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by Douglas E. Himberger, Joan Bishop, and Mike Magoon

01/27/2009

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Business Performance during a Disease Outbreak

A new study measures how businesses could survive economic disruption in the event of a pandemic.

by Douglas E. Himberger, Joan Bishop, and Mike Magoon

Could your organization continue operations during an outbreak of pandemic influenza or a biological attack of the plague? Most business executives would prefer not to think about this question, but they should. An outbreak of avian flu could cause up to 40 percent of employees to be absent from work due to illness, the need to care for ill family members, and fear of infection, according to the U.S. Department of Health and Human Services. It could also trigger US$3 trillion in economic losses as businesses struggle to maintain operations in the face of widespread illness and death, according to Dr. David Nabarro, who has been leading the United Nations' efforts to contain avian and human influenza since 2005. As for bioterrorism, a U.S. Congressional commission warned in December 2008 that a terrorist attack will likely occur within the next five years, and that "terrorists are more likely to unleash an aerosol can filled with pathogens than to strike with a nuclear weapon."

Nabarro and other health officials have been urging businesses to prepare for a pandemic by readying a variety of social-distancing and infection-control measures. These measures, which entail avoiding close contact with others and observing strict hygiene practices, are widely recognized as effective in restricting the spread of disease, but little data exists on their potential impact on business operations. Would employees actually comply with such restrictions? And, more important, how would the measures affect morale and performance?

To address these questions in a rigorous, controlled workplace study, Booz Allen Hamilton (the Washington, D.C.–based strategy and technology consulting firm) joined with Lockheed Martin Corporation and the Safe America Foundation to conduct a first-of-a-kind experiment. If businesses and government agencies are expected to adopt these social-distancing and infection-control measures during a pandemic, they will need practical, realistic lessons to help guide implementation and ensure both compliance and smooth, efficient operations.

Simulating an Outbreak

For our experiment, we exercised Lockheed Martin's Pandemic Response Plan during a simulated infectious disease outbreak at one of the company's regional IT support offices. The call center has approximately 75 employees, including about 25 contract employees, who assist corporate employees with their computer and network needs. The simulated outbreak lasted three weeks, during which time employees followed the same strict regimen of behaviors that would be demanded of them during a real infectious disease crisis.

The social-distancing measures, for example,

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required employees to stay at least three feet away from one another and avoid physical contact, such as shaking hands. They also had to enter and exit the building at a single door; replace face-to-face meetings with telecon-ferencing; cancel workshops, training sessions, and other public meetings; refrain from sharing office equip-ment of any kind; and abstain from using the cafeteria, vending machines, and microwave and other food-relat-ed appliances. With regard to infection control, employ-ees had to adhere to a stringent hand-hygiene regimen that included using alcohol-based hand sanitizers and antimicrobial wipes after touching common areas, such as telephones or door handles. They also had to keep their own immediate area disinfected and take out their personal trash before leaving for the day.

Prior to beginning the study, we set 80 percent com-pliance as the minimum level needed for a realistic study, and then monitored employees' compliance through on-site observations and self-reporting by employees. Performance was measured using Lockheed Martin's own metric, called Occupancy Time — the time employees spend on work-related tasks, such as providing assistance to people over the phone. We compared the employees' Occupancy Time during the three-week experiment with their performance during the three-week periods imme-diately preceding and immediately following the experi-ment. In addition, we compared their performance during these three periods with Lockheed Martin's regional call centers — our control group — that did not implement the disease prevention measures.

Compliance and Complaints

During the three weeks that the interventions were implemented, business performance at the experimental site improved slightly. Employees' Occupancy Time increased from 52 percent in the pre-experimental period to nearly 57 percent during the period when the preven-tative measures were implemented. Occupancy Time then decreased to 53 percent during the three-week peri-od after the simulated outbreak. Results were roughly similar at the non-experimental regional call centers, which had Occupancy Time measures of 56 percent (pre-experiment), 56.5 percent (during the experiment), and 53 percent (post-experiment). The modest performance increase during the intervention period could be explained by several factors. It is possible that call center performance was aided by the Hawthorne effect, which causes experimental subjects to display short-term improvement because they know they are being observed. It also is possible, however, that the company call centers were simply busier during that three-week period.

Employees also demonstrated strong compliance with the interventions, though they embraced social distancing much more readily than infection control; average compliance ranged from 86 percent to 96 per-cent for the former, but just 69 percent to 84 percent for the latter. Still, the average compliance for the com-bined activities was well above the 80 percent mini-mum: Observers recorded an average compliance of 92 percent, while employees self-reported an average com-pliance of 89 percent.

As might be expected, the interventions added to regular workday stress. Some employees reported that they felt isolated because they could not leave the office complex and had to spend more time in their cubicles, separated from co-workers. Asked to describe their experiences, they said that social distancing "wears on you and you go stir crazy…it is like being in a cave."

Some felt trapped and claustrophobic. Walking long distances to the designated bathrooms was inconvenient, as were the restrictions against using the vending areas and cafeteria. Smokers could not take their usual smoking breaks. Also inconvenient was the constant hand washing and cleaning of their workspaces and desks, which one person said made him feel as if he were developing an obsessive-compulsive disorder.

Unanticipated stress developed between employees and contractor staff. A chief tenet of social distancing is that people should stay home when sick. This prescription is much easier to follow if a person has paid sick leave. Full-time employees have such benefits, but contractors generally do not. Although this study did not involve a real pandemic, it heightened awareness of how illness spreads, especially by people who come to work when they are sick. Consequently, employees began noticing when people sneezed, coughed, or displayed other signs of illness, and contractors began to feel scrutinized as the experiment progressed. This problem — how to ensure that sick people stay home during a crisis — is one that organizations will have to address.

Some unanticipated benefits also resulted. After the employees became accustomed to the new hygiene practices, such as using disinfectants regularly and keeping their office space sanitized, the majority reported that they continued these practices in their homes and other places. In addition, employees at another IT call center within the corporation, recognizing the value of these measures in reducing everyday illnesses, requested that their center also be stocked with antimicrobial wipes and other hygiene-related supplies that were used in our study.

Overall, more than 70 percent of the participants said the social-distancing and hygiene measures did not negatively affect their day-to-day activities. In fact, a majority said that if given the opportunity, they would continue using wipes, hand sanitizers, and other hygiene measures at work. And more than 90 percent said they felt confident that they had the tools to enable social distancing if a real pandemic occurred in a wave lasting six to eight weeks.

Lessons Learned and Next Steps

In September 2007, the U.S. Department of Homeland Security published 15 National Planning Scenarios depicting "the broad range of natural and man-made threats facing our nation." The scenarios include biological attacks of aerosol anthrax, food contamination, foreign animal disease, and the plague; chemical attacks involving a blister agent, nerve agent, toxic industrial chemicals, and a chlorine tank explosion; and a disease outbreak of pandemic influenza. Each has the potential to disrupt national and even global economic activity through rapidly spreading illness and death. All would require businesses and government organizations to adopt social-distancing and infection-control measures in order to continue operations.

Our study justifies cautious optimism that business and government organizations could, in fact, work through a crisis — if they prepare. Although the preventative measures adopted by our experimental group disrupted normal routines, employees found ways to incorporate the new behaviors into their work regimen without measureable impact on performance. Not only did a majority of participants express overall satisfaction with the measures, they also said the experience had given them the knowledge, tools, and confidence to handle a real, and even lengthier, pandemic.

We are preparing a more detailed article for a peer-reviewed academic journal to publicize our findings and lay the groundwork for follow-on studies that can replicate our results and help us understand how to implement pandemic response plans in other industries and workplace environments. But the key lesson, as Safe America Foundation CEO Len Pagano notes, is clear: "Businesses need to adopt a pandemic response plan and to prepare their employees accordingly." Our study suggests that people will rise to the challenges presented by an infectious pandemic when given an effective plan, training, and tools.+

Resources

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