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How did Occupational and Employee Health Services Provide Strategic Input to Organizational Emergency Contingency Planning During the COVID-19 Pandemic? A Case Study

“In the midst of chaos, there is also opportunity”—Sun-Tzu, A. Arte da Guerra

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Contingency planning is a vital task for organizations in the public and private sectors. The Severe Acute Respiratory Syndrome Corona Virus-2 (SARS-CoV-2) pandemic has affected nearly all sectors of public and private life. The pandemic also has revealed that despite disaster professionals’ contingency plans, too often effectiveness has been relatively inadequate. This is regrettable given the

fact that epidemics and pandemics have plagued humankind throughout history, with perhaps the earliest known example occurring in 430 B.C.E. Then, what may have been typhoid fever, decimated the Athenian population, possibly contributing to Sparta’s victory during the Peloponnesian War.¹ The failure to seriously consider pandemics during disaster planning is even more confusing in light of the notoriety of recent outbreaks of Ebola, Severe Acute Respiratory Syndrome Coronavirus-1, Middle Eastern Respiratory Syndrome, and the H5N1 Avian Influenza (“bird flu”). These lapses of judgement may be partially explained by the hubris, embodied in published statements from experts, that relegate the threat to humanity posed by pandemics to the dustbin of history.² John Barry’s *The Great Influenza* (2004) on the 1918 Spanish Flu pandemic notes that despite disaster planning by government agencies and businesses worldwide, “planning does not equal preparation, and too many political leaders ignored the plans.”³ Of note, Soper,⁴ who discovered the asymptomatic carrier of typhoid, “Typhoid Mary,” described a set of non-pharmaceutical interventions for pandemics quite similar to what we now recommend. We argue that medical and healthcare input into organizational emergency contingency planning is a necessity—and the occupational health physician is uniquely poised to act.

Evidence-based, executable, effective pandemic response plans unfortunately often are the exception rather than the rule. Organizational pandemic plans seem frequently to have been developed to satisfy regulatory body mandates and serve a documentary function. As an effort to redress this state of affairs and representing the 4th in the Journal of Occupational and Environmental Medicine series discussing one of the six building blocks of the World Health Organization (WHO) Framework for Strengthening Health Systems, we briefly review barriers to action, how occupational health professionals can contribute, and illustrate these ideas with the layered COVID-19 defense strategy implemented at the Oak Ridge National Laboratory (ORNL). (Everybody’s Business: Strengthening Health Systems to Improve Health Outcomes: WHO Framework for Action. World Health Organization; 2007 AT: https://www.who.int/healthsystems/strategy/everybodys_business.pdf).

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BARRIERS TO IMPLEMENTATION OF GUIDANCE

Incorporating public health guidance into contingency plans can be challenging to execute when the threat is felt as ambiguous. This is compounded if public health guidance is unclear, contradictory, poorly communicated, and/or disseminated from multiple agencies as has been the case to date in the SARS-CoV-2 pandemic. Public health guidance should be clear, authoritative, accurate, evidence/science-based, effectively communicated, and thoroughly coordinated by the multiple stakeholder agencies. However, even with solid public health guidance, there are barriers that must be overcome prior to the emergence of an actual threat.

The first barrier is often the lack of an appropriately qualified healthcare professional to serve as member of the contingency planning/preparedness/response team. Another all-too-common scenario is for contingency planners to reach out to a physician or other healthcare professional for input, but the selection is based on convenience or acquaintance rather than qualification. The solution to this is intuitively obvious: place a qualified (this is not a situation where any available physician or nurse will do) and experienced medical planner on contingency/disaster planning/response teams well before the disaster occurs.

The second barrier is a lack of interdisciplinary understanding within the contingency planning team. Medical planners tend to broadly focus on minimizing and mitigating illnesses, injuries, and death. In contrast, other disciplines typically focus on aspects such as security, logistics (eg, food, water, shelter, transportation), public safety, societal disruption, and potential or probable economic losses. Disagreements around prioritization can lead to conflict between medical professionals and non-medical planners/contingency response leaders. The solution to this barrier is to ensure all team members understand and respect the roles, missions, and responsibilities of each position.

The following major tasks of pandemic planning include:

- Estimating the potential health impact of a pandemic.
- Developing contingency plans for health care services in a pandemic.

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- Consulting and sharing information with the healthcare community.
- Helping the private sector plan for business continuity.
- Ensuring that members of the public have the information they need to prepare.⁵

At the risk of stating the obvious, all these tasks must reinforce the overarching objective “to prevent the spreading of the infection or contagion.” This is an overriding goal within the contingency planning group itself and in public messaging. This includes avoiding “zero-sum” thinking, combatting influences of social media-based information to which even contingency planners can be vulnerable, and demonstrating calm and evidenced-based medical leadership. This includes avoiding the pitfall of “optimism bias” as well (the tendency to believe that negative events may befall others but not ourselves).⁶

The medical historian D.S. Jones reminds us that “leaders need to think carefully, weigh risks in context, and pursue policies commensurate with the magnitude of the threat.”⁷ The assessment of the threat’s magnitude must not be under- or overestimated. Arguably, the United States’ slow initial response to COVID-19 is attributable to underestimation of the risk posed by SARS-CoV-2. The default bias for epidemic/pandemic risk assessments should be to risk overestimation rather than underestimation (ie, avoid optimism bias).

GUIDANCE

As planning proceeds (ideally in the pre-event phase) the following steps must be built into the plan:

1. Coordination mechanisms with organizational executive leadership (assuming the organization’s executive leader/CEO/COO is not part of the incident command apparatus).
2. Develop vertical communication strategy and channels from executive leadership to all levels of the organization.⁸
3. Develop funding plans and coordinate with CFO/organization funding authority to “free up liquidity quickly in order to remove a potential barrier to a swift response.”⁹
4. Develop logistics plans that consider potential supply chain disruptions and workarounds.
5. Develop cross-sector partnerships⁹ and relationships with state, local and federal governmental organizations, healthcare organizations, appropriate private-sector organizations, disaster response organizations as required.
6. Develop and harness information technology, cybersecurity, and information privacy plan.
7. Clear understanding of all reporting requirements.

MEDICAL LEADERSHIP AND COVID-19

Leadership is both an art and science, just as is the practice of medicine. Space does not permit extended discussion of leadership principles, qualities, and development. However, we note basic elements which the occupational medicine professional can and should bring to the table. These include the following:

1. Modeling calm while providing fact-based guidance.
2. Mitigating the contagion of fear.
3. Advising on effective messaging (and never shying away from being up front on difficult subjects such as expected mortality).
4. Demonstrating active listening and empathy.
5. Seeking to elevate common purpose to support effective action.

CRITICAL ASPECTS OF ORNL’S LAYERED COVID-19 DEFENSE STRATEGY

ORNL is the largest National Laboratory for the U.S. Department of Energy (DOE). In early 2020, facing the emerging pandemic, the Health Services Division (HSD) of ORNL stood up a layered COVID-19 defense strategy. We sought to implement the principles described above and effectively transform ORNL’s occupational health clinic into a “public health department,” while continuing ongoing occupational health services.¹⁰ Our goal was to enable ORNL to maintain continuity of operations in conducting vital scientific (eg, world’s fastest supercomputer; Spallation Neutron Source facility, High Flux Isotope Reactor, etc) and national security missions. HSD rapidly added to the existing (less than adequate) pandemic plan, benefiting from the relevant military medicine (and epidemic response) experiences of the Medical Director. Arms of ORNL’s layered defense included:

1. Insertion of ORNL’s Medical Director into ORNL’s senior-level management team charged with full authority to manage all aspects of operations related to the pandemic.
2. Ongoing, frequent consultation at all levels of management.
3. Scores of virtual “town halls” for thousands of employees to include those working from home.
4. Launching extensive molecular testing by Real Time-Polymerase Chain Reaction (RT-PCR) for SARS-CoV-2 targeting

(a) all employees working on site and random samples of the work force, (b) frequent testing of mission critical employees, and (c) testing of symptomatic and suspected exposure cases.

5. Establishment of onsite RT-PCR testing capability through standing up a high-complexity CLIA Laboratory.
6. Assertive screening and identification of positives/suspected positives, with rapid isolation/quarantine as appropriate.
7. Training of HSD workforce to support rapid contact tracing of known/suspected positive employees.
8. Careful mandatory return to work screening policies and procedures implemented with ORNL-developed information technology tools.
9. Immediate development of databases to track exposures, quarantines, PCR testing, and employee telephone evaluation/consulting with both on and off-site workers.
10. Rapid and flexible responses to national supply chain bottlenecks for molecular testing.
11. Doubling HSD’s workforce by using temporary administrative and healthcare workers as well as employees from other ORNL directorates.
12. Development of a vaccination distribution plan for EUA-approved vaccines and a surveillance program for antibody status on prior COVID-19 positive employees and for those receiving the Pfizer or Moderna vaccine.

These interventions have come at a large financial cost as well as expenditure of time and energy. HSD staff frequently worked at least 12-hour days with minimal or no time off. The principles articulated above guided all interventions. An esprit de corps was nurtured, staff rose to the occasion, and ORNL management supported medical advice and devoted substantial resources to HSD. In turn, ORNL has maintained successful continuity of essential scientific and national security missions. To date, HSD has administered approximately 35,000 PCR tests for SARS-CoV-2 in our “test-test-test” strategy and have a global case positivity rate of 1.6% (April to December 31, 2020)—dramatically lower than local, state, and national Covid-19 positivity rates.

SUMMARY

In summary, to ensure medical advice and public health guidance are incorporated in contingency plans, accomplishment of the two following essential tasks is necessary:

1. Healthcare professions must heed the advice of General George S. Patton,

“Prepare for the unknown by studying how others have coped with the unforeseeable and the unpredictable.” In other words, healthcare professionals must obtain the requisite disaster management knowledge, training and skills to be active participants in pre-disaster/contingency planning, and in disaster/contingency response/incident management teams.

2. Appropriately skilled/trained healthcare professionals must make themselves available for active participation, and on rare occasions insist upon involvement when incident command may not welcome the addition of an appropriately skilled, trained, and knowledgeable healthcare professional.

Adlai Stevenson’s statement, “Nature is indifferent to the survival of the human species, including Americans” is undoubtedly true. It is essential that we treat pandemics as a realistic threat. This means qualified healthcare professionals must be active participants in all phases of planning and response.

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