospital Los Gatos	Los Gatos	CA
El Centro Regional Medical Center	El Centro	CA
El Monte Comprehensive Health Center	El Monte	CA
Emanate Health	Covina	CA
Emanate Health Diagnostic Imaging Center	Glendora	CA
Emanate Health Ferguson Outpatient Surgery Center	Glendora	CA
Emanate Health Foothill Family Practice Medical Group	Glendora	CA
Emanate Health Foothill Family Practice Medical Group	Glendora	CA
Emanate Health Foothill Presbyterian Hospital	Glendora	CA
Emanate Health Hospice & Home Care	West Covina	CA
Emanate Health Inter-Community Hospital	Covina	CA
Emanate Health Inter-Community Hospital Heart Center	West Covina	CA
Emanate Health Orthopedics - Chino	Chino	CA
Emanate Health Orthopedics - Glendora	Glendora	CA
Emanate Health Orthopedics - West Covina	West Covina	CA
Emanate Health Queen of the Valley Hospital	West Covina	CA
Emanate Health Sports Medicine & Rehabilitation - Chino	Chino	CA
Emanate Health Sports Medicine & Rehabilitation - Glendora	Glendora	CA
Emanate Health Sports Medicine & Rehabilitation - West Covina	West Covina	CA
Encino Hospital Medical Center	Encino	CA
Enloe Medical Center	Chico	CA
Enloe Medical Center — Cohasset Campus	Chico	CA
Enloe Regional Cancer Center	Chico	CA
Enloe Rehabilitation Center	Chico	CA
Fairchild Medical Center	Yreka	CA

CHPSO Member Listing

Company	City	State
Fairmont Campus of Alameda Health System	San Leandro	CA
Flaget Memorial Hospital	Bardstown	KY
Flatiron Health, Inc.	New York	NY
Foothill Regional Medical Center	Tustin	CA
Foothill Regional Medical Center	Tustin	CA
French Hospital Medical Center	San Luis Obispo	CA
Fresno Heart & Surgical Hospital	Fresno	CA
Garden Grove Hospital and Medical Center	Garden Grove	CA
Garfield Medical Center	Monterey Park	CA
Gateways Hospital and Mental Health Center	Los Angeles	CA
George L. Mee Memorial Hospital	King City	CA
Glendale Health Center	Glendale	CA
Glendale Memorial Hospital and Health Center	Glendale	CA
Glendora Community Hospital	Glendora	CA
Goleta Valley Cottage Hospital	Santa Barbara	CA
Good Samaritan Hospital - Bakersfield	Bakersfield	CA
Greater El Monte Community Hospital	South El Monte	CA
Grimes St. Joseph Health Center	Navasota	TX
H. Claude Hudson Comprehensive Health Center	Los Angeles	CA
Hazel Hawkins Memorial Hospital	Hollister	CA
Healdsburg District Hospitals	Healdsburg	CA
Hemet Valley Medical Center	Hemet	CA
Henry Mayo Newhall Hospital	Valencia	CA
High Desert Regional Health Center	Lancaster	CA
Highland Campus of Alameda Health System	Oakland	CA
Highland Hospital	Oakland	CA
Hoag Hospital Irvine	Irvine	CA
Hoag Medical Group	Irvine	CA
Hoag Memorial Hospital Presbyterian	Newport Beach	CA
Hoag Orthopedic Institute	Irvine	CA
Hollywood Presbyterian Medical Center	Los Angeles	CA
Hubert H. Humphrey Comprehensive Health Center	Los Angeles	CA
Huntington Beach Hospital	Huntington Beach	CA
Huntington Memorial Hospital	Pasadena	CA
Incline Village Community Hospital	Incline Village	NV
Jerold Phelps Community Hospital	Garberville	CA
Joe Arrington Cancer Center	Lubbock	TX
John C. Fremont Healthcare District	Mariposa	CA
John George Psychiatric Pavilion Campus of Alameda Health System	San Leandro	CA
John Muir Medical Center — Concord Campus	Concord	CA
John Muir Medical Center — Walnut Creek Campus	Walnut Creek	CA
Kāhi Mōhala Behavioral Health	Ewa Beach	HI
Kaweah Delta Health Care District	Visalia	CA
Kaweah Delta Medical Center — South Campus	Visalia	CA
Kaweah Delta Mental Health Hospital	Visalia	CA
Kaweah Delta Rehabilitation Hospital	Visalia	CA
Kentfield Rehabilitation & Specialty Hospital	Kentfield	CA
Kern Medical	Bakersfield	CA
Kern Valley Healthcare District	Lake Isabella	CA
Kindred Hospital — Brea	Brea	CA
Kindred Hospital — San Diego	San Diego	CA
Kindred Hospital — San Francisco Bay Area	San Leandro	CA
KPC Healthcare	Santa Ana	CA
La Palma Intercommunity Hospital	La Palma	CA
La Puente Health Center	La Puente	CA
LAC/Harbor - UCLA Medical Center	Torrance	CA
LAC+USC Medical Center	Los Angeles	CA
Lake Los Angeles Community Clinic	Lake Los Angeles	CA
Langley Porter	San Francisco	CA
Littlerock Community Clinic	Littlerock	CA
Loma Linda University Children's Hospital	Loma Linda	CA
Loma Linda University Medical Center — Murrieta	Murrieta	CA
Lompoc Valley Medical Center	Lompoc	CA
Long Beach Comprehensive Health Center	Long Beach	CA
Long Beach Memorial	Long Beach	CA
Los Angeles Community Hospital	Los Angeles	CA
Los Angeles Community Hospital at Bellflower	Bellflower	CA
Los Angeles Community Hospital at Bellflower	Bellflower	CA
Los Angeles Community Hospital at Los Angeles	Los Angeles	CA
Los Angeles Community Hospital at Norwalk	Norwalk	CA
Los Angeles Community Hospital at Norwalk	Norwalk	CA
Los Angeles County Department of Health Services	Los Angeles	CA

Company	City	State
Los Angeles County Olive View - UCLA Medical Center	Sylmar	CA
Lucile Packard Children's Hospital Stanford	Palo Alto	CA
Mad River Community Hospital	Arcata	CA
Madera Community Hospital	Madera	CA
Madison St. Joseph Health Center - Madisonville	Madisonville	TX
Mammoth Hospital	Mammoth Lakes	CA
Marian Regional Medical Center	Santa Maria	CA
Marian Regional Medical Center West	Santa Maria	CA
MarinHealth Medical Center	Greenbrae	CA
Mark Twain Medical Center	San Andreas	CA
Marshall Medical Cameron Park	Cameron Park	CA
Marshall Medical Center	Placerville	CA
Martin Luther King, Jr. Community Hospital	Los Angeles	CA
Mayers Memorial Hospital District	Fall River Mills	CA
Memorial Hospital Los Banos	Los Banos	CA
Memorial Hospital of Gardena	Gardena	CA
Memorial Medical Center	Modesto	CA
Memorial Medical Center - Livingston	Livingston	TX
Memorial Medical Center - San Augustine	San Augustine	TX
Memorial Medical Center of East Texas	Lufkin	TX
Menifee Valley Medical Center	Menifee	CA
Menlo Park Surgical Hospital	Menlo Park	CA
Mercy General Hospital	Sacramento	CA
Mercy Gilbert Medical Center	Gilbert	AZ
Mercy Hospital of Folsom	Folsom	CA
Mercy Hospital Southwest	Bakersfield	CA
Mercy Hospitals - Bakersfield	Bakersfield	CA
Mercy Medical Center	Roseburg	OR
Mercy Medical Center Merced	Merced	CA
Mercy Medical Center Mount Shasta	Mount Shasta	CA
Mercy Medical Center Redding	Redding	CA
Mercy Medical Pavilion	Merced	CA
Mercy San Juan Medical Center	Carmichael	CA
MercyOne Des Moines Medical Center	Des Moines	IA
MercyOne West Des Moines Medical Center	West Des Moines	IA
Methodist Hospital of Sacramento	Sacramento	CA
USC Arcadia Hospital	Arcadia	CA
Metro Health Center Group	Nashville	TN
Mid Valley Comprehensive Health Center	Van Nuys	CA
Miller Children's & Women's Hospital Long Beach	Long Beach	CA
Mills Health Center	San Mateo	CA
Mills-Peninsula Health Services	Burlingame	CA
Mills-Peninsula Medical Center	Burlingame	CA
Mission Bay Hospital	San Francisco	CA
Mission Heritage Medical Group	Mission Viejo	CA
Mission Hospital Laguna Beach	Laguna Beach	CA
Mission Hospital Mission Viejo	Mission Viejo	CA
Modoc Medical Center	Alturas	CA
Montclair Hospital Medical Center	Montclair	CA
Monterey Park Hospital	Monterey Park	CA
MPHS Senior Focus	Burlingame	CA
Natividad Medical Center	Salinas	CA
NorthBay Healthcare Corporation	Fairfield	CA
NorthBay Medical Center	Fairfield	CA
NorthBay Outpatient Clinics	Fairfield	CA
NorthBay VacaValley Hospital	Vacaville	CA
Northern Inyo Hospital	Bishop	CA
Northridge Hospital Medical Center	Northridge	CA
Novato Community Hospital	Novato	CA
O'Connor Hospital	San Jose	CA
Ojai Valley Community Hospital	Ojai	CA
OLE Health	Napa	CA
Olympia Medical Center	Los Angeles	CA
Orange Coast Memorial Medical Center	Fountain Valley	CA
Orange County Global Medical Center	Santa Ana	CA
Orchard Hospital	Gridley	CA
Oroville Hospital	Oroville	CA
Ose Adams Medical Pavilion	Sacramento	CA
Our Lady of Fatima Hospital	North Providence	RI
Pacific Central Coast Health Centers	San Luis Obispo	CA
Pacific Diagnostic Laboratories	San Luis Obispo	CA
Palmdale Regional Medical Center	Palmdale	CA

CHPSO Member Listing

Company	City	State
Palo Alto Medical Foundation	Palo Alto	CA
Palomar Health	Escondido	CA
Palomar Medical Center Downtown Escondido	Escondido	CA
Palomar Medical Center Escondido	Escondido	CA
Palomar Medical Center Poway	Poway	CA
Paradise Valley Hospital	National City	CA
Parkview Community Hospital Medical Center	Riverside	CA
Petaluma Valley Hospital	Petaluma	CA
PIH Health Good Samaritan Hospital	Los Angeles	CA
PIH Health Hospital — Downey	Downey	CA
PIH Health Hospital — Whittier	Whittier	CA
Pioneers Memorial Healthcare District	Brawley	CA
Pipeline Health, LLC	El Segundo	CA
Plumas District Hospital	Quincy	CA
Pomona Valley Hospital Medical Center	Pomona	CA
Prebys Cardiovascular Institute	La Jolla	CA
Prospect Medical Holdings, Inc.	Los Angeles	CA
Providence Health & Services — Southern California	Torrance	CA
Providence Holy Cross Medical Center	Mission Hills	CA
Providence Little Company of Mary Medical Center San Pedro	San Pedro	CA
Providence Little Company of Mary Medical Center Torrance	Torrance	CA
Providence Saint Joseph Medical Center	Burbank	CA
Providence Tarzana Medical Center	Tarzana	CA
Queen of the Valley Medical Associates	Napa	CA
Queen of the Valley Medical Center	Napa	CA
Rady Children's Hospital — San Diego	San Diego	CA
Rancho Los Amigos National Rehabilitation Center	Downey	CA
Redlands Community Hospital	Redlands	CA
Redwood Memorial Hospital	Fortuna	CA
Riverside University Health System - Medical Center	Moreno Valley	CA
Roger Williams Medical Center	Providence	RI
Ronald Reagan UCLA Medical Center	Los Angeles	CA
Saddleback Memorial Medical Center - Laguna Hills	Laguna Hills	CA
Saint Agnes Medical Center	Fresno	CA
Saint Francis Memorial Hospital	San Francisco	CA
Saint Joseph Berea	Brea	KY
Saint Joseph East	Lexington	KY
Saint Joseph Hospital	Lexington	KY
Saint Joseph London	London	KY
Saint Joseph Mt. Sterling	Mount Sterling	KY
Salinas Valley Memorial Healthcare System	Salinas	CA
San Antonio Regional Hospital	Upland	CA
San Bernardino Mountains Community Hospital	Lake Arrowhead	CA
San Dimas Community Hospital	San Dimas	CA
San Fernando Health Center	San Fernando	CA
San Gabriel Valley Health Center Group	San Gabriel	CA
San Gabriel Valley Medical Center	San Gabriel	CA
San Geronio Memorial Hospital	Banning	CA
San Juan Regional Medical Center	Farmington	NM
San Leandro Hospital	San Leandro	CA
San Mateo Medical Center	San Mateo	CA
Santa Barbara Cottage Hospital	Santa Barbara	CA
Santa Clara Valley Medical Center	San Jose	CA
Santa Paula Hospital	Santa Paula	CA
Santa Rosa Memorial Hospital	Santa Rosa	CA
Santa Ynez Valley Cottage Hospital	Solvang	CA
Scripps Green Hospital	La Jolla	CA
Scripps Health	San Diego	CA
Scripps Memorial Hospital Encinitas	Encinitas	CA
Scripps Memorial Hospital La Jolla	La Jolla	CA
Scripps Mercy Hospital	San Diego	CA
Scripps Mercy Hospital Chula Vista	Chula Vista	CA
Select Specialty Hospital - San Diego	San Diego	CA
Sequoia Hospital	Redwood City	CA
Seton Coastside	Moss Beach	CA
Seton Medical Center	Daly City	CA
Sharp Chula Vista Medical Center	Chula Vista	CA
Sharp Coronado Hospital and Healthcare Center	Coronado	CA
Sharp Grossmont Hospital	La Mesa	CA
Sharp HealthCare	San Diego	CA
Sharp Home Health	San Diego	CA
Sharp Mary Birch Hospital for Women & Newborns	San Diego	CA

Company	City	State
Sharp McDonald Center	San Diego	CA
Sharp Memorial Hospital	San Diego	CA
Sharp Mesa Vista Hospital	San Diego	CA
Sharp Rees – Stealy Medical Group	San Diego	CA
Shasta Regional Medical Center	Redding	CA
Sherman Oaks Hospital	Sherman Oaks	CA
Shriners Hospitals for Children - Northern California	Sacramento	CA
Sierra Nevada Memorial Hospital	Grass Valley	CA
Sierra View Medical Center	Porterville	CA
Sonoma Valley Hospital	Sonoma	CA
South Coast Global Medical Center	Santa Ana	CA
South Valley Health Center	Palmdale	CA
Southern California Hospital at Culver City	Culver City	CA
Southern California Hospital at Culver City	Los Angeles	CA
Southern California Hospital at Hollywood	Los Angeles	CA
Southern California Hospital at Hollywood	Hollywood	CA
Southern California Hospital at Van Nuys	Van Nuys	CA
Southern California Hospital at Van Nuys	Van Nuys	CA
Springfield Hospital	Springfield	PA
St. Anthony Hospital	Pendleton	OR
St. Bernardine Medical Center	San Bernardino	CA
St. Elizabeth Community Hospital	Red Bluff	CA
St. Francis Medical Center	Lynwood	CA
St. John's Pleasant Valley Hospital	Camarillo	CA
St. John's Regional Medical Center	Oxnard	CA
St. Joseph Assisted Living	Bryan	TX
St. Joseph Health	Irvine	CA
St. Joseph Health Center - College Station	College Station	TX
St. Joseph Heritage Medical Group	Orange	CA
St. Joseph Home Care Network	Sonoma	CA
St. Joseph Home Health Network	Orange	CA
St. Joseph Hospital Acute Rehabilitation Unit	Eureka	CA
St. Joseph Hospital, Eureka	Eureka	CA
St. Joseph Hospital, Orange	Orange	CA
St. Joseph Manor - Bryan	Bryan	TX
St. Joseph Regional Health Center - Bryan	Bryan	TX
St. Joseph's Behavioral Health Center	Stockton	CA
St. Joseph's Hospital and Medical Center (Barrow Neurological Institute)	Phoenix	AZ
St. Joseph's Medical Center of Stockton	Stockton	CA
St. Joseph's Westgate Medical Center	Glendale	AZ
St. Jude Medical Center	Fullerton	CA
St. Louise Regional Hospital	Gilroy	CA
St. Luke's Hospital at the Vintage	Houston	TX
St. Luke's Lakeside Hospital - Woodlands	The Woodlands	TX
St. Luke's Patients Medical Center - Pasadena	Pasadena	TX
St. Luke's Sugar Land	Sugar Land	TX
St. Luke's Woodlands Hospital	The Woodlands	TX
St. Mary High Desert Medical Group	Victorville	CA
St. Mary Medical Center - Apple Valley	Apple Valley	CA
St. Mary Medical Center Long Beach	Long Beach	CA
St. Mary's Medical Center	San Francisco	CA
St. Rose Dominican Hospitals — Rose de Lima Campus	Henderson	NV
St. Rose Dominican Hospitals — San Martin Campus	Las Vegas	NV
St. Rose Dominican Hospitals — Siena Campus	Henderson	NV
St. Vincent Medical Center	Los Angeles	CA
Stanford Health Care - ValleyCare	Pleasanton	CA
Stanford Health Care - ValleyCare-Livermore	Livermore	CA
Stanford Health Care System	Palo Alto	CA
Stewart & Lynda Resnick Neuropsychiatric Hospital at UCLA	Los Angeles	CA
Sulpizio Cardiovascular Center	La Jolla	CA
Sutter Amador Hospital	Jackson	CA
Sutter Auburn Faith Hospital	Auburn	CA
Sutter Care at Home	Emeryville	CA
Sutter Center for Psychiatry	Sacramento	CA
Sutter Coast Hospital	Crescent City	CA
Sutter Davis Hospital	Davis	CA
Sutter Delta Medical Center	Antioch	CA
Sutter East Bay Medical Foundation	Lafayette	CA
Sutter Gould Medical Foundation	Modesto	CA
Sutter Health	Sacramento	CA
Sutter Lakeside Hospital	Lakeport	CA
Sutter Maternity & Surgery Center of Santa Cruz	Santa Cruz	CA

CHPSO Member Listing

Company	City	State
Sutter Medical Center — Sacramento	Sacramento	CA
Sutter Medical Foundation	Sacramento	CA
Sutter Medical Foundation - Central	Sacramento	CA
Sutter Pacific Heart Centers	San Francisco	CA
Sutter Pacific Medical Foundation	San Francisco	CA
Sutter Physician Services	Sacramento	CA
Sutter Rehab Institute	Roseville	CA
Sutter Roseville Medical Center	Roseville	CA
Sutter Santa Rosa Regional Hospital	Santa Rosa	CA
Sutter SeniorCare	Sacramento	CA
Sutter Solano Cancer Center	Vallejo	CA
Sutter Solano Medical Center	Vallejo	CA
Sutter Surgery Center Division	Sacramento	CA
Sutter Surgical Hospital	Yuba City	CA
Sutter Tracy Community Hospital	Tracy	CA
Tahoe Forest Hospital District	Truckee	CA
Taylor Hospital	Ridley Park	PA
Torrance Memorial Medical Center	Torrance	CA
Tri-City Healthcare District	Oceanside	CA
Trinity Health System dba Trinity Hospital Holding Co	Steubenville	OH
Trinity Hospital	Weaverville	CA
Trinity Hospital Twin City	Dennison	OH
UC San Diego Health	San Diego	CA
UC San Diego Health - Ambulatory	La Jolla	CA
UC San Diego Health - Jacobs Medical Center	La Jolla	CA
UC San Diego Health Hillcrest – Hillcrest Medical Center	San Diego	CA
UCLA Medical Center, Santa Monica	Santa Monica	CA

Company	City	State
UCSD Health Sciences	La Jolla	CA
UCSF Benioff Children's Hospital Oakland	Oakland	CA
UCSF Children's Hospital San Francisco	San Francisco	CA
UCSF Medical Center	San Francisco	CA
UCSF Medical Center at Mount Zion	San Francisco	CA
University of California	Oakland	CA
University of California Davis Medical Center	Sacramento	CA
University of California Irvine Medical Center	Orange	CA
Valley Children's Healthcare	Madera	CA
Valley Presbyterian Hospital	Van Nuys	CA
Vaughn School Based Health Center	San Fernando	CA
Ventura County Health Care Agency	Ventura	CA
Ventura County Medical Center	Ventura	CA
Verity Health System	Redwood City	CA
Vibra Hospital of Sacramento	Folsom	CA
Victor Valley Global Medical Center	Victorville	CA
Warrack Campus of Sutter Medical Center of Santa Rosa	Santa Rosa	CA
Washington Hospital Healthcare System	Fremont	CA
Waterbury Hospital	Waterbury	CT
Watsonville Community Hospital	Watsonville	CA
West Anaheim Medical Center	Anaheim	CA
Whittier Hospital Medical Center	Whittier	CA
Wilmington Health Center	Wilmington	CA
Woodland Memorial Hospital	Woodland	CA
Yvapai Regional Medical Center East	Prescott Valley	AZ
Yvapai Regional Medical Center West	Prescott	AZ
Zuckerberg San Francisco General Hospital and Trauma Center	San Francisco	CA



Eliminating preventable harm and improving the quality of health care delivery

Contact: info@chpso.org

Visit: www.chpso.org

1215 K Street, Suite 1915
Sacramento, CA 95814
(916) 552-2600

restore.
inspire.
lead.

Working together to achieve
zero harm in patient care



New for 2022, the HQI Annual
Conference is coming to locations
in both Northern and Southern

California! The internationally renowned patient safety experts and keynotes will be riveting regardless of where you see them, and the tracks on general patient safety, joy in practice, applied data, and health equity will be the same in both places — *simply choose which location is best for you.*

**Two dates and
locations to
choose from:**

SOUTHERN CALIFORNIA

October 3 & 4, 2022

Long Beach, CA

[More Information](#)

NORTHERN CALIFORNIA

November 6 & 7, 2022

Napa, CA

[More Information](#)