EXPERIENCE EXCHANGE

Development of an employee call center for healthcare workers with symptoms and exposures to COVID-19

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ABSTRACT

Coronavirus disease 2019 placed unprecedented challenges on the modern healthcare system. In addition to caring for patients directly affected by the virus, hospitals and clinics had to quickly mobilize forces in order to protect and manage employees with symptoms and/or exposures to COVID-19. Interventions are needed to efficiently diagnose and quarantine healthcare workers with disease while returning those without disease expediently in order to maintain a workforce capable of dealing with the pandemic surge. This article describes the Johns Hopkins system-wide occupational health response to the coronavirus outbreak. Specifically, the steps taken to develop and implement an employee covid call center that fielded 9,000 calls during the $2\frac{1}{2}$ month initial surge of the virus are outlined. The 24/7 availability and rapid triage of healthcare workers led to an ultimate decline in call volume despite increasing exposure to the virus and rising hospitalizations.

Key Words: COVID-19, Occupational health, Call center, Employee health

1. INTRODUCTION

The coronavirus disease 2019 (COVID-19) pandemic has taken its toll on healthcare workers (HCWs). In addition to caring for patients with unpredictable and severe illness, working long hours, and potentially assuming roles outside of their historical scope of practice, HCWs have had to deal with trying to protect themselves and their families in the setting of uncertainty and insufficient availability of personal protective equipment.[1] Early reports from China highlighted the deaths of health care professionals after occupational exposure to severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), the pathogen responsible for COVID-19.[2, 3] This potential lethality of SARS-CoV-2 has been shown to increase the risk of developing fear, anxiety, and depression among HCWs.[4]

Most hospital occupational health departments are trained to evaluate and manage clinical exposures and routine illnesses but are not staffed to deal with an outbreak of this magnitude and acuity. In the Baltimore/Washington area, coronavirus cases began to rise precipitously in early March 2020. Supporting over 56,000 employees, the Johns Hopkins occupational health clinics throughout the health system were inundated with calls. Employee calls ranged from reporting symptomology representative of COVID-19, to concerns sur-

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rounding potential exposures, and anxieties about the safety of their work location. It was imperative to respond to each of these inquiries promptly, so as to return employees to the workforce and maintain critical staffing levels. Approximately 60% (n = 33,433) of the Johns Hopkins workforce is classified as patient-facing frontline employees. Additionally, it became necessary to unify the response among occupational health clinics throughout the system, which had historically been independently functioning units.

The following is an account of our institution's occupational health response to COVID-19. Specifically, we describe the steps taken to establish and implement a central call center designed to meet the medical concerns of our employees while maintaining staffing levels necessary for operation of our clinical enterprise.

2. METHODS/INTERVENTION

Given the acuity of the situation and the rapidity at which medical information was evolving, a formal needs assessment was not performed. Instead, a small task force consisting of leaders in ambulatory, hospital operations, and occupational health was established to quickly develop a framework and infrastructure that could balance the medical care of employees with workforce needs. The traditional occupational health infrastructure was not sufficient to handle the surge demand related to COVID. A decision to develop a unique employee hotline for COVID-related symptoms and exposure concerns was made and subsequently named the Employee COVID Call Center (ECCC). The formation of the ECCC required action by numerous individuals covering a number of different domains:

2.1 Space

As with most academic medical centers, space is a commodity. The new and rapidly changing nature of COVID-19 compounded by provisional staffing and ad-hoc call center technology prohibited a work-from-home set-up. Therefore, the decision was made to initially develop the ECCC in a conference room on the 1st floor of an older building on campus (former psychiatric hospital built in 1913). The first floor location was ideal for entrance and egress of employees. Given increased knowledge about the importance of social distancing and adequate ventilation, the staffing needs to support call volumes quickly outgrew this space. To guarantee the safety of its employees, the ECCC was moved to a floor of a modern medical education building, which was vacant due to the temporary cessation of classes necessitated by the pandemic. This new space consisted of five moderate-sized classrooms for call center agents adjacent to conference rooms for the incident command center and for occupational health employees.

2.2 Logistical support

The Johns Hopkins Health System Logistics Chief (a current medical student with a background in emergency management) made the development of the ECCC a priority. He convened a multidisciplinary group of professionals from the information technology department, the telecommunications department, patient access services center, and facilities engineering. After the initial space was recognized as being too small to support social distancing the priority of the team shifted to rapidly establishing the infrastructure to support up to 50 call takers, and 10 additional clinical managers. Because a location that was both spacious enough to support this large call center and had the wiring infrastructure in place to do so was not available, the decision was made to use voice-over-internet-protocol phones. These phones were attached to clinical workstations with electronic patient care records access and were able to utilize the internet infrastructure already in place in the medical education building. When the move to the medical school was made, the Logistics Chief enlisted other medical students to help set up and test the phones, workstations, and printers as well as provide daily logistical support to meet supply needs as they arose. After opening of the large call center, on-site telecommunications support was available throughout the day to help prevent any disruptions in service.

2.3 Staffing

A project manager shepherded the mobilization of staff to function as call agents. Due to the need for clinical assessment and triage, nurses were recruited to staff the call center. The center began by utilizing nurses from across the Johns Hopkins Health System who volunteered their time, in addition to continuing to perform their normal responsibilities. As the center evolved, communication with Johns Hopkins Medicine nursing leadership occurred to identify employees needing redeployment due to the institutional decision to close all elective outpatient visits/procedures or due to occupational health accommodations. Over 125 nurses were identified and scheduled for shifts. Additionally, leadership at the Schools of Medicine and Nursing helped recruit students to volunteer to work in this capacity.

Recruitment of providers evolved over time. Initially, volunteer faculty, preferentially those with an infectious disease background, were enlisted to assist in answering questions in the call center and placing orders for the COVID-19 reverse transcriptase polymerase chain reaction test that was performed at the Johns Hopkins Hospital laboratory. As the pandemic expanded, the infectious disease faculty was

needed to perform other roles throughout the health system so volunteer faculty was recruited from all specialties within the Department of Medicine. As the testing and exposure algorithms were refined, advanced practice providers were added to the staffing pool, with general internal medicine and occupational medicine physician leaders serving as support. The project manager ultimately developed and maintained all schedules, as well as the data tools and analytics related to tracking calls, intake information, and dispositions. In total, over 300 nurses, students, advanced practice providers, and physicians participated in the ECCC.

2.4 Scope and hours of operation

The ECCC was originally developed to serve the needs of the occupational health department at the Johns Hopkins Hospital Shortly after opening, the need to help support all the Johns Hopkins Health system hospitals and clinics was identified, due to the burgeoning call volume at other occupational health sites. Within 5 days of being in the expanded call space, the ECCC became the centralized resource for all Johns Hopkins employees, regardless of their primary work location. The call volume was robust and the operating hours of the ECCC needed to respond. The call center has operated 7 days per week since inception. Originally, it was operational from 7 am to 7pm but changed to 7 a.m. to 11 p.m. and then to 24/7.

2.5 Pathway development

Leaders within the ambulatory team worked with the occupational health leads to develop and modify call center algorithms that were designed to balance employee and patient safety, workforce needs, and the availability of diagnostic testing. Multiple iterations of the guidelines were necessary to respond to an increased understanding of the disease presentations and course. These algorithms were then reviewed and edited by the Hospital Epidemiology and Infection Control department and ultimately approved by the Incident Commander for the COVID-19 response as well as by the President of the health system. The algorithms were published on the Johns Hopkins Health System intranet and adopted by occupational health departments at all hospitals and facilities within the enterprise.

2.6 Training

The rapid evolution of knowledge about COVID-19 coupled with the transient nature of redeployed staff and providers, originally required in-person training sessions prior to each shift. As algorithm guidelines stabilized, online recordings were developed and adapted to meet the needs of new staff. Existing staff were updated regularly on clinical changes to the pathway. Additionally, ECCC staff communicated health and well-being supplemental resource offerings for employees affected by COVID-19. Leadership of the ECCC and occupational health were available 24/7 for questions.

2.7 Employee monitoring

The importance of actively monitoring employees and encouraging them to call the ECCC was emphasized. Marketing and Communications messaged reminder to employees to utilize the ECCC with any concerns. This was also disseminated to all trainees through hospital and medical school leadership. The Human Resources Department initiated an effort for employees to report any COVID-related symptoms through the time keeping system and/or at the time of log-in to clinical workstation computers. The message displayed on the system encouraged employees with any symptoms to notify their supervisor and call the ECCC. A report of these self-attestations was also sent to occupational health services. This symptom attestation message needed to be modified as the algorithms were changed. Additionally, a symptom monitoring system (emocha Health®) was leveraged and asymptomatic patients concerned about exposures were enrolled into the system by the ECCC agents.

2.8 Relationships

The success of the ECCC hinged on streamlined communication between various stakeholders. The most important relationship was between the call center temporary staff and permanent occupational health staff. A subset of occupational health employees were co-located with the ECCC in order to efficiently communicate off duty and return to work information to employees and their managers. For the first several weeks of the response, daily calls between the central ECCC and existing occupational health teams were conducted to communicate and coordinate efforts. Additionally, direct communication with the COVID test scheduling and resulting center helped prioritize the testing of front-line healthcare workers. A close working relationship with Hospital Epidemiology and Infection Control was vital to adoption of changes in pathways and disposition of employees with situations falling outside of the established algorithms. Additionally, regular communication with the human resources department, the legal department, and information technology team were necessary to ensure that the ECCC was appropriately meeting employee needs.

2.9 Leadership

The importance of managing employee symptoms and concerns was recognized early by institutional leaders. The rapid mobilization of resources could not have occurred without the unwavering support of the Senior Director of Emergency Management and the Dean and Executive Vice Dean of the

School of Medicine.

3. Results

The ECCC officially began on March 18, 2020. Initially, testing was ordered exclusively on employees with 2 of 5 symptoms (fever, cough, myalgia, shortness of breath, and sore throat). Employees with one symptom were permitted to work (unless they had a fever) and were told to call the ECCC back if any new symptoms arose. Those that were sent for testing, were told to stay off work until cleared by occupational health. Over time, the algorithm was modified 8 times within 8 weeks, accounting for changes in knowledge about symptoms (addition of loss of taste and smell, diarrhea, headache) and the expanded availability of testing.

Between March 18 and June 1 approximately 9,000 incoming calls were fielded by nurses working in the ECCC. Early on, many of the calls surrounded in-hospital exposures of providers and staff. With limited infrastructure of hospital infection control departments to perform contact tracing, ECCC staff were relied upon to perform exposure assessments and the need for employees to self-quarantine. Universal masking was adopted system-wide on April 3, 2020, diminishing the need for in-depth exposure assessments.

Total calls to and from the ECCC increased rapidly and peaked on April 1, 2020 at 450 (see Figure 1). Calls began to decline thereafter, likely due to greater familiarity with COVID-19 and in-hospital processes, the adoption of universal masking precautions, and reassurance that the presence of the ECCC provided. As Figure 1 indicates, the decrease in calls persisted despite a rise in COVID-related admissions and new cases being diagnosed in the state of Maryland.

A total of 4,455 COVID tests were performed on symptomatic frontline healthcare workers (13% of total frontline employees). The positivity rate during this period was 8.9%. This was well below the positive rate for the state of Maryland during the same time period.[5]

4. Discussion

The COVID-19 pandemic has put significant strain on the healthcare workforce. Fraher, et al. described steps that could be taken to expand workforce capacity.[6] Specifically, they looked at increasing healthcare providers' scope of practice by temporarily rescinding medical malpractice policies, training staff to perform tasks and operate technology outside of their current level of expertise, utilizing 3rd and 4th year medical students to offload non-COVID-19 care, re-engaging retired professionals, and enhancing telehealth services. However, little has been written on how to most efficiently assess, evaluate, and support frontline HCWs in order to maintain an existing workforce during the pandemic. We describe the efforts of the Johns Hopkins Health System to address this aspect of labor force management.

The pandemic caused an acute strain on the occupational health departments at Johns Hopkins' six hospitals and their affiliated clinics. The Employee Covid Call Center served as a relief valve for occupational health that was immediate and sustainable. Co-location of the ECCC with some occupational health staff was integral to keeping employees off work and returning them to duty in a streamlined fashion. Additionally, frequent and direct communication with infection control, informational technology, communications, and the COVID testing center was necessary in order to adapt to the fluid medical environment, one that required that the employee evaluation and testing algorithm be amended weekly.

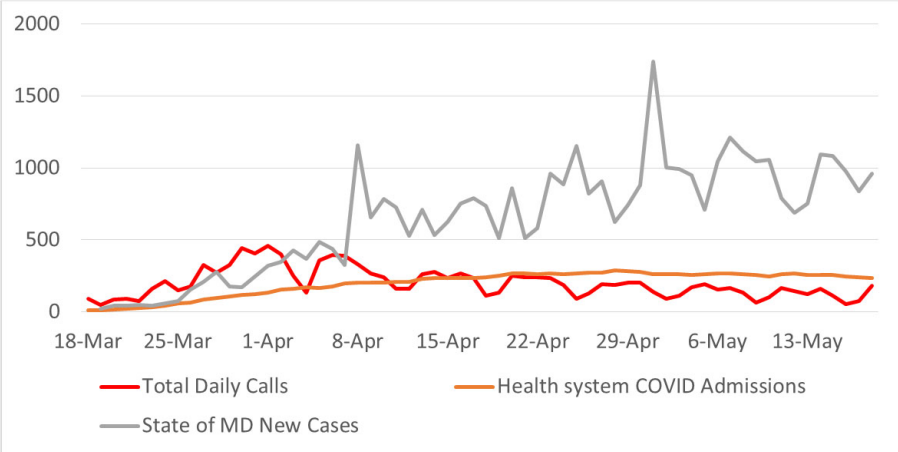

Figure 1. Total Calls to the ECCC compared to total COVID-related hospital admissions and new COVID cases in Maryland

The success of the ECCC has been recognized throughout the University. Since the first wave of the pandemic, the breadth of its activity has been significantly expanded. The new Johns Hopkins COVID Call Center (JHCCC) has become an integral part of the reopening of undergraduate and graduate campuses in order to maintain flexibility to respond to any subsequent outbreaks of coronavirus cases. A unit dedicated to contact tracing of students has formed under the JHCCC. Most recently, the JHCCC has been utilized to field calls regarding employee concerns and symptoms related to coronavirus vaccines.

There were a number of barriers that needed to be overcome in order for a call center to be developed. These issues should be taken into consideration in order for the ECCC to be generalizable to other institutions. First, the rapid mobilization of resources would be limiting under most circumstances but were quickly supported by leadership during the pandemic. Continued support of a longer-term vision is also unwavering. Second, the redeployment of staff from their regular positions to the ECCC occurred quickly and with full support of central nursing services. The Department of Medicine also rapidly reached out to faculty to volunteer to support the call center. Third, silos had to be broken down and the flow of information needed to occur freely between hospitals, clinics, and departments. The Johns Hopkins Incident Command Center continues to serve in this role, with data being openly available through the intranet. Finally, functional and privacy issues requiring integration between the occupational health electronic medical record (EMR) and the established patient-care EMR was a challenge that required decisive action, an engaged IT support team, and oversight to assure that employee confidentiality was maintained.

5. Conclusions

There is no playbook on how to deal with a pandemic of this nature. Despite the best strategic plans, decisions are often reactionary rather than anticipatory. The development of the COVID Call Center is one such decision that had a positive impact as part of our Institution's response to the coronavirus pandemic. Enacting such an initiative required rapid mobilization of resources and staff that can limit its generalizability. However, if those structural limitations can be overcome, this response has the potential to serve as a model for hospitals and health care systems as they deal with anticipated waves of COVID-19 or when faced with similar widespread contagions in the future.

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Conflicts of Interest Disclosure

The authors declare they have no conflicts of interest.

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