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Return to work considerations in the lingering COVID-19 Era: Long COVID, multiple chemical sensitivity, and universal design

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Abstract. This article discusses how COVID-19 has impacted the American workforce, symptoms of Long COVID syndrome, Multiple Chemical Sensitivity, and ways to avoid triggering its symptoms when sanitizing the workplace and using Universal Design practices to increase accessibility and decrease transmission of COVID-19 among workers. Interface with healthcare providers, rehabilitation professionals, and employers is emphasized.

Keywords: COVID-19, long COVID, accessibility, universal design

1. Introduction

The purpose of this article is to examine workplace responses to Long COVID syndrome and multiple chemical sensitivity through the lens of universal design. Now more than two years after the onset of the COVID-19 pandemic, we are still coping with the impact of this unprecedented global public health crisis. Multiple variants and surges have caused us all to continue to pivot in our daily work and home routines. COVID-19 has changed the American workforce as well as the American workplace, probably irrevocably. Employers are looking, often desperately, for qualified workers and have an increased focus on recruitment and retention of employees, owing to the national labor shortage that is evident in the slowly re-opening economy. In the new COVID-19 driven American and global workplaces, people with disabilities have been disproportionally removed from the labor force, often due to difficulties in arranging technology to enable them to work at home or to the lack of available in-person on-the-job supports [1].

Prior to the pandemic, individuals with disabilities experienced alarmingly higher rates of joblessness compared to individuals without disabilities [2]. While U.S Bureau of Labor data also show that the labor force participation rate appears to be slowly improving over the last year [3], the full impact of the pandemic on the employment of people with disabilities remains to be seen. However, as needs for workers to meet productivity and service expectations are at the forefront of employers' recruitment and retention efforts, programs promoting hiring individuals with disabling conditions are options for employers to pursue. Additionally, employers are more receptive to hiring and accommodating qualified and productive workers with disabilities than ever before as part of their diversity, equity and inclusion initiatives. This presents previously unseen opportunities for workers

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with disabilities and rehabilitation professionals who serve them. Organizations may be scrutinized by investors on their Environmental, Social and Governance (ESG) scores. ESG is a model for companies to be accountable for their impact on society. According to globaldiversitypractice.com, as climate change, social diversity and sustainable living are at the forefront of consumer minds, investors are looking beyond financial performance. The Social portion speaks to how a company manages its relationships both internally and externally by examining work conditions, health and safety, and diversity (including disability). Actively recruiting people from a range of ethnic and social backgrounds can serve to increase a company's score in this area of ESG. Research has shown that 35% of an employee's emotional investment in their work and 20% of their desire to stay within their existing company [4] is attributable to how included they feel in their workplace. Based on that study, diversity, equity, and inclusion can increase an organization's retention of valued employees.

What has been coined "The Great Resignation" has been marked by a voluntary mass exodus of employees from the workplace during the COVID-19 pandemic. Fuller and Kerr [5] pointed out that the great resignation actually began pre-pandemic, but that the pandemic dramatically increased resignation patterns. This trend has been fueled by people taking note of what was most important to them during the pandemic, including how work and their careers fit into their priorities and values. Many older workers have exited the workforce permanently, and many other workers have stayed in the workforce while modifying their schedules, work locations (e.g., telecommuting), and job duties. Flexibility including remote work, modified shifts, and hybrid opportunities in the workplace became highly desirable to people managing their work-life balance, and to those who did not feel safe physically engaging with people during the pandemic.

As we progress through the pandemic, employers are considering ways to support employees in work-life balance through creative ways to finance or provide transportation, childcare and increased paid time off. They are also examining ways to make sure that the new American workplace is accessible and safe for workers who are at high risk for developing COVID-19, those dealing with lingering effects of COVID-19, and workers who have multiple chemical sensitivity.

2. Long COVID and multiple chemical sensitivity in the workplace

Although most people's symptoms resolve within a few weeks of having COVID-19, some experience post-COVID-19 conditions. Initially known as "Long COVID," effective July 2021, this condition is considered a presumptive disability under the Americans with Disabilities Act (ADA). Post-COVID-19 conditions are known by many names including long COVID, long-haul COVID, post-acute COVID-19, post-acute sequelae of SARS CoV-2 infection (PASC), long-term effects of COVID, and chronic COVID [6]. These terms are generally interchangeable but, for the sake of brevity, we will refer to the condition as Long COVID hereafter.

According to the Centers for Disease Control and Prevention [6], estimates of the proportion of people who go on to experience Long COVID symptoms can vary from 13.3% at one month or longer after infection to 2.5% at three months or longer based on self-reporting. For patients who were hospitalized due to COVID-19, 30% continued to have symptoms six months later.

Long COVID symptoms may impact multiple major body systems and organs including cardiovascular, pulmonary, renal, integumentary, neurologic, and psychological functions. The list of long COVID symptoms is extensive and highly individualized. For some people, lasting COVID symptoms are nothing like the original symptoms when they were first infected with the virus [7]. The most common Long COVID symptoms include coughing, fatigue, body aches, joint pain, shortness of breath, loss of taste or smell, difficulty sleeping, headaches and brain fog.

Brain fog is among the most frustrating symptoms of long COVID. People report being unusually forgetful, confused, or unable to concentrate. In many cases, the associated respiratory and physical symptoms are debilitating and occur in people who had no prior illnesses that would trigger them. Fragrance allergies and hyperosmia add to the expanding list of Long COVID symptoms. Hyperosmia is defined as a heightened and hypersensitive sense of smell that has been associated with several medical conditions including COVID-19 and Multiple Chemical Sensitivity [8].

Multiple Chemical Sensitivity Disorder or MCS is a medical disorder triggered by exposure to chemicals or other environmental stimuli. This often begins with a short-term, severe chemical exposure, such as

a chemical spill, or it can be related to a longer-term exposure such as being around chemicals daily. Once exposed, low levels of chemicals found in everyday materials, such as soaps, detergents, cosmetics, and newspaper inks, can trigger physical symptoms in people with MCS [9]. People with MCS find themselves unable to tolerate even trace amounts of the triggering chemical or chemicals that are tolerated by most other people. MCS affects 13% of people in the United States, and 26% of Americans report having a chemical sensitivity. Of those diagnosed with MCS, 86% report symptoms (migraines, breathing difficulties) when exposed to products with fragrance, 71% have asthma, 70% cannot go to places where products like air fresheners are used, and 61% have lost workdays due to workplace fragrances or odors [10]. Chemical toxicants include perfume, air fresheners, fragrances, diesel or gas engine exhaust, fresh tar or asphalt, gasoline, paint and paint thinner, pesticides, household cleaners, nail polish/remover, laundry products, building materials, new carpet, new cars, and furniture coverings or other fabrics.

Early data from countries that were most severely affected by the COVID-19 pandemic, including China and Italy, enabled populations at high risk for fatal outcomes to be identified, including those with underlying health conditions such as cardiovascular disease, lung disease, allergies, asthma, chemical sensitivities, immunocompromised illnesses, renal disease, liver disease, diabetes, and pregnancy [11] There has also been considerable discussion of the emergence of at-risk groups during COVID-19 with respect to age (older), gender (male), and underlying conditions [11]. As such, not only do people with MCS have to take extra measures to avoid exposure to COVID-19, but they are also vulnerable as we have re-opened workplaces and return to work in person while spraying disinfectant chemicals to sanitize the environment.

Fragrance-free workplace policies are increasing in American businesses and worksites. Because the ADA classifies MCS as interfering with a major life activity (breathing), someone diagnosed with MCS has legal grounds to request an accommodation. There are a variety of ways to lessen the chances of aggravating the symptoms of someone with Long COVID or MCS. One important technique is related to safe sanitization. Employers should avoid aerosolized products and spraying products in the air, because chemicals from those products are easily inhaled into the lungs and can be abrasive to the respiratory system. It is critically important to use the smallest amount of chemicals possible to clean. It is also recommended that workplaces use products that are unscented when possible. Air filtration systems can remove and destroy toxic and noxious odors, chemicals, and pathogens. HEPA filters capture harmful dust, particulate, allergens, pet dander, microorganisms, and more. Using products that are applied or poured onto a surface or cleaning cloth as opposed to products sprayed into the air and posting signs when areas are being cleaned or sanitized are also ways to lessen exposure for individuals with MCS. These practices can be implemented by building maintenance professionals, supervisors, and coworkers as well as the individual who has MCS.

Personal Protective Equipment or PPE's have been used extensively during the pandemic. Although they can protect and minimize one from COVID-19 exposure, an individual with MCS may not be able to use some of these options as they, themselves, may trigger symptoms. Masks and gloves may cause someone with MCS to have symptoms. Latex-free gloves may be an option for some individuals, but not all. Triggers for people with MCS vary from one individual to the next. This means that general guidelines are good to adopt, but a worker may need other accommodations based on their specific and individual needs.

Situations and solutions for MCS exposures in the workplace need to be implemented on a case-by-case basis. Resolutions may include moving the employee to an area with less exposure to chemical toxicants, providing an air purification system where the employee works, asking coworkers to decrease or eliminate the use of fragrances, and reducing the time the employee spends in the work setting by allowing hybrid/virtual work options. Table 1 contains accommodations considerations for employees with MCS [12].

3. Increasing access and decreasing COVID-19 and MCS Exposure through Universal Design Strategies

The concept of universal design (UD) is not a new idea. However, when applied in work settings, UD provides rehabilitation and other fields invested in social justice with a new way to approach equal access to employment and all domains of meaningful societal participation, including education, healthcare, community participation and independent living [13]. As its name implies, UD is design that is usable

Table 1
The Job Accommodation Network: (JAN) recommended considerations when accommodating employees with Multiple Chemical Sensitivity

1. What limitations is the employee experiencing?
2. How do these limitations affect the employee and the employee's job performance?
3. What specific job tasks are problematic as a result of these limitations?
4. What accommodations are available to reduce or eliminate these problems? Are all resources being used to determine possible accommodations?
5. Once accommodations are in place, would it be useful to meet with the employee to evaluate the effectiveness of the accommodations and to determine whether additional accommodations are needed?
6. Do supervisory personnel and employees need training?

by all people, to the greatest extent possible, without the need for adaptation or specialized measures [14]. While rehabilitation professionals and employers continue to assess what the worker needs to do the job, UD can assist in improving a worker's physical access and sense of belonging in the workplace [15]. UD consists of a set of strategies to make environments, products and policies that are usable to the broadest array of people. UD has been around for decades, but its meaning has been expanded during the COVID-19 pandemic. Now, when we talk about UD, we consider spaces to include physical and virtual environments. We consider people with disabilities as the primary beneficiaries of UD, but all people across the lifespan who have different styles of learning, different preferences and needs, and different body shapes and sizes also benefit. When we think about using UD at the outset of an employment situation, we in fact may eliminate the need for an individual accommodation entirely; if a space is created with accessibility in mind right from the start, it is less likely to require retrofitting after the fact. The need to provide accommodations for qualified employees who require them will always exist on a case-by-case basis, but UD principles may lessen those individual needs. This results in two sets of strategies to use to maximize someone's ability to be successful in a given environment – individual accommodations and UD – but these strategies are not mutually exclusive. Indeed, when we use them both in tandem to promote the full participation of everyone, the result is inclusion!

In the following text, we apply the seven core principles of UD [13] to the needs and concerns of workers with Long COVID, MCS, and other disabling conditions. Principle One is equitable use, which means that the design is marketable to and used by people with diverse abilities. An example of this would be incorporating a ramp front entrance for everyone to use. Equitable use is also implied in policies that apply evenly and universally to all employees, such as provisions that are made for time off after a worker has contracted COVID-19. When policies are created broadly, the structure provides an umbrella under which specific issues can be addressed without a need for developing new procedures.

UD principle Two is flexibility in use. This principle emphasizes that UD can accommodate a wide range of individual preferences and abilities. An example of the second principle would be a deck of playing cards that indicate the number and the suit whether it is being held in the person's right hand or left hand or from any direction it is being viewed. The flexibility principle is also upheld in the practice of allowing workers with Long COVID or MCS to work from home all or part of the time to reduce their possible exposure to COVID-19 or triggering chemicals. While this principle is often operationalized with objects in a physical sense, it could also be exemplified in the flexible design of a staggered work schedule that would promote social distancing in the workplace.

Principle Three is simple and intuitive use. Materials related to training, benefits, and policies (e.g., fragrance-free workplace rules) should be available at various language levels and in different languages so workers can understand them regardless of experience, knowledge, language skills, or concentration abilities. Smartphones are excellent examples of UD Principle Three, as intuitive use is built into their design. Similarly, use of clear directions for a work task, machinery or instructions could be an accommodation for an employee who is experiencing symptoms of Brain Fog. Regardless of application, design that is simple and intuitive is easy to understand.

Principle Four focuses on perceptible information. This means that communications with all workers are accessible and understandable to them regardless of their ambient conditions or their sensory abilities. Information is provided in different modalities, such as a combination of images, sound, text and tactile inputs. An example of this would be a crosswalk where there is an image of a person on the display who lights up when it is safe to cross but there is also an audible signal or a chirp for someone who may not see the display.

Principle Five is tolerance for error, which minimizes the hazards or the adverse consequences of accidental or unintended actions. An example of this would be a ramp that includes a railing or is extra wide so if a person gets off course, it minimizes those hazards and the potential for negative results. Tolerance for error is also important in policies to protect workers with MCS; a provision should be put into place to allow a worker with MCS to immediately leave the job site and work from home if another worker inadvertently or intentionally violates the company's fragrance-free policy.

Principle Six is low physical effort. This has been evident during COVID-19 with "touchless" activities like paper towels or hand sanitizer dispensers or hand dryers that turn on when a person waves hands in front of them. These promote a lack of physical contact, thereby decreasing COVID-19 transmission. A hybrid or work from home option also reduces the stamina needed by an employee who is experiencing reduced respiratory function as a result of Long COVID-19. Another usually non-work related example would be the presence of a shower bench in a shower so an individual can be in a seated position, thereby promoting low physical effort versus standing.

Principle Seven is size and space for approach and use. The size and space that are designed for a product or activity should permit all users to engage with the product or activity regardless of their body size, posture, or mobility. While this principle is often associated with ensuring that meeting spaces provide sufficient maneuvering room, it also promotes social/physical distancing and work environments that provide ample space for employees.

Within the context of COVID-19, there is an opportunity for a broader audience to connect with and relate to UD, as employers face new challenges in keeping their employees productive and bonded with their jobs [13]. Not only does UD promote social/physical distancing and contactless activities specific to decreasing COVID-19 transmission, but there is also an array of benefits that arise from a UD approach to employment that include a decreased need for accommodations, lessening the stigma of disability, promoting an inclusive workplace, and improving the overall bottom line of an employer [13]. Workplace environments that include a variety of UD strategies, such as buildings and offices that are accessible for employees with mobility devices, as well as large print, captioning, and audio capability for all meetings and documents, ensure accessibility for all workers [16].

UD can positively impact a myriad of factors for an employee with Long COVID and/or MCS, including social interactions, coworker attitudes, and job satisfaction [15]. Importantly, workplace productivity for employees with and without disabilities increases in "universally accessible" environments [17]. A recent Accenture study conducted in partnership with the American Association of People with Disabilities (AAPD) found a positive correlation between employer inclusiveness and financial performance [18].

4. Conclusion

As a global society, we continue to modify our response to the ongoing COVID-19 pandemic, including dealing with variants, engaging with one another, and workforce trends. Individuals with Long COVID and MCS continue to face challenges in the workplace having to do with immune safety, symptoms of their conditions, and exposure to toxicants in the environment. By implementing universal design and individual accommodation strategies with the assistance of rehabilitation and health professionals, employers can provide opportunities for people with Long COVID and MCS while taking advantage of the valuable labor resource that exists within the American disability community. Employers are leaning in the right direction of total workplace inclusion, and we expect that trend to continue for many years to come.

Conflict of interest

None to report.

Disclaimer

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