Early Pandemic Experiences and Lessons Learned Within A Multinational Corporation

A Testimonial of the COVID-19 Pandemic

There is an old public health parable written by Irving Zola[1,2] depicting a dramatic scene in which a doctor is walking along a swiftly flowing stream and hears cries for help from a drowning man. In response, the doctor quickly jumps into the stream, pulls the drowning man safely to shore, and resuscitates the man back to life. Just as the saved man begins to recover, another cry for help is heard from a woman who is also drowning in the stream. The doctor does not hesitate to respond and quickly rescues the drowning woman, resuscitating her back to life as well. As soon as this woman has recovered, yet another cry for help is heard. And another. This pattern continues until there are numerous drowning people in the stream. The doctor is so exhausted from trying to save as many people as possible from the stream that they have no time to investigate what is driving all these people into the stream in the first place.

Irving Zola's public health parable helps to capture a sense of the eternal coexistence and importance of addressing upstream and downstream issues that impact health throughout societies around the world. His story also illustrates the vivid point that addressing an individual's health and symptoms of illness do not impact the overall drivers and causes of catastrophes. While traditional medical practice addresses individual health, public health draws its distinction and value in population-level health crises like pandemics. Parallels to this story can be demonstrated in the case of the current global coronavirus (COVID-19) pandemic. Many of the socioeconomic, occupational, exposure levels, and underlying causes for accelerated and uneven disease transmission in communities were largely discovered and diagnosed by non-medical and medical adjacent professionals such as scientists working on the bench, public health researchers, mental health professionals, and epidemiologists.

Throughout the duration of the COVID-19 global pandemic, a lot of media coverage has focused on capturing the stories, trials, and tribulations of the individuals jumping into the streams and pulling drowning people to shore—these being the critical and necessary frontline workers that are working directly with COVID-19 patients such as doctors, nurses, physician assistants, surgeons, and other healthcare workers. Rarely, however, do we get a glimpse into the hard work being done by other frontline workers behind the scenes, toiling further "upstream" to stem the tides of patients that may flow downstream into the hospitals at the risk of overwhelming the entire system. It has become clear throughout the pandemic that the end will not be brought about taking care of

individuals but rather addressing all the causes that led to the global spread in the first place. Truly understanding and tackling problems at the population health level of the COVID-19 pandemic will ultimately bring transmission under control.

Examples of "upstream" frontline workers include epidemiologists, contact tracers, and scientists working in government or public health venues. However, among those facing a unique set of challenges are multinational corporations that employ large numbers of globally distributed employees. These types of companies with large geographic footprints serve as venues in which individuals may spend nearly one-quarter to half of their waking lives engaged in work for their employers.[3] Because of the significant amount of time spent working at places of employment, employees generally place a lot of trust in and seek advice on topics from their employers during periods of crisis, including health and wellbeing.[4–6] The COVID-19 pandemic has been no exception. Thus, large corporations that employ a significant number of workers around the world represent a large population and bear the public health responsibility to manage and mitigate global crises like pandemic. Smart, forward-thinking corporations who have invested in health, safety, and logistics staff members with the skills and expertise to help companies formulate effective plans to respond to public health crises have benefited the most during this pandemic. International Business Machines Corporation, or IBM, is one such example. With a workforce of hundreds of thousands of employees currently working across the globe and multiple business units with a large variety of operations, all still working to fulfill the needs of a diverse set of business clients, IBM among other multinational companies faced an especially unique set of operational and logistical challenges throughout the timeline of the COVID-19 pandemic. On the most global level, regional differences in the ever-changing governmental and systemic public health response to COVID-19 have tested the adaptability of IBM's Corporate Health and Safety Team response to protecting employee health. A small sampling of these regional differences may have included:

- Contact tracing practices—for example, aggressive contact tracing and enforceability of quarantine for COVID-19 cases.[7–9]
- Health system infrastructure, medical care capacity, and medical billing.[10,11]
- Mask use requirements and recommendations for wearing in public.[12,13]
- Differing physical distancing requirements,[14–17] enforceability, and ethical implications of noncompliance in public spaces.[18–23]
- COVID-19 diagnostic testing—employer availability, screening eligibility to receive a test, public availability of access to tests, sample processing and testing capacity within the country, and reliability and accuracy of different COVID-19 tests.[12,13]
- "Covidiocy"[24]—willingness of the citizens to follow government measures and protect the greater good of public health.
- Governmental speed, planning, and supply access for vaccine distribution and allocation, as well as prioritization group ordering.[25–31]
- Cultural and health behaviors that may propagate disease transmission.[32–34]

Despite having to work within the confines of dynamic, ever-changing country laws and regulations, IBM's approach to

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TABLE 1. CH&S Composition in the Context of the COVID-19 Pandemic

	Core Medical Team	CH&S COVID-19 Team	Local CH&S Teams
Composition	Physicians and nurses from various geographies.	Physicians, nurses, epidemiologists, and safety professionals from various geographies.	Nurses, physicians, epidemiologists, psychologists, social workers, industrial hygienists, and safety professionals.
COVID-19 Response Roles	• Monitors development of the COVID-19 pandemic and latest information at the global level.	• Subject Matter Experts (SMEs) providing recommendation on sanitation practices, IAQ, PPE.	• Performs assessment and research on situation and risk at the local level.
	• Performs assessment and research on situation and risk at the global level.	• Monitors and provides overview of country/market COVID-19 situation which includes government and client requirements.	• On the ground providing day-to-day support to local business executives and Crisis Management Teams.
	• Develops evidence-based recommendations which informs internal IBM processes and policies (eg, case management, mask use, social distancing, travel and meeting guidance, testing).	• Participates in both local and Corporate Crisis Management Teams to provide advice and counsel.	• Handles case management of suspected and confirmed IBM COVID-19 cases.
		• Brings up pressing issues to the CH&S leadership team for further guidance.	

pandemic preparedness and response is structured upon the goals of protecting human health and safety and the maintenance of business continuity. This is built on the principles that: 1) employee health is the top priority; 2) all plans and responses are evidence-based and scientific in approach; 3) compliance with government requirements and/or instructions is paramount; and 4) IBM's Business Continuity Plan (BCP) and response are based on identification and maintenance of critical operations in the pandemic context of reduced resources. The Corporate Health and Safety (CH&S) Team has been diligently working since the beginning of the pandemic in January 2020 to figure out the best ways to protect employee health and safety both inside and outside of IBM workplaces. With a team of over 200 medical and safety professionals composed of doctors, nurses, epidemiologists, psychologists, social workers, and industrial hygienists across more than 40 countries, the amount of regional and institutional knowledge that this kind of team provides has driven strong, evidence-based strategies relevant to IBM's pandemic response, and business-critical needs. The CH&S setup in response to management of the COVID-19 pandemic is composed of a Core Medical Team, a CH&S COVID-19 Team, and Local CH&S Teams that raise local issues for global consideration of solutions. Table 1 illustrates the responsibilities of each of these teams.

In summary, because IBM chose to have the CH&S Team as part of main corporate structure, IBM has managed to fare the direct blows of the pandemic compared to companies that may not have a professional health and safety team. By having dedicated professionals whose skills were readily available to address the many unknowns of this crisis, the efforts of the CH&S team directly reduced acute impacts to employees, workplaces, and interruptions to business continuity—all of which directly translates to preserving IBM Corporation's bottom-line and revenue. It will be prudent and, frankly, necessary for other multinational companies to build up or strengthen similar health and safety teams to prepare for the future storms and tribulations of the next pandemic.

CH&S RESPONSE EARLY IN THE COVID-19 PANDEMIC

Since the beginning of the COVID-19 pandemic in January 2020, IBM's globally represented CH&S team took early and decisive action to start monitoring the developments of the outbreak as it spread across China and outwards through the rest of the world. A globally distributed team allowed the larger company to have a localized pulse at different key locations around the world where IBMers are, as well as formulate a consistent but flexible framework that could easily be amended to comply with and capture local, legal, and regulatory requirements for different locations. Additionally, amidst a public health system where frontline workers and hospitals were overwhelmed and overrun, there was a dire need for providing evidence-based information. This specific, localized approach also strategically positioned leaders of the local CH&S teams to serve as a trusted, coordinated source of centralized information that was rapidly adapted to reflect emerging evidence.

As more offices began to adapt to either limiting in-person interactions, travel, and large gatherings, the team issued guidance on helping employees protect their own health, safe travel, placing limitations on meetings and in-person events, and eventually issuing advisories to shift business operations and the majority of the IBM workforce to work from home. In an ongoing series of FAQs, news interviews, and other communication channels, CH&S monitored and researched the latest health guidance and advisories coming from health institutions such as the U.S. Centers for Disease Control and Prevention and the World Health Organization to keep employees abreast of how to take every day preventative measures to protect their health. As the pandemic continued into March and April of 2020, restrictions were put in place on non-essential travel and large in-person meetings. Live, online safety trainings were presented for global audiences of essential employees conducting on-site work at IBM locations and client locations to empower employees to conduct worksite risk assessments before entering potentially risky work situations and obtaining the appropriate protective equipment to do their work safely. Most importantly, the CH&S team was able to develop protocols for, train other team members in, and deploy guidance for medical case management, clinical criteria for safely reopening offices, contact tracing, geospatial tracking of case incidence, and health screening of IBM employees and visitors coming into IBM locations.

For employees who needed to conduct their work in-person throughout the pandemic, IBM gave employees the flexibility to take responsible actions to protect workplace health, including taking early decisive action to procure sufficient protective equipment to meet demand, as well as formulate protective protocols for

TABLE 2. Summary Table of Example IBM COVID-19 Workplace Safety Interventions in Modified Hierarchy of Controls*

Control	IBM Workplace Interventions
Elimination of Hazard (Enterprise Level)	• Majority of workforce works from home during and after peak of pandemic • Only essential workforce continues to visit client sites and work onsite • Reduced occupancy shift work • Phased return to work occupancy • Identification and quarantining of sick employees • Case management within CH&S
Engineering Controls (Enterprise Level)	• Travel restrictions • Meeting guidance • Massive COVID-19 public health communication campaign about disease prevention and transmission from CH&S • Building modifications • Elevator occupancy limitations • One-way traffic flow • Every other desk occupancy • Cafeteria layout • Agile space markings to maintain social distance • Social distancing enforcement and observation in building • Access controls for entry and exit
Administration Controls (Individual Level)	• Illness and symptom screening prior to entering the workplace • Temperature screening before coming into work and at entry ways where legally required • COVID-19 employee testing pilot to assess utility in returning safely to work • Social distancing • Hand washing practices • Cough etiquette • Enhanced and more frequent cleaning of occupied spaces
Usage of Protective Equipment (Individual Level)	• Situational and case-by-case usage of N-95 masks • Temperature screeners wearing protective equipment to screen employees • Essential workers and workers that frequently go on client sites to fix/provide customer service of IBM equipment wearing protective equipment appropriate to the risk setting they are entering • Medical exception documentation requirements • Short-term disability if individual cannot meet requirements

*While this list is not exhaustive in nature of all the control measures put in place for implementing a safe Return-To-Work plan, a more complete description of these measures can be found in IBM's forthcoming Return-To-Work Playbook.

people to continue to work. At the time of the global shortage of widespread and easily accessible treatments and vaccines against the coronavirus, the most effective control measures that could be adapted for use within IBM to reduce transmission risk were non-pharmaceutical interventions (NPI's).[35,36] Examples of NPI's include such transmission control measures as enforcement of social distancing, closure of gathering areas, preventing large gatherings of people, travel restrictions, quarantine and isolation of confirmed and suspected COVID-19 cases, and wearing of masks. For the purposes of outlining CH&S's proposed workplace interventions to curb the transmission of COVID-19 both inside and outside the workplace, CH&S composed a COVID-19 Risk Pyramid that was a modified version combining the National Institute of Occupational Safety and Health's (NIOSH) and Johns Hopkins University's Hierarchy of Controls.[37,38] The premise of outlining CH&S' interventions within the traditional Hierarchy of Controls is that it would allow the team to anchor proposed control measures in a familiar framework and help determine how to implement feasible and effective control solutions to eliminate the greatest amount of transmission risk possible. Table 2 illustrates examples of modified control measures that IBM has implemented within the context of COVID-19.[37,38]

Lastly, early in the pandemic, IBM recognized and emphasized the importance and responsibility of protecting the health of community members over workplace productivity in areas where IBMers were located. Alterations included expansion of health benefits for increased access and utilization of telemedicine, as well as increased paid time off for individuals to handle family or personal health issues related and unrelated to COVID-19. By

expanding these offerings, these measures likely helped to minimize the public health and healthcare system impacts on local communities where IBM operates, as well as decrease the number of sick people being steered into the healthcare system, further helping to minimize the ongoing demand for limited resources.

CH&S RESPONSE AT THE CURRENT STAGE OF THE COVID-19 PANDEMIC

As the world observes the one-year anniversary of the COVID-19 pandemic,[39] the CH&S team is currently still monitoring the pandemic across the globe as well as continuing to restrict company travel and meetings to only those that are business critical. The largest project that is continually being updated to reflect governmental guidance is IBM's recently externally published "Return to Workplace Playbook" (RTW),[40] which has been developed using the input from all of IBM's major business units. Outlined in the RTW Playbook is a phased approach of employees returning to the workplace to limit the potential for an outbreak occurring in the office. This three-wave phased approach of employee return takes into consideration clinical criteria determined by the Core Medical Team, governmental and legal requirements, as well as public health system indicators like testing availability. This is outlined in more detail in Figure 1. Other guidance issued by the CH&S team and outlined within the RTW Playbook includes updated space planning guidelines with incorporation of IBM's TRIRIGA application,[41] return to work training offered to all returning employees, continual updates to the case management and contact tracing protocols as new

A phased approach based on risk mitigation

Return to Workplace Playbook

Using this Return to Workplace (RTW) Playbook

Principles, Context, and Overview

Decision making framework: Is your site ready to open?

New workplace safety norms: What do we need to do to keep IBMers safe at your site?

Prioritizing the returning IBMers: How do you determine who needs to be on site?

Readiness Checklist & Next Steps

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Wave 2 and 3 expansion is dependent upon reduced risk through testing, tracing, treatment, and healthcare system capacity. If clinical data of confirmed cases or fatalities changes over a 5-day period, work from home should be reinstated for all but essential employees.

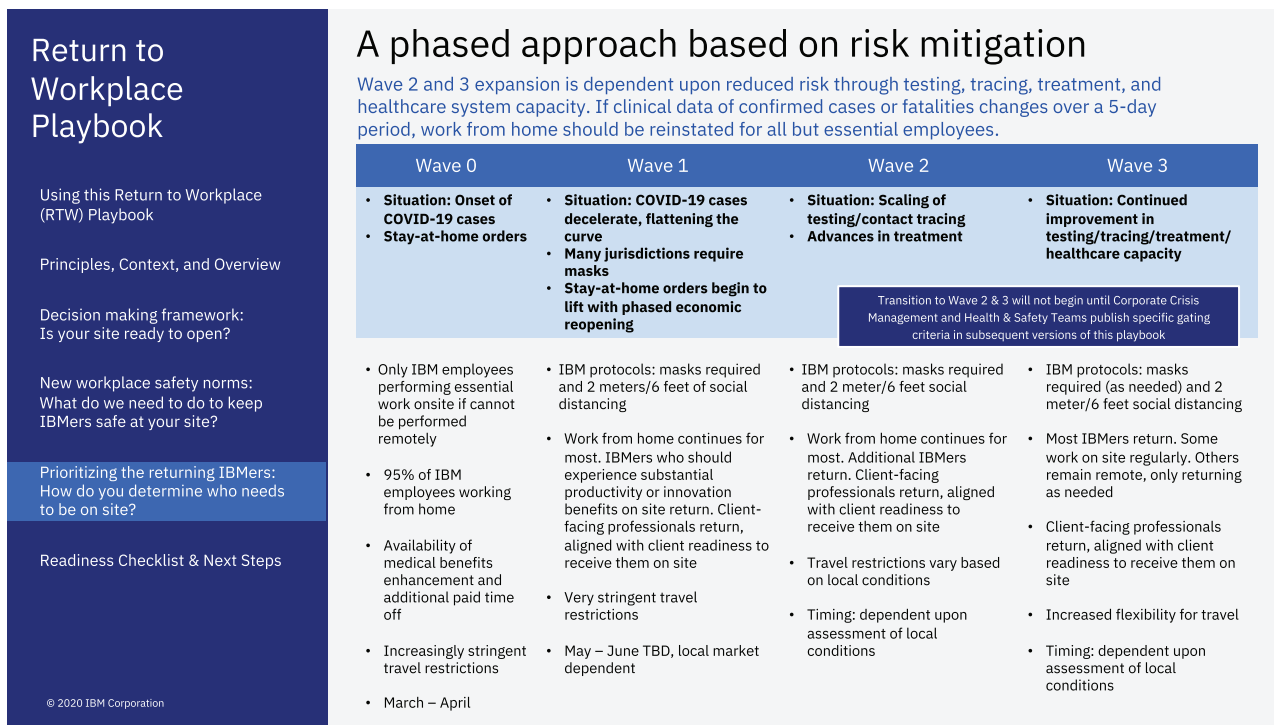| Wave 0	Wave 1	Wave 2	Wave 3
• **Situation: Onset of COVID-19 cases** • **Stay-at-home orders**	• **Situation: COVID-19 cases decelerate, flattening the curve** • **Many jurisdictions require masks** • **Stay-at-home orders begin to lift with phased economic reopening**	• **Situation: Scaling of testing/contact tracing** • **Advances in treatment**	• **Situation: Continued improvement in testing/tracing/treatment/healthcare capacity**
		Transition to Wave 2 & 3 will not begin until Corporate Crisis Management and Health & Safety Teams publish specific gating criteria in subsequent versions of this playbook	
• Only IBM employees performing essential work onsite if cannot be performed remotely • 95% of IBM employees working from home • Availability of medical benefits enhancement and additional paid time off • Increasingly stringent travel restrictions • March – April	• IBM protocols: masks required and 2 meters/6 feet of social distancing • Work from home continues for most. IBMers who should experience substantial productivity or innovation benefits on site return. Client-facing professionals return, aligned with client readiness to receive them on site • Very stringent travel restrictions • May – June TBD, local market dependent	• IBM protocols: masks required and 2 meter/6 feet social distancing • Work from home continues for most. Additional IBMers return. Client-facing professionals return, aligned with client readiness to receive them on site • Travel restrictions vary based on local conditions • Timing: dependent upon assessment of local conditions	• IBM protocols: masks required (as needed) and 2 meter/6 feet social distancing • Most IBMers return. Some work on site regularly. Others remain remote, only returning as needed • Client-facing professionals return, aligned with client readiness to receive them on site • Increased flexibility for travel • Timing: dependent upon assessment of local conditions

FIGURE 1. IBM's three-wave phased return to work plan in conjunction with health and legal requirements.

guidelines arise, collaboration with the Watson Health teams to make the IBM Workplace Health Advisor App[42] and Exposure Notification tool,[43] as well as strengthening and providing support for addressing the emerging issues of employee mental health and wellbeing.[44]

FUTURE OF RETURNING TO THE WORKPLACE AND LESSONS LEARNED

As we continue into the next stages of the pandemic in 2021, the prospect of returning to the workplace has allowed the CH&S team to reflect on our next steps moving forward. One important pilot study that was conducted across a selection of IBM offices in the US was a COVID-19 testing pilot study in which four different COVID-19 detection methods were tested among different groups of employees. The lessons learned from this study are now being analyzed for publication later in 2021. Testing protocols are being developed as COVID-19 testing is becoming more widely available to the IBM global population. Mental health support has now been expanded globally through the Employee Assistance Program (EAP) and offerings are continuously being improved as long-lasting effects of the pandemic become more apparent throughout society. CH&S is continuing to advise and counsel on new ways of working at home and in the workplace for employees who have since returned. A Hybrid Workplace plan is underway to give employees the flexibility to work from home but come into the office a few days of the week (when the public health environment has improved to allow for this arrangement). It is estimated that up to 80% of IBM employees will be covered by this arrangement while 20% will continue to work primarily from an office location.[45] Home working and/or working from third spaces (eg, libraries and cafes)[46] expand the concept of a workplace and introduces hazards and risks from which traditional workplaces were largely insulated. "Life" and "work" are also integrated such that workplace health practitioners that truly want to keep their employees healthy cannot afford to pay sole attention to risks within the organization.[47] Finally, when reflecting on global issues that continue to confront the ability of the CH&S team to quickly adapt, challenges, mitigation strategies, and learning points were captured throughout the IBM business regions as shown in Table 3.

EMERGING ISSUES AND CH&S COVID-19 COMPENDIUM RELEASE

The COVID-19 global pandemic has caused unforeseen indirect effects on healthcare system access and use.[48–52] With the closure of IBM workplaces and on-site clinics, there has been an impending need to address the backlog of legally mandated and regular workplace exams and inspections. Externally to the workplace, chronic disease and condition management have been delayed due to restrictions of in-person visits to medical facilities, medical system shifts to telemedicine, and general apprehension and hesitance to seek treatment and care for these illnesses in the midst of the pandemic.[52] Lastly, global health experts have recognized an emerging COVID-19 mental health crisis brought on by the prolonged isolation, threat to health and life, political and racial injustice,[53,54] and everyday challenges of living in a pandemic environment.[39,44,55–58]

As the world recognizes the one-year anniversary of the WHO declaration of the pandemic,[39,59–62] the CH&S Team is formulating a multi-faceted COVID-19 Mental Health and Wellbeing Campaign. The goals of this campaign include:

• Assessing the current state of mental health and wellbeing by checking how employees are doing through a company-wide Pulse survey.
• Determining what public health messaging and resources would be most helpful to employees.
• Increasing visibility and global employee access to mental health and wellbeing support resources (eg, EAP, digital apps, etc).

TABLE 3. IBM Global Challenges, Mitigation Strategies, and Learning Points during the COVID-19 Global Pandemic

Unique Challenges	Mitigation Strategies (Internal or External)	Learning Points
Slow spread of virus into Africa	CH&S communications to debunk myths around virus susceptibility to heat and humidity	Single, trusted source for peer-reviewed information is required
Data privacy issues (government track/trace apps, case reporting)	IBM Legal Team was always contacted to clarify responsibilities and requirements	Always double-check with the data privacy and legal teams
Home grown "cures," folk/alternative remedies	Advice to employees to stick with treatment protocol from local health authorities	During crises, strong, constant, continuous, science-based communication is needed
Failure of lockdown measures in low income areas	Advice to employees to follow local guidelines on sheltering in place	Population health initiatives work when all or most of the population adheres to them
Religious gatherings/holidays recognized as an avenue for spread	Advice on avoiding large gatherings	What employees do during their personal time has an impact on pandemic planning
Family dynamics of living in multigenerational households	Tailor advice on self-isolation with regards to elderly relatives and frontline workers in the household	Reinforced the need for communicating family history when providing advice to People Under Investigation (PUIs)
Sub-par health and safety arrangements at some client sites	Client executive to engage clients on health and safety issues and business continuity	Health and safety, pandemic planning, and business continuity to be included as part of business negotiations
Supply chain challenges with protective equipment acquisition	Pre-qualification of local manufacturers and thorough safety review of protective equipment options.	The need for local manufacturers as back-up to global suppliers

- Assessing employee baseline prevalence of mental and behavioral health issues, chronic disease management, and musculoskeletal diagnoses across 2020 and previous years where data is available.
- Increasing awareness and knowledge of chronic disease detection and management with encouragement for annual check-ups in response to delayed care seeking in 2020.[51]
- Engaging senior leadership and managers in leading their teams with empathy to support employees throughout the pandemic and beyond.

The information collected and analyzed from this campaign will be used to inform and design the health promotion program strategies for the remainder of 2021 and continuing into 2022.

Importantly, as the roll-out and distribution of COVID-19 vaccines continue to develop, the team looks forward to collaborating cross-functionally within and outside of IBM to develop tracking systems for prioritization, distribution, and extended employee vaccination coverage across the globe. Initial discussions are underway about how solutions like IBM's Digital Health Pass COVID-19 blockchain app[63,64] could be leveraged to assist in a safe and effective return to the workplace. Continuing to monitor and screen for symptomatic employees prior to workplace entry will also be important to prevent workplace transmission and outbreaks. Incorporating use of the Exposure Notification App[43] as a control measure for entry will be helpful in this effort.

In addition to IBM's recently published "Return to Workplace Playbook,"[40] the CH&S Team looks forward to sharing its COVID-19 Compendium later this year with the public and other multinational companies facing similar employee health and safety challenges throughout the pandemic. Titled "The Compendium for Pandemic-Crisis Management for Corporations," the compendium will showcase the CH&S team's strategic journey to develop health and safety guidelines on everything from mask usage, social distancing, clinical parameters, and data monitoring sources for reopening workplaces, to ventilation safety and temperature screening protocols. This work reflects the team's lessons learned from the first year of the COVID-19 pandemic and is consistently being updated to reflect the latest developments, including vaccine distribution and disease surveillance protocols, for effective pandemic management. We look forward to sharing additional knowledge and lessons learned in the forthcoming compendium.

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