Virus out, Safety in: Using Quality Improvement to Rapidly Respond to Occupational Health Needs During the COVID-19 Pandemic

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Background

The coronavirus disease 2019 (COVID-19) pandemic emerged and immediately presented challenges to our health care systems. The “status quo” infrastructure was not able to adequately respond to the needs of its community, becoming reactionary to the impending crisis.

Quality improvement (QI) was described by Batalden and Davidoff as “the unceasing efforts of everyone to make changes that will lead to better patient outcomes (health), better system performance (care), and better professional development (learning).”¹ Conventionally considered a systematic and methodical process, QI offers opportunity to implement small cycles of change to rapidly assess their impact on the process. This rapid-cycle change is critical in an emergent situation where there is minimal forewarning and ability to prepare. QI tools and methods were used to build an organizational response when we started to see our first local COVID-19 surge in March 2020 and were further encouraged when Staines et al² proposed the utility of employing individuals with QI skills early in the pandemic. COVID-19 has been a consuming landscape, but despite this, others have published on their use of QI tools during COVID-19.^{3,4} When QI skills are discussed in this setting, their applicability often has been focused on organizational change with respect to the care of COVID-19 patients.

Health care systems not only focus on their patients’ care, but also on the safety and well-being of their employees. Our Department of Employee

Occupational Health (EOH) prepared to meet the needs of more than 5200 health care employees and health professional trainees by providing guidance to local leadership, concerned supervisors, and apprehensive employees, as well as mitigate increased employee infection risk, protect employee privacy, and support the essential workforce.

QI Tools Used

Our vision was to meet the increased COVID-19 safety needs by providing timely information to our leadership regarding employees’ work exposures, infection risk, work status, and infection status. Our aim was to establish a standard operating procedure, workflow, and tracking tool to support our leadership within 2 weeks from initial assignment date.

Applying the Model for Improvement methods, an interdisciplinary team with varying EOH and QI knowledge developed this response.⁵ We integrated and reconciled evolving information daily from the Centers for Disease Control & Prevention, public health departments, local and national offices, and affiliated institutions.

The following is a list of QI tools used and their practical application:

Driver Diagram

We used a driver diagram to help understand the initial challenges our local EOH team experienced in this unique environment. By using this tool, we were able to see what we were lacking in our current condition to help us achieve our goal. The main drivers we found were few designated EOH personnel, rapidly changing guidelines, disjointed communication, and lack of informatics structure.

Team Formation and Stakeholder Engagement

Initially, EOH was understaffed to meet the increased needs created by COVID-19. After a brief assessment,

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a team with QI background, including health professional trainees in QI training programs, was established to help meet the response needs and communicate with the health system's Incident Command. The EOH and QI team's roles and responsibilities, and accountability to meet aims were established. The team's success permitted allocation of resources of assigned personnel to defined roles by early May 2020.

Process Map

Process mapping allowed us to develop current and then future state flow diagrams of employees' and their supervisors' interface with EOH with regard to COVID-19 concerns. This mapping allowed us to develop a unified response to provide guidance to leadership, supervisors, and employees. An example of a process map we created is a COVID-19 exposure risk assessment and associated guidance.

Cause and Effect Diagram

A cause and effect diagram allowed us to dive deeper into understanding the underlying factors that were barriers to enacting a complete, robust COVID-19 response immediately. The diagram helped us realize that EOH had fractured communication, incomplete standard operating procedures, and inadequate tracking and measurement capabilities.

Measurement

Manual daily data collection and tracking of employee exposure, exposure risk, employee symptoms, and COVID-19 status informed the production of a web-based data tool that allowed for increased accessibility to timely data analysis to support employee tracking and reporting to leadership.

Plan-do-study-act Cycles

Rapid change cycles were used to employ all COVID-19 EOH responses. This framework allowed us to evaluate changes we implemented in our organizational response. Using PDSA cycles, we accomplished employee screening upon entry, employee COVID-19 risk assessment, exposure tracking, supervisor and employee guidance, standard operating procedures, COVID-19 employee testing and follow-up, role education, and leadership reporting.

Conclusion

The rapid evolution of COVID-19 is a barrier to implementation with new information daily, escalating fear, rationed testing, protective equipment shortage, and shifting leadership requests. By using QI and engaging staff and trainees with this expertise we were able to respond to our employees', supervisors', and leadership's needs to bring about organizational change. We are encouraged to see others believe QI can be used in emergent situations and hope that, by sharing our initiatives, others with QI skills are persuaded to do so as well.

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Conflicts of Interest

The authors have no conflicts of interest to disclose.

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Author Contributions

Dr Falconer substantially contributed to the conceptualization and implementation of the quality improvement initiative, drafted, and revised the article for critically important intellectual content, and approved the version to be published. Dr Tomolo substantially contributed to the conceptualization of the quality improvement initiative, supervised the implementation of the quality improvement initiative, revised the article for critically important intellectual content, and approved the version to be published.

Previous Presentations

Previous abstract poster presentation as, "Virus Out, Safety In: Rapidly Responding to COVID-19 in Occupational Health" at the 2020 VA Quality Scholars Summer Institute in August 2020.

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