Veterans Health Administration Response to the COVID-19 Crisis: Surveillance to Action

Maureen A. Charles, DNP, EJD, Edward E. Yackel, DNP,*
Peter D. Mills, PhD, MS,*† and Deborah E. Welsh, MS, BA**

Objectives

Monitoring patient safety and quality of care during a pandemic is critically important. The U.S. Veterans Health Administration's (VHA) multifaceted strategic approach to evaluating the coronavirus disease 2019 (COVID-19) pandemic as it relates to patient-safety and quality-of-care concerns will be described, and data trends that resulted in the delivery of system-wide patient safety messages will be presented.

Methods

As the COVID-19 pandemic began to surge, the VHA established a strategic approach to identify emerging patient safety and quality concerns. The concerns were analyzed and patient safety notices were developed to communicate information and recommendations to the staff to aid in clinical decision making.

Results

Between February 2020 and May 2020, there were 1713 issue briefs and 3143 safety reports reviewed and analyzed to identify system-wide trends and patient safety signals. The most common themes noted among the issue briefs were staff exposed to COVID-19, patients testing positive for COVID-19, patient falls, and medication events. Although the primary themes noted in patient safety reports were not following COVID-19–related protocols, staff exposure to COVID-19, patient testing positive for COVID-19, patient falls, and medication events.

Conclusions

Healthcare organizations should respond to crisis events by proactively monitoring data sources that help warn the healthcare system about potential or actual patient safety events. Early detection methods and warning signals assist healthcare organizations in proactively identifying gaps and subsequently notifying appropriate stakeholders of potential patient safety events and actual patient harms so that decisions and action plans are put into place to mitigate harm.

At the onset of the coronavirus disease 2019 (COVID-19) pandemic in early 2020, healthcare systems around the world engaged in crisis management to care for those affected by the virus.[1–4] Ex-

perts around the world worked tirelessly to try and anticipate the next steps of the pandemic response. As with any crisis, there is often variance in how organizations or communities respond. For example, Johns Hopkins Medicine created a local system for analyzing event reports to identify and address threats to patient safety,[1] and New York City developed a collaboration between public, private, and federal hospitals to address the demands placed on their healthcare facilities.[3] In Paris, France, the Bichat-Claude Bernard hospital worked to care for patients with COVID-19 and attempted to anticipate the next steps of their pandemic response by ensuring the health and safety of frontline workers while managing logistics through coordination with other regional and national hospitals.[2] Like the other healthcare systems mentioned, the Veterans Health Administration (VHA) developed their own pandemic response measures such as the use of volunteer staff members to surge to assist facilities hit the hardest by the pandemic. The VHA also helped take on patient overflow from local areas when able. Lastly, the VHA implemented a system to monitor the safety of the healthcare system.

During the early days of the pandemic, common themes across the world arose and were noted among healthcare systems. The need for clear communication was evident as policies and procedures frequently changed. There was also a need to anticipate requirements for increased patient capacity during surges, to set up triage systems for patients needing ventilators, to coordinate logistics during supply shortages; and to ensure the health and safety of frontline staff.[2–5] Likewise valuable lessons have been shared and documented throughout the literature to include the need for patient safety and quality improvement personnel to monitor and manage the surge[5]; the need for a national surveillance system[6]; the importance of telemedicine, personal hygiene, and infection control[7]; and the implications for our healthcare system in general.[8]

The VHA, the largest integrated healthcare system in the United States, which cares for more than 9 million veterans at 170 VHA medical centers, also had to adapt and respond to the rapid spread of COVID-19.[9] The VHA's goals of providing safe and high-quality patient care while protecting staff who cared for those infected with COVID-19 was like other healthcare systems described in the literature.

In the early days of the pandemic, the VHA's National Center for Patient Safety established an enterprise-level approach to monitor patient safety and quality of care system issues comparable to the approach reported in the literature from Johns Hopkins Medicine.[1] This article describes how the system was developed and monitored, defines patient safety trend information, and elucidates enterprise interventions and lessons learned that may be applied to other healthcare systems.

METHODS

As initial reports of COVID-19 increased throughout the country, it became clear to the VHA's National Center for Patient Safety that a systematic process or strategy was needed to identify, collect, and analyze emerging pandemic-related patient safety and

FIGURE 1. COVID-19 JPSR and IB review teams schedule for analysis.

quality concerns. Before the pandemic, the VHA had a well-established and systematic process to monitor patient safety and quality of care.[10,11] The systematic process ensured that anonymous reports of patient safety and quality concerns at each VHA medical facility were available for review and analysis by the National Center for Patient Safety. A dedicated multidisciplinary team of nurses, physicians, allied healthcare professionals, statisticians, analysts, and biomedical and human factors engineers from the National Center for Patient Safety rapidly assembled to create an innovative process for identifying, collecting, and analyzing pandemic-related patient safety and quality concerns. This internal team began meeting daily in March of 2020 to review information from government and national organizations such as the Centers for Disease Control and Prevention (CDC), the U.S. Food and Drug Administration (FDA), ECRI (previously known as the Emergency Care Research Institute), news stories, and data from various patient safety and quality sources to identify nation and system-wide trends in healthcare quality and patient safety.

The National Center for Patient Safety team established a strategy outlining a weekly schedule for collecting and analyzing, processing, and reporting data (Fig. 1). The team extracted data to identify emerging patient safety concerns that affected or could affect patients and the clinical care rendered by frontline healthcare workers. One of the patient safety and quality systems, the team monitored was information entered through the VHA's patient safety reporting application called the Joint Patient Safety Reporting (JPSR) system. The JPSR system provides a standardized method for capturing patient safety reports from frontline healthcare workers that can be evaluated by a specific location, region, or throughout the enterprise.

Using the established strategy, the team analyzed safety reports related to COVID-19 as well as any reports flagged by patient safety professionals at VHA medical facilities for national (system-wide) attention. Reports flagged for enterprise-level attention were addressed using an established internal methodology, the Safety Triage Assessment Repository (STAR) evaluation process. The STAR process uses an issue tracking repository to facilitate a multidisciplinary assessment of reported patient safety events.

Another source for patient safety and quality information evaluated by the National Center for Patient Safety team was VHA Issue Briefs. Similar to the National Incident Management System's standardized approach to incident management, the VHA uses generalized incident reporting system to capture and report critical events that occur anywhere throughout in the system.[4] Issue briefs cover a wide variety of topics to include local emergencies, equipment shortages, staff illness, communication breakdowns, and adverse patient safety events using standardized template. The template includes the following categories: date of report, brief statement of issue and stats, and estimated resolution to initiate notification of the appropriate chain of command for the submitted report. The issue briefs reach the incident termination phase once the emergency has been resolved or the next appropriate phase has been completed.

The increased numbers of safety reports and issue briefs during the initial phase of COVID-19 required the National Center for Patient Safety to establish 2 separate working groups, a patient safety group, and an issue brief group, to evaluate and identify patient and staff safety trends as they emerged in real-time throughout the healthcare system.

Statisticians from the National Center for Patient Safety designed and implemented natural language processing methodologies to identify and extract any safety reports or issue briefs that specifically referenced COVID-19. The VHA Issue Brief Tracker tool was used to extract issue briefs and PolyAnalyst 6.5 (Megaputer Intelligence Inc, Bloomington, Indiana) was used to extract identified safety reports. The safety reports and issue briefs identified were then provided to the 2 working groups to conduct further clinical analysis and determine if the data met the criteria for inclusion in data sets analyzed. The following search terms were used to determine if the reports were directly related to COVID-19: "COVID," "China," Coron," "Corona," COVID-19″, "virus," "travel," "PPE," and "Wuhan." The issue brief workgroup developed a code book to aid with further exam of the reports. The analysis included coding the issue briefs according to type of incident, diagnosis of COVID-19, level of harm, and location of the event. The safety report workgroup developed a similar code book to analyze reports by type of event, COVID-19–confirmed care, event labeled for national (National Center for Patient Safety) interest, level of harm, location of event, and trends of interest. Events labeled for national attention are those events that the local
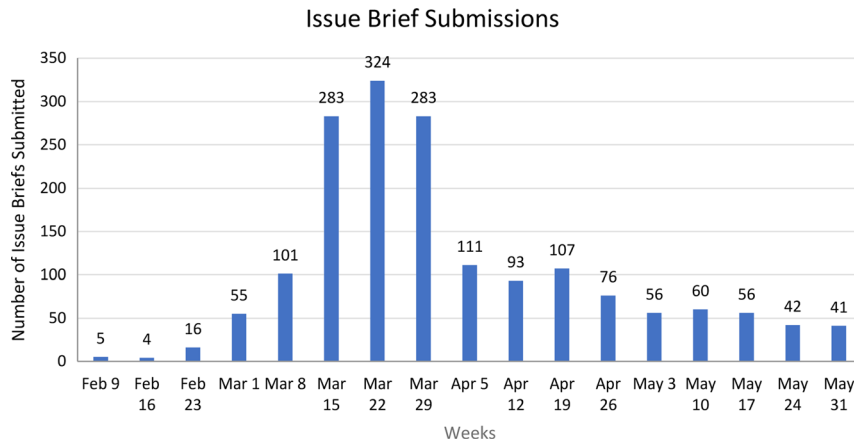
Issue Brief Submissions

FIGURE 2. Bar graph showing the number of COVID-19–related Issues Briefs by week in 2020.

facility identified as having potential implications for other facilities in the VHA system.

RESULTS

The National Center for Patient Safety teams assessed data from February 1, 2020, to May 31, 2020. This evaluation resulted in the review and analysis of 1713 issue briefs and 3143 safety reports. A noticeable increase in the number of issue briefs relating to COVID-19 occurred between March 15 and March 29, 2020, with the highest reports received during the week of March 22, 2020 (Fig. 2).

The highest reporting periods for safety reports were noted during the week of March 29 and April 5, 2020 (Fig. 3). The key themes identified from coding and analyzing the issue briefs and safety reports are noted in Figures 4 and 5. The most common types of issue briefs were as follows: reports of COVID-19–positive patients (441), followed by staff positive (241), staff, exposed (171), closed units (141), and death of a patient due to COVID-19 (117) (Fig. 4). The most common types of safety reports were not following COVID-19–related protocols (643), followed by staff exposed to COVID-19 (331), patient testing positive for COVID-19 (179), patient falls (103), and medication events (85) (Fig. 5).

Safety reports labeled for national (National Center for Patient Safety) attention were reviewed using the STAR evaluation process, which included analysis of information obtained from within the VHA as well as information from external sources such as the

FDA and CDC. An analysis of all available information and data resulted in the research, development, and publication of 6 Patient Safety Notices that were issued to 170 VHA facilities between April 3, 2020, and July 14, 2020. A Patient Safety Notice is a method used by the National Center for Patient Safety to raise awareness throughout the VHA of patient safety vulnerabilities and provides a heads-up to healthcare and administrative staff regarding an issue even when solutions may not be immediately evident. The notice also captures guidance updates or changes as they are reported by other federal agencies like the FDA or CDC. The notices developed by the National Center for Patient Safety were written in consultation and coordination with VHA subject matter experts across the healthcare system such as the Offices of Mental Health and Suicide Prevention, Nursing Services, Sterile Processing, Pulmonary, Critical Care, and Sleep Medicine to ensure all stakeholders were aware of and had input into these key safety messages.

DISCUSSION

Although emergency and pandemic response plans are extremely important to have in place before the onset of a crisis, it is also very important to develop local, regional, and national processes for monitoring and trending patient safety and quality data within and across healthcare systems. Large healthcare systems, like the VHA, must be able to monitor trends and identify concerns in healthcare delivery both proactively and in real time to assist in signal detection. The information (or signals) obtained from
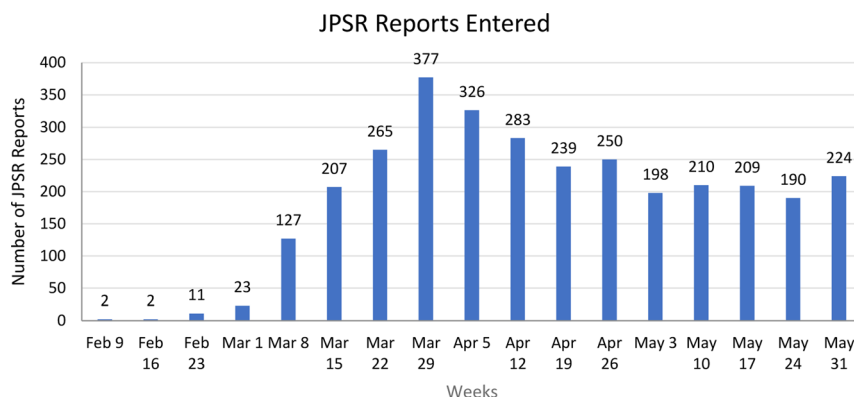
JPSR Reports Entered

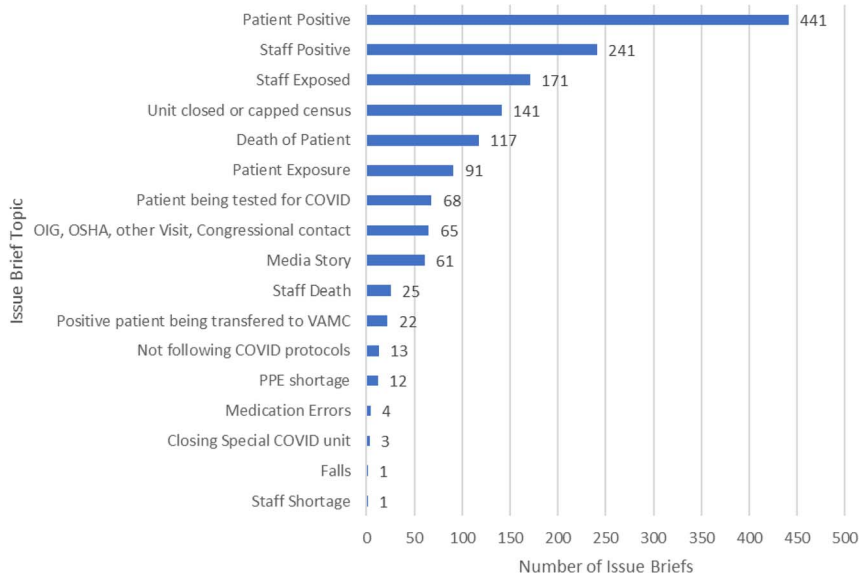**FIGURE 3.** Bar graph showing the number of JPSRs by week in 2020.

FIGURE 4. COVID-19–related IB topics identified, February to May 2020.

monitoring various data systems or input methods is crucial to development of clinical and administrative guidance needed when systems are strained under emergency conditions.

Within the VHA, the evaluation of signals received during the early stages of the pandemic led to the identification of 6 critical safety concerns that prompted the need for additional guidance for those delivering healthcare services. In response, the National Center for Patient Safety published Patient Safety Notices surrounding these critical issues, which included guidance on the use of personal protective equipment in response to COVID-19, infusion pump use outside of patient rooms, thermal temperature screening considerations, safety concerns with the utilization of powered air purifying respirators, use of medical devices that required powered air supply for inflation, and guidance using personal protective equipment on acute mental health units (Table 1).

Gaps may occur within healthcare systems when crisis management requires the rapid allocation of scarce resources (i.e., personal protective equipment), management of personnel shortages (including reassignment of patient safety and quality improvement staff), and expansion of efforts aimed at communication and transparency.[1,2,5] Reassignment of patient safety and quality improvement staff is of particular concern during a crisis because these staff play a vital role in identifying, collecting, and analyzing emerging patient safety and quality concerns. The National Center for Patient Safety's ability to issue Patient Safety Notices would have been hampered had patient safety and healthcare quality staff been assigned other duties.

Patient Safety Notices were a strategic tool used by the National Center for Patient Safety to communicate, raise awareness, and increase transparency of patient safety concerns identified by
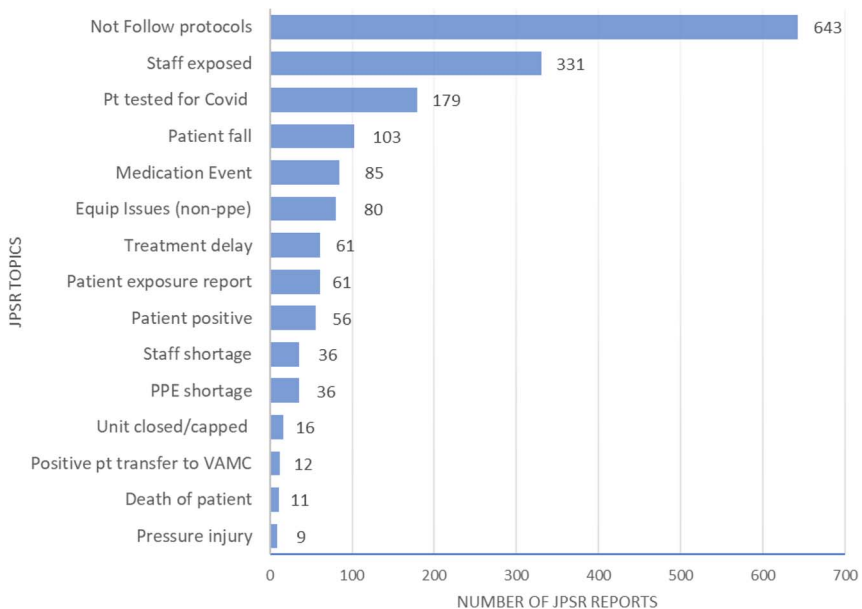

FIGURE 5. COVID-19–related JPSR topics identified, February to May 2020.

TABLE 1. COVID-Related Patient Safety Alerts Issued by NCPS Between March and July 2020

Patient Safety Alert Name	Description
N20-06 REVISED-PPE strategies in response to COVID-19	VHA PPE strategies in response to COVID-19 • Eye protection (e.g., goggles, face shields) • Gowns • Facemasks • N95 respirators, elastomeric respirators, PAPRs • Gloves
N20-07 Patient safety aspects of using infusion pumps outside of patient rooms	Patient safety aspects of using infusion pumps outside of patient rooms, including intravenous infusion pumps, syringe pumps, administration sets, and other infusion devices
N20-08 Temperature screening considerations	Temperature screening considerations to identify possible cases of COVID-19 including appropriate use of thermometers and screening thermographs for temperature screening
N20-11 Safety concerns regarding use of PAPRs during the COVID-19	Safety concerns regarding use of PAPRs and PAPR variants during the COVID-19 pandemic including PAPRs from various manufacturers
N20-12 COVID-19 and powered air supplies for inflation	COVID-19 and patient safety considerations when using medical devices that require a powered air supply for inflation including specialty mattresses and cushions, safe patient handling and mobility technologies, intermittent pneumatic compression devices, and other medical devices that require a powered air supply for inflation
N20-10 PPE guidance MH units	Guidance on the use of face coverings for patients on acute mental health units, specifically regarding suicide risk, during the COVID-19 pandemic

PAPRs, powered air-purifying respirators; PPE, personal protective equipment.

frontline staff throughout the VHA. As noted previously, frontline staff submitted 643 patient safety reports that signaled their concern that COVID-19 protocols were not followed. The STAR evaluation process and issuance of Patient Safety Notices were important components of a multifaceted strategy to monitor patient safety and healthcare quality events during the COVID-19 pandemic. Spalluto et al[12] posit that a healthcare crisis requires leaders to increase transparency efforts through enhanced communication methods such as bidirectional communication. The Patient Safety Notice uses a closed-loop communication method as an excellent example of how an enhanced communication method is used to increases transparency throughout the VHA to ensure patients continue to receive safe, high-quality care while protecting the staff who care for them.

One strength of the methodology used by the National Center for Patient Safety was the analysis of both patient safety reports and issue briefs. The early signals obtained helped identify clinical areas where targeted guidance was needed to ensure the continued delivery of high-quality and safe patient care. An important difference between issue briefs and patient safety reports was that issue briefs reflected the concerns of the facility but did not identify patient safety issues requiring national (VHA National Center for Patient Safety) action. The analysis of content found within patient safety reports allowed for the identification of concerns associated with protocols, variation in practice, and ways in which staff were inadvertently exposed to COVID-19.

Having a multifaceted strategic plan for identifying, collecting, and analyzing patient safety and healthcare quality events was essential in the development of guidance for the field during the initial stages of the worldwide pandemic. Established patient safety and healthcare quality programs must be maintained during any crisis that stresses healthcare systems because attention may be diverted elsewhere during crisis management activities. Identification and resolution of system-wide quality and patient safety concerns can only occur if a culture exists where local patient safety and quality teams at each facility are encouraged to report patient safety concerns. These concerns must be communicated and addressed at the regional and national levels to ensure that standardized guidance is provided to keep patients safe from harm.

CONCLUSIONS

Healthcare systems should respond to crisis events by monitoring data systems that reveal early warning signals that potential or actual patient safety events are occurring. It is imperative to have policy and procedures in place that describe how healthcare organizations will monitor potential or actual patient safety concerns during a disaster or pandemic. It is also important to have a strategic plan in place to quickly stand up multidisciplinary analytical teams to collect, analyze, and identify system-wide trends in the data that might affect multiple healthcare facilities within the healthcare system. Once patient safety issues are identified, it is critical to have a protocol in place for distribution of clear, specific guidance for all stakeholders that includes a method for closed-loop communication. Closed-loop communication is especially important during a crisis to keep healthcare workers informed and safe in a rapidly changing healthcare environment so that they can provide high-quality and safe patient care. Leaders at all levels within a healthcare organization need to understand that the safety guidance was communicated, received, and acted upon by those rendering care.

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