

**LOS ANGELES COUNTY DEPARTMENT OF MENTAL HEALTH  
QUALITY, OUTCOMES AND TRAINING DIVISION**

**Mental Health and Infectious Disease Outbreaks  
Literature Review  
May 12, 2020**

**I. Introduction**

The COVID-19 pandemic, caused by the Coronavirus, formally known as Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) is causing a considerable degree of fear, worry, and concern and elevating levels of stress and anxiety. While public health measures such as social distancing, isolation, and quarantine are effective in slowing the spread of COVID-19, the disruption to people’s daily activities, routines, and livelihoods is having a significant negative mental health impact.

In order to support and inform the Department’s efforts to meet the mental health needs of Los Angeles County residents during and after the COVID-19 pandemic, we have summarized findings from research literature about the psychological impact of previous infectious disease epidemics. Included are those who are directly and indirectly affected by the disease as well as effective mental health interventions on the individual, community, and systems levels. To the extent possible, we included emerging research about COVID-19, most of which is still evolving as we progress through the current pandemic.

**II. Psychological Impact of Infectious Disease Outbreaks**

**A. General Outcomes**

We examined the scientific literature related to infectious disease outbreaks including Ebola, H1/N1 (Swine Flu), Influenza (2002-2003), Middle East Respiratory Syndrome (MERS), Severe Acute Respiratory Syndrome (SARS), and the Zika virus, as well as current and forthcoming research on Coronavirus/COVID-19. These studies reported on general psychological symptoms and behaviors, as well as emotional disturbance and distress. By and large, “Individuals, families, and communities experience feelings of hopelessness, despair, grief, bereavement, and a profound loss of purpose because of pandemics” (Usher et al., 2020). Nearly all of the studies reported higher-than-normal prevalence of depression, post-traumatic stress, and anxiety, and many reported increased irritability, anger, insomnia, and emotional exhaustion. The findings from these studies are detailed below.

Because COVID-19 had a tremendous impact in Asia prior to its arrival in Europe and North America, there are already preprints of forthcoming research about COVID-19 available. For example, a survey of 1,210 Chinese citizens conducted during the initial outbreak in China found that “53.8% of respondents rated the psychological impact of the outbreak as moderate or severe; 16.5% reported moderate to severe depressive symptoms; 28.8% reported moderate to severe anxiety symptoms, and 8.1% reported moderate to severe stress levels. Females were reported to experience a higher degree of the psychological impact of the outbreak, stress, anxiety, and depression” (Wang et al., 2020). In another study, the authors reported that:

Psychological symptoms relating to COVID-19 have already been observed on a population level including anxiety-driven panic buying and paranoia about attending community events. Students,

workers, and tourists who have been prevented from accessing their training institutions, workplaces, homes, respectively, are expected to have developed psychological symptoms due to stress and reduced autonomy and concerns about income, job, security, and so on. The Chinese, Singaporean, and Australian governments have highlighted the psychological side effects of COVID-19 and have voiced concerns regarding the long-term impacts of isolation and that the fear and panic in the community could cause more harm than COVID-19. If left untreated, these psychological symptoms may have long-term health effects on patients and require treatment adding to the cost burden of managing the illness. (Zhou et al., 2020)

Furthermore, an analysis of 1,715 survey respondents in Hong Kong indicated there was mild general anxiety (9.01 out of 21) as measured by the Hospital Anxiety and Depression Scale. The study attributed this to timely psychological and behavioral assessment of the community as the epidemic was progressing in Hong Kong (Kwok et al., 2020).

Prior to the aforementioned research on COVID-19, findings from studies about various infectious disease outbreaks highlight the emotional toll of outbreaks, although results depend on the type of outbreak and impacted community. One study on the Ebola Virus outbreak found that “whole communities may experience fear, isolation, and suffering during or after an infectious disease epidemic” (WHO, 2014). Other studies emphasized the prevalence of grief and loss related to cultural identity and rituals (Chew et al., 2020). However, one survey of the general population in Great Britain suggested that there was little personal anxiety over the outbreak.

South Koreans’ emotional responses during the MERS outbreak included despair, anxiety, and anger (Yoon et al., 2016). Several studies from Asia during and after the SARS outbreak showed symptoms of anxiety (45%), depression (38%), acute stress disorder (31%), burnout (29%), post-traumatic stress disorder (19%), and chronic fatigue syndrome (27.1 %) (Leung et al., 2009; Cabello et al., 2020). In one survey of Hong Kong residents, 42.5 % of participants reported experiencing psychological problems four years after the outbreak (Leung et al., 2009). Data from the SARS outbreaks indicated that:

upwards of 40% of the community population experienced increased stress in family and work settings during the outbreak; 16% showed signs of traumatic stress levels; and high percentages of the population felt helpless, apprehensive, and horrified by the outbreak. In another community survey 30% of those surveyed thought they would contract SARS, while only a quarter believed they would survive if they contracted the disease, despite an actual survival rate of 80% or more, indicating a fairly high rate of perceived risk that might have preceded widespread panic had the outbreak been either more widespread or more lethal. Community residents were diligent about adopting appropriate person-to-person transmission precautions; however, precautions were adopted differentially based upon anxiety levels and perceived risk of contracting the disease, indicating the importance of stress and anxiety levels, as well as baseline mental health. (Center for the Study of Traumatic Stress, 2020)

During the 2009–2010 H1N1 influenza pandemic, individuals in the U.S. experienced confusion, anxiety, and increased risky behaviors (for example: smoking, drinking, drug misuse, recklessness, and unsafe work practices), reportedly as a result of uncertainties. Pfefferbaum and colleagues (2012) reported:

Mental and behavioral health considerations associated with the H1N1 crisis emerged from concerns about (1) the severity of the virus and the availability of vaccines, medicines, and health care, (2) conflicting media reports on appropriate protective measures that led to confusion, loss

of confidence, and noncompliance with health directives, (3) potential workforce and child care issues resulting from widespread infection and disease-related absenteeism.

## **B. Secondary Outcomes**

In addition to the very common experiences of depression, anxiety, PTSD, insomnia, anger, and distress, a few articles mentioned associated mental health outcomes, as follows.

### ***Health Anxiety***

One very common mental health issue with infectious disease outbreaks is health anxiety, or hypochondriasis. According to an article in the Lancet, participants in multiple studies of quarantines reported fears about their health, and became particularly worried if they experienced physical symptoms that they perceived as related to the specific outbreak, for example a sore throat, cough, or fever (Brooks et al, 2020). In addition, given that “high health anxiety is known to manifest following exposure to disease-related popular media, of which there is no current shortage with COVID-19, levels around the world and particularly in areas reporting confirmed cases are likely to be on the rise” (Asmundson & Taylor, 2020).

### ***Isolation***

Independent of infectious disease outbreaks, the effects of quarantine itself can include symptoms of posttraumatic stress, anxiety, and depression, and responses such as fear, anger/irritability, insomnia, detachment, fatigue, poor concentration, and diminished work performance. Results from a meta-analysis on the impact of isolation on quality of life, as well as empirical analysis of psychological burden related to isolation, implied that isolated patients are worse off than their non-isolated counterparts (Sharma et al., 2020). Purssell and colleagues (2020) found that among isolated individuals there were significant declines in mean scores related to control and self-esteem, and in many studies there were increases in the mean scores for risk of anxiety and depression. In addition, a study comparing post-traumatic stress symptoms in families who were quarantined with those who were not quarantined found that “the mean post-traumatic stress scores were four times higher in children who had been quarantined than in those who were not quarantined.” Meanwhile, “28% (27 of 98) of parents quarantined in this study reported sufficient symptoms to warrant a diagnosis of a trauma-related mental health disorder, compared with 6% (17 of 299) of parents who were not quarantined” (Brooks et al., 2020).

Among people who were quarantined after coming in contact with MERS patients but who were not diagnosed with MERS themselves, anxiety symptoms were present in 7.6% and feelings of anger were present in 16.6% during the isolation period. Symptoms persisted in about half of those people at four to six months after release from isolation. Persistence of symptoms appeared to be related to history of psychiatric illnesses, and financial loss among other things (Jeong et al 2016). For community members who were placed under precautionary quarantine in Toronto, the duration of quarantine, as well as having an acquaintance with or exposure to someone who was hospitalized with SARS, predicted PTS (Post-Traumatic Stress) symptom levels (Hawryluck et al., 2004). Hospital inpatients without SARS who were deprived of social support experienced insomnia and anxiety, and had limited access to physical supports that would normally provide comfort, such as books and music (Maunder et al., 2003).

The psychological effects of quarantine hold true for health care workers during an infectious disease outbreak. Among hospital staff who came in contact with SARS, having been quarantined was the factor most predictive of symptoms of acute stress disorder. In another study, the effect of being quarantined was a predictor of PTSD symptoms in hospital employees even 3 years later (Brooks et al., 2020). That said, neither healthcare worker status, nor age, level of education, living with other adult household members, nor having children was correlated with PTSD and depressive symptoms. What was significantly related to PTSD and depressive symptoms was the duration of quarantine, as well as acquaintance with or exposure to someone who was hospitalized with SARS (Hawryluck et al., 2004).

### ***Stigma and Discrimination***

Infectious disease outbreaks often lead to stigmatization of people from the originating country, and of people who are infected. Stigma may be internalized by people who currently have a disease or who have survived a disease such that they may see themselves as inferior to others and have poor self-esteem. The stigma associated with a disease can also discourage people from getting tested and seeking treatment (Fischer, 2019). Furthermore, stigma can lead to physical violence, harassment, and discrimination with financial consequences. Due to the Coronavirus originating in China, and frequently being referred to as the “China Virus” or “Wuhan Virus”, FBI Director Christopher Wray has recently expressed that he is “concerned about the potential for hate crimes by individuals and groups targeting minority populations in the United States who they believe are responsible for the spread of the virus” (CNN, 2020). As concern regarding the virus has grown in the United States, so has discrimination against Asian Americans. The potential health effects of racism, xenophobia, and discrimination include mental health, such as post-traumatic stress disorder, generalized anxiety disorder, substance and alcohol abuse disorders, and others (Wen et al., 2020; Rodriguez-Seijas et al., 2015). Meanwhile Representative Judy Chu has said that hate crimes against Asian Americans have surged to approximately 100 per day across the US (Kelley, 2020).

During the SARS epidemic, a study of Asian patients reported stigmatization and racist reactions in the community because the outbreak was thought to have originated in China. Hospital inpatients with suspected and probable SARS worried that their contacts would be stigmatized and would lose income due to quarantine. Patients with SARS often refrained from reaching out to these contacts for social support and subsequently complained of boredom and loneliness, as well as sadness about missing their loved ones (Maunder et al., 2003). According to Chew and colleagues (2020), in a Taiwanese sample:

Anger and frustration was attributed to lack of and conflicting information regarding the disease, as well as feelings of isolation and stigmatisation that persisted even after discharge. In a general population sample of Taiwanese residents, 9.7% reported that they, their family or their friends had experienced SARS-related discrimination because they had been quarantined or had family members who were healthcare workers. Residents living at the epicentre of the outbreak in Hong Kong experienced more severe stigmatisation, with 40.6% being rejected for dining with friends, 48.7% experiencing workplace discrimination from employers, and 47.8% from colleagues. Despite most patients understanding the need for quarantine measures, being quarantined evoked feelings of abandonment that sometimes lasted beyond discharge.

Stigmatization was also a problem during the Zika Virus epidemic in 2016. Recall that Zika affected fetuses; however, the stigma was applied to pregnant women. In both Brazil and Puerto Rico, pregnant women infected with Zika as well as those who had not been infected showed high levels of stress, anxiety, and depression (Dos Santos, 2016). In addition, mothers with microcephalic children in Brazil reported being

abandoned by the fathers of affected children, seeing other parents pull their children away due to fear of infection, and being refused entry to public transportation due to their “demon babies” (Li, 2016).

### ***Domestic violence/child abuse***

There have been reports of increased domestic violence and child abuse during the COVID-19 pandemic. This can happen during times of increased stress (financial instability and family conflict, for example) and isolation from social support systems (Serrata & Hurtado, 2019). Children and sexual and gender minority communities are particularly vulnerable to domestic violence during infectious disease outbreaks because of stay-at-home orders and lack of childcare/respice care as well as the compounded stressors of marginalization. Of course, violence in the home can lead to adverse mental health outcomes including depression, PTSD, and at-risk behaviors.

### **C. Special populations at higher risk**

Our review indicated that there are specific factors that exacerbate risk of mental health issues resulting from infectious disease outbreaks. The literature mentioned a variety of communities that are potentially at greater risk for psychological problems, including: individuals who are infected with the disease, individuals who are quarantined or isolated due to the disease, family members of individuals who are infected, older adults, children/youth, people with pre-existing mental health conditions or trauma, first responders including healthcare workers, marginalized communities including people with disabilities or chronic disease, the LGBTQIA2-S community, racial/ethnic minorities, those in a larger body, single mothers, pregnant women, women more generally, socio-political minorities, non-English speaking immigrants, residents of nursing homes, behavioral health care facilities, or inpatient care settings, inmates of correctional systems, homeless, those with no formal education, those living in poverty, and essential workers such as those in the service industry and farmworkers. For example, a 2011 WHO report points out that:

Although everyone is affected in some way by these events, there are a wide range of reactions and feelings each person can have. Many people may feel overwhelmed, confused or very uncertain about what is happening. They can feel very fearful or anxious, or numb and detached. Some people may have mild reactions, whereas others may have more severe reactions. How someone reacts depends on many factors, including: the nature and severity of the event(s) they experience; their experience with previous distressing events; the support they have in their life from others; their physical health; their personal and family history of mental health problems; their cultural background and traditions; their age (for example, children of different age groups react differently).

Personality plays an important role in mental health. For example, people who have an internal locus of control cope better at such times because they view themselves as having influence over their destinies. “Conversely, those with an external locus of control view themselves as victims of fate with little perceived self-efficacy in being able to influence many life events and outcomes.” That said, some people are more likely than others to suffer adverse psychological outcomes due to reasons other than personality— for example, living with someone who has the disease, being female, elderly, or having lower levels of education (Perrin et al., 2009).

In the U.S., psychological distress due to coronavirus is a real issue, according to a Pew poll on March 30, 2020. Furthermore, the mental health impact may be disproportionate. Among Latinos, 28% are in the

“high psychological distress” category (28%), higher percentage than their black (26%) and white (22%) peers. High distress also is worse for those who suffer job or income loss. One-third of lower-income Americans (33%) are in the high distress group, as are 29% of those in households that have experienced job or income loss as a consequence of the outbreak (Keeter, 2020).

Chew and colleagues (2020) cited some reasons for increased anxiety during an outbreak, including: “beliefs that one was more vulnerable to the infection, uncertainty regarding the treatment process and outcomes, the well-being of loved ones and their economic situation, separation from loved ones, disruption in work life, and having to juggle multiple responsibilities as a caregiver.” They also cited factors associated with depressive symptoms, including: the inability to return to their usual routine of life, the contagiousness of the disease, lack of information regarding its route of transmission, stigma, and proximity to the epicenter of the outbreak. In addition, a meta-analysis in Hong Kong during the SARS epidemic identified factors associated with the likelihood of developing psychological problems, “including sociodemographic (younger age and female gender), social (lack of social support, social rejection or isolation, stigmatization), and occupational (working in a high risk environment (frontline staff), specific occupational roles (e.g., nurse), and lower levels of specialised training, preparedness and job experience) factors” (Cabello et al., 2020).

Reactions also depend on the accuracy of information being disseminated, volume of exposure to media including fake news, and perceived trustworthiness of news sources and agencies releasing information, as well as whether people are being tested or making assumptions about their infection. For example:

Fear of the unknown, in this case, the spread of the disease and the impact on people, health, hospitals, and economies... raises anxiety in healthy individuals as well as those with pre-existing mental health conditions... Feelings of loss of control drive fear and uncertainty as the trajectory of the pandemics is constantly evolving... Perceived mixed messaging from government or health officials can also lead to public confusion, uncertainty, and fear. (Usher et al., 2020)

We took a closer look at some of the factors that increase risk of mental health issues resulting from an infectious disease outbreak and have included them below.

### ***Individuals who are (or were) infected with the disease***

Among those populations for whom there is additional risk of mental health complications during infectious disease outbreaks, the most discussed are those who are infected. One way that may happen is via direct effects that the Coronavirus appears to have on the brain and Central Nervous System. For example, there have been reports of confusion, disorientation, headaches, and even seizures, and strokes. The implication is that even in the absence of the more common respiratory symptoms, some of the population may begin to exhibit neuro-cognitive impairments that could have an impact on individual mental health (Molteni, 2020).

Infectious disease outbreaks can create mental health problems in less direct ways as well. For example, infection with Ebola Virus reportedly caused: “vulnerabilities, social stigma, distress, and isolation at an individual level. Individuals can experience fear, anxiousness, numbness, and detachment. Patients infected by the Ebola virus also experienced post-traumatic stress disorder, depression, anxiety disorder and survivor guilt” (WHO, 2015). Furthermore, “Survivors of Ebola and their caregivers reported lingering feelings of fear and low mood after the outbreak and re-experienced them during subsequent disease

outbreaks. Many Ebola survivors also reported flashbacks, particularly those involving images of corpses” (Chew et al., 2020).

Studies of survivors of SARS also demonstrated increased mental health impact when compared to those who had not been infected, even months and years later. One study looked at PTSD symptoms (using the Impact of Event Scale-Revised, IES-R) as well as depression and anxiety (using the Hospital Anxiety and Depression Scale, HADS) among 476 SARS survivors a month after discharge from the hospital:

Twenty-four participants (12%) met the cutoff for the Intrusion subscale; 20 (10%) met the cutoff for the Avoidance subscale; 29 (15%) met the cutoff for the Hyperarousal subscale. Eleven participants (6%) met the cutoffs for all three IES-R subscales. With reference to HADS, 28 participants (14%) met the cutoff for the Anxiety subscale; 35 participants (18%) met the cutoff for the Depression subscale. The rating of perceived life threat and the number of people with whom participants reported they could talk and share their worries were significantly related to various IES-R and HADS subscale scores. Results suggested that the higher the perceived life threat, the greater the symptom severity. On the other hand, the more people one could talk to and share worries with, the less the symptom severity. The impact of perceived life threat was greater than that of emotional support on various IES-R measures and the HADS Anxiety score. (Wu et al., 2005)

In another study, the mean Perceived Stress Scale (PSS 10) scores of SARS survivors were significantly higher than those of matched community control subjects in 2003. The elevated stress level of SARS survivors was maintained in 2004. At both time points, PSS-10 scores were higher among female survivors. In 2004, depressive symptoms continued to be moderate-to-severe in 36.3% of the participants and extremely severe in 4.4% of the participants. Anxiety symptoms were moderate to-severe in 36.7% of the participants and extremely severe in 14.4% of the participants. Meanwhile, on the General Health Questionnaire-12 (GHQ-12), 64% of subjects scored above the threshold (having a score of 3 or above), indicating potential psychiatric morbidity (Lee et al., 2007).

Stigma can have a profound effect on mental health, and is of particular concern for those infected. Participants in several studies reported that others were treating them differently: avoiding them, withdrawing social invitations, treating them with fear and suspicion, and making critical comments (Brooks et al., 2020). In one study in Taiwan, "fear of SARS" led to substantial reductions in seeking medical care: a 23.9% reduction for ambulatory care, a 35.2% reduction for inpatient care, and a 16.7% reduction for dental care. The authors speculate that people avoided seeking medical care out of fear of becoming infected with SARS in these medical settings (Des Jalais et al., 2006).

### ***Individuals who are quarantined/isolated due to the disease***

Some of the additional risk faced by those infected can be attributed to the isolation that has been discussed above. In general, people who are isolated experience higher rates of depression and anxiety than those who are not (Sharma et al., 2020), while they also experience reduced self-esteem and sense of control (Pursell et al., 2020). Many Americans (15%) say that their mental health is suffering as a result of the “social distancing” recommended during the COVID-19 pandemic, even when their physical health and financial health are not suffering (Brenan, 2020).

Quarantine and Isolation can expose individuals to stressors both during and after the quarantine/isolation period that may result in adverse acute and long-term psychological outcomes. Financial loss can

be a problem during quarantine, with people unable to work and having to interrupt their professional activities with no advanced planning; the effects appear to be long lasting. In the reviewed studies, the financial loss as a result of quarantine created serious socioeconomic distress and was found to be a risk factor for symptoms of psychological disorders and both anger and anxiety several months after quarantine (Brooks et al., 2020). Longer quarantine is associated with poorer psychological outcomes, perhaps unsurprisingly, as it stands to reason that the stressors reported by participants could have more of an effect the longer they were experienced (Maunder et al., 2003).

### ***Family members of individuals who are infected, isolated, or quarantined***

With the urgency of COVID-19, there have been profound changes in how we care for people who are sick or dying, and those they leave behind. "Hospitals have closed their doors to visitors, separating patients from family and friends. Reports of families denied access to patients dying from COVID-19, refusals to release bodies, and restrictions on funerals are widespread" (Yardley & Rolph, 2020). According to Yardley & Rolph (2020), some hospitals are allowing just one visitor for patients at the end of life, and if a person dies, there are limited bereavement services available, to minimize human contact. They also expressed that family members are concerned about basic care not being given, no one being there to tell caregivers what the patient is "really like", decisions not being made on just grounds, and that the patient might die in pain. All of these factors have significant impact on not only the person with the illness but also their family members.

Families and friends whose loved ones died of Ebola Virus Disease (EVD) experienced psychological problems including depression, sleep disturbances, and post-traumatic stress symptoms; and their use of alcohol and nicotine increased following the loss (Yadav, 2015). A 2014 study found that survivors of EVD experienced inability to concentrate, lack of sleep, unhappiness, or depression which could largely be predicted by loss of family member (Mohammad et al., 2014). Family members have reported difficulties due to not being able to provide direct support to their sick relatives in quarantine. And childcare issues as well as pre-existing marital tensions while a family member was hospitalized were also reported as risk factors for psychological issues during the SARS epidemic (Maunder et al., 2003).

### ***Older People***

According to the CDC, "8 out of 10 deaths [due to Coronavirus] reported in the U.S. have been in adults 65 years old and older" (CDC, 2020). Therefore, it is not surprising that older adults express higher levels of concern about the virus. A recent Pew (2020) poll showed that, "While about six-in-ten adults ages 50 and older (61%) are at least somewhat concerned that they will be hospitalized due to catching the coronavirus, only about four-in-ten adults younger than 30 (39%) say the same." Meanwhile about 26% of those ages 50 and up are very concerned about getting COVID-19 and needing to be hospitalized, while only about 18% of those under 30 are concerned about this.

### ***Children/Youth***

The closure of schools and subsequent disruption of routines and social networks can have an impact on young people. Routine and engagement with teachers and classmates are particularly important for children and difficult to maintain under the stay-at-home order. Furthermore, unequal access to equipment and internet connections can interfere with distance learning, and pre-existing problems with family dynamics may be exacerbated (Fleming, 2020). In a study in China on the initial impacts of COVID-19, students were found to have higher levels of stress, anxiety, and depression. The uncertainty of when

schools would re-open and potential negative impact on academic progression were hypothesized to have an adverse effect on the mental health of students (Wang et al., 2020).

In addition, given that education-mental health system collaborations are typically housed at schools, there are implications of school closures on access to mental health services. Adolescents in racial and ethnic minority groups, with lower family income, or with public health insurance are disproportionately likely to receive mental health services exclusively from school settings. These students may lack the family resources and existing relationships with clinicians to quickly gain access to alternative community-based services (Golberstein et al., 2019).

### ***People with preexisting mental illness/trauma***

Pre-existing mental illness and trauma history are predisposing factors for psychological distress during a stressful event such as an infectious disease outbreak. A history of previous episodes of depression significantly increases the risk of subsequent episode. Similarly, a history of childhood trauma, mental illness, or substance abuse increases the risk that someone will develop PTSD after living through a dangerous event. Other psychological factors like high sensitivity, low self-esteem, and a negative worldview also predispose people to depression and PTSD. A national probability sample completed a survey in response to the Ebola crisis. “History of mental health diagnoses and Ebola-related media exposure were associated with greater psychological distress and functional impairment. Prior acute stress and Ebola-related media exposure were also associated with Ebola-related worry” (Thompson et al., 2017). Meanwhile, “in patients with history of psychiatric illnesses, there was a high risk of anxiety and anger at four to six months after removal from isolation” due to MERS exposure (Jeong et al., 2016).

### ***First Responders Including Healthcare Workers***

Police, firefighters, search and rescue personnel, and emergency and paramedical teams are included in most definitions of “first responders” and have been studied most extensively in the literature related to natural disaster responses. While healthcare workers (HCWs) including nurses, physicians, laboratory personnel, and ancillary hospital staff also play important roles in response to natural disasters, they are playing an even more important role in response to COVID-19. Acute stress disorder (ASD) and acute and chronic posttraumatic stress disorder (PTSD) are the focus of considerable study in these workers. Traumatic responses include distress, worry, disturbed sleep or concentration, alterations in work function, difficulties with interpersonal relationships, increase in substance use, somatization, and depression. Studies of firefighters have generally found rates of PTSD ranging from 13% to 18% 1–4 years following large-scale response events. Personal events such as loss of a loved one, unemployment, and involvement in subsequent critical incidents were also related to the development of psychological symptoms. In mass disaster situations, exposure to dead bodies and remains has been reported to be especially stressful for disaster workers. Identification (“it could have been me” and “it could have been my child”) and emotional involvement with the deceased victims were risk factors for PTSD in disaster workers exposed to the dead (Benedek et al., 2007).

In Wuhan, China, where the COVID-19 pandemic began, about half of HCWs participating in a cross-sectional study reported experiencing increased depression and/or anxiety symptoms (Lai et al., 2020). Sadly, there have already been suicides by healthcare workers on the frontlines of the battle against COVID-19 in the U.S. Lorna Breen was an emergency room physician without pre-existing conditions. She contracted and subsequently recovered from COVID-19 and then returned to her New York City hospital

to treat more patients, reportedly putting in 18-hour days and sleeping in hallways. Breen was taking time off when she died of self-inflicted injuries (Romine, 2020). John Mondello, a rookie New York City EMT used his father's gun to commit suicide after telling colleagues that "the death toll from the coronavirus was weighing heavily on him" (Ortega, 2020).

There have been other serious psychosocial implications for HCWs during infectious disease outbreaks like EVD, including confusion, anger, and stigma from communities against HCWs (Chiapelli et al., 2015). In fact, HCWs were reportedly just as affected by the mental health repercussions of the epidemic as were the patients with EVD; a significant percentage experienced PTSD (Greenberg et al., 2015). In addition, many infected HCWs expressed concern about the risk to staff caring for them, some anger because their own risk had not been acknowledged properly, and also conflict between their roles as health care provider and parent including guilt about potentially exposing their families to infection (Maunder et al., 2003).

In 2006, randomly selected employees (n = 549) of a hospital in Beijing, China were surveyed concerning their exposure to the 2003 SARS outbreak, and the ways in which the outbreak had affected their mental health. About 10% of the respondents had experienced high levels of posttraumatic stress (PTS) symptoms since the SARS outbreak. Respondents who had been quarantined, or worked in high-risk locations such as SARS wards, or had friends or close relatives who contracted SARS, were 2 to 3 times more likely to have high PTS symptom levels, than those without these exposures. Respondents' perceptions of SARS-related risks were significantly positively associated with PTS symptom levels and partially mediated the effects of exposure (Wu et al., 2009).

### ***Marginalized Communities***

Racism, bigotry, heterosexism, transphobia, ageism, ableism, and other forms of discrimination can lead to feelings of invalidation, negation, dehumanization, disregard, and disenfranchisement. For some populations, laws and policies enacted throughout American history have resulted in mental health stressors passing from generation to generation. Discrimination based on language and cultural assimilation, for example, adds significant stress in many populations (California Pan-Ethnic Health Network, 2015). These factors potentially exacerbate the mental health impact of an epidemic for marginalized communities. Our review found limited research on the mental health impact of epidemics specific to such communities, detailed below.

#### ***People with Disabilities or Chronic Disease***

Substantial evidence shows that people living with physical disabilities are at least three times more likely to experience depression compared to the general population (Noh, 2016). People with physical disability experience multiple risk factors for depressive symptoms, including being victims of microaggressions, abuse, loss of roles, and stressors related to poverty, environmental barriers, or lack of access to appropriate health care. In addition,

Individuals with disabilities are disproportionately affected in disaster, emergency, and conflict situations due to inaccessible evacuation, response (including shelters, camps, and food distribution), and recovery efforts. Common experience reveals that persons with disabilities are more likely to be left behind or abandoned during evacuation in disasters and conflicts due to a lack of preparation and planning, as well as inaccessible facilities and services and transportation systems. Disruption to physical, social,

economic, and environmental networks and support systems affect persons with disabilities much more than the general population. There is also a potential for discrimination on the basis of disability when resources are scarce. (United Nations, 2020)

Millions of adults and children with disabilities live in segregated and often overcrowded residential settings where they can face neglect, abuse, and inadequate health care (Human Rights Watch, 2020), and where COVID-19 can spread rapidly. Caregiver fatigue is a major concern during stay-at-home orders, as taking care of family members with disabilities can lead to mental health issues for caregivers/parents/family members. “Should a child with a disability become sick or need medical care during the pandemic, many parents worry about rationing of care and supplies as another threat to their child’s safety (National Council on Disability, 2020). Stressors like these intensify enacted or perceived experiences of stigma and discrimination (Priestly et al., 2006).

Chronic disease, while sometimes a form of disability, can have an impact on mental health independent of the stigma and discrimination common to marginalized communities. Researchers have found that physical changes in the body can be accompanied by mental changes. Medical illnesses such as stroke, heart attack, cancer, Parkinson’s disease, and hormonal disorders can increase the risk of depression. Chronic pain is known to be associated with depression. Therefore, the mental health impact of an epidemic can be far more detrimental on this community.

### ***The Lesbian, Gay, Bisexual, Transgender, Queer, Questioning, Intersex, Asexual, Two-Spirit (LGBTQIA2-S) Community***

Due to stigma, discrimination, prejudice, and rejection, gender and sexual minorities face stress that can lead to psychological problems (California Pan-Ethnic Health Network, 2015).

Social distancing may be particularly difficult for those who have been rejected by their families, are not out with their families and now forced to be with them the whole time and/or are facing mental health issues. This results in increased mental health difficulties among young LGBTI people who have not disclosed their sexual orientation, or who have and are forced to quarantine with often unaccepting or abusive family members. This may lead to an increase in domestic violence experienced by LGBTI people and in many cases this abuse is emotional and in some cases it is physical. Closeted LGBTI people will experience stress due to their inability to freely express themselves and their fear of being outed (including fear of physical and emotional consequences), which will have long-term consequences on their physical and mental health. (ILGA-Europe, 2020)

Furthermore, “medical quarantine and medical surveillance can be re-traumatizing to intersex and transgender people who have been subjected to non-consented medical testing or procedures and monitoring based on their sex characteristics and/or gender identity and expression” (ILGA-Europe, 2020).

LGBTQIA2-S youth may be particularly vulnerable to negative mental health impacts associated with the COVID-19 pandemic. Even prior to the pandemic, LGBTQIA2-S youth have been found to be at significant increased risk for depression, anxiety, substance use, and suicidality (Russell &

Fish, 2016). These risks are even more pronounced among youth who are transgender or non-binary (Price-Feeney et al., 2020). An unintended consequence of physical distancing is potential loss of the social connections that protect LGBTQIA2-S youth from suicidality (Trevor Project, 2020).

### ***Racial and Ethnic Minorities***

Racial and ethnic minorities are disproportionately affected by infectious disease, as well as the mental health ramifications of an outbreak. A Pew Research Center poll found that Latinos (43%) are far more likely than white individuals (only 18%) to be very concerned about getting COVID-19 and needing to be hospitalized. A full 70% of Latinos are at least somewhat concerned. Meanwhile, about a third (31%) of African Americans are very concerned and 59% are somewhat concerned about getting COVID-19 and needing to be hospitalized (Pew, 2020). Minorities may be justifiably concerned, as available data suggest that an increased risk of adverse health outcomes is likely among racial and ethnic minority populations during a pandemic. According to Hutchins and colleagues (2009), racial and ethnic minorities:

experienced disproportionately poor health outcomes and greater barriers to care during both pandemic and annual pneumonia and influenza illnesses, including higher mortality, more complications, limited access to health care, lower annual influenza vaccination rates, and greater socioeconomic, cultural, educational, and linguistic obstacles to adoption of pandemic interventions. These health and social challenges place racial/ethnic populations at very high risk for poor health in a pandemic.

With regard to COVID-19, it is postulated that “the higher infection rate for African American communities can be attributed to preexisting social inequities including less reliable access to health care and a higher rate of chronic illnesses. Black people are also more likely to have jobs that require them to leave the house and to live in environments, such as apartment buildings, that make social distancing more difficult (Laurencin et al., 2020). Furthermore, "Civil rights leaders, politicians and community activists worry that concerns of racial bias will discourage black people from wearing masks to protect themselves and others, further increasing their exposure to a virus that is disproportionately infecting and killing African Americans" (Jan, 2020).

Recent data from the L.A. County Department of Public Health shows that “the death rate for Pacific Islanders in L.A. County is 12 times higher than it is for whites, 9 times higher than for Asians, 7 times higher than for Latinos, 5 times higher than for African Americans.” Dr. Raynold Samoa indicated that “the pandemic is unmasking the current conditions of poor health access and lower socioeconomic conditions”, as well as underlying conditions like diabetes and hypertension, which put them at higher risk. He also pointed to the communal nature of Pacific Islander culture, which has made it difficult to quarantine infected family members to contain the virus (Huang, 2020).

American Indian/Alaska Natives (AI/ANs) suffer from asthma, heart disease, and diabetes at disproportionate levels compared to the rest of the U.S., which makes them more susceptible to the coronavirus. As with Pacific Islanders, AI/AN communities tend to be multigenerational, and quarantining an elderly member of the tribe may be considered disrespectful. In addition, AI/AN communities lack adequate funding for and access to health care (Blake, 2020).

### ***Elevated body weight***

Some anecdotal evidence suggests that obesity plays a role in Coronavirus infection and complications. For example, a CDC report with descriptive statistics for 180 hospitalized adults reported through COVID-NET suggested that 48% of those hospitalized for COVID-19 in March of 2020 were categorized as “obese” (CDC, 2020). However, it failed to mention that this is within the margin of error for the population as a whole, where 42% are categorized as “obese”. None of these preliminary findings involve peer-reviewed research that controls for race, socioeconomic status, or quality of care, which typically account for health disparities. While the association between body weight and COVID-19 infection is likely overstated and has origins in weight stigma and biased reporting, one consequence of such reports is to exacerbate the stigma that larger-bodied people already face and make appropriate health care even less accessible. The mental health impact of such stigma includes depression, anxiety, disordered eating and eating disorders, and feelings of poor self-esteem, self-blame, and shame, and is typically accompanied by further social isolation and poor social support. In fact, a meta-analysis showed that “the greater the perceived weight stigma, the worse the mental health status.” (Emmer et al., 2020)

### ***Other Vulnerable Populations***

As mentioned, there are other communities that are potentially at greater risk for psychological problems, including: single mothers, pregnant women, women more generally, socio-political minorities, non-English speaking immigrants, residents of nursing homes, behavioral health care facilities, or inpatient care settings, inmates of correctional systems, homeless individuals, those with no formal education, those living in poverty, and essential workers such as those in the service industry and farmworkers. Many of these groups have pre-existing conditions like those mentioned above, which can exacerbate both the physical impact of COVID-19, and the psychological impact of an infectious disease outbreak. Many of these groups also live in situations where it is difficult to control the spread of Coronavirus. Given the uncertainty surrounding the virus, the additional risk of being exposed to the virus, or additional risk of complications because of underlying conditions, anxiety and distress should be anticipated in these populations. However, at the time of this writing, the literature is insufficient to remark on the mental health impact that the COVID-19 pandemic has had on any one of these groups.

## **D. Positive Effects/Protective Factors**

Our review did identify a handful of positive psychological effects related to infectious disease outbreaks. A recent article in Edutopia suggested that some students are benefiting from distance learning while in isolation under COVID-19. While many students miss the social experience of brick and mortar schools, those who are shy, hyperactive, highly creative, or face bullying or other social stressors, are relieved to be learning in a safe and flexible environment. Students who are bullied have lower academic performance, while pressures to fit in can influence participation and focus in class. There is also evidence suggesting that some kids’ grades are improving because they are getting more sleep (Fleming, 2020).

Although the SARS epidemic of 2003 was traumatic for residents of Hong Kong, many residents also experienced positive changes as a result of the outbreak, including improvements in social support and family relationships (Lau et al., 2006). Survey results indicated there was an increase in aspects of social

cohesion among certain groups. More than 60% of the respondents stated that they cared more about their family members' feelings, about one-third felt their family members and/or friends were more supportive, and about two-thirds of the respondents paid more attention to their mental health (Perrin et al., 2009). Furthermore, the psychological impact of stressful events related to an infectious disease outbreak may be mediated by peoples' perceptions of those events. Altruistic acceptance of work-related risks was negatively related to PTS levels, such that altruism may help to protect some health care workers against these negative impacts (Wu et al., 2009).

### **III. Interventions to Reduce the Mental Health Impact of Epidemics**

#### **A. Individual Level Interventions**

##### **1. Recommendations for Managing Stress for the General Public**

From our review, below are some recommended steps individuals can take to manage their stress and ease the fear and worry in an epidemic:

- Diet and exercise: Ensuring daily exercise activities have a positive impact on mental health (Usher et al., 2020). As well, ensuring well-balanced, healthy meals that include lean proteins, fruits, vegetables and whole grains and avoiding tobacco, drugs and excessive amounts of alcohol is beneficial.
- Maintain a routine: Having consistent, healthy habits is crucial in order to feel a sense of balance in unprecedented times. "It is recommended that individuals keep a regular routine, by having regular sleep-wake rhythms and diet patterns" (Fiorillo & Gorwood, 2020).
- Stay connected: "As the physical distance from each other increases, finding ways to maintain our social connectedness is critical as lack of interpersonal attachments is linked to poor physical, emotional, and mental health" (Baumeister & Leary, 1995). Setting up regular phone calls or video conferences with family, friends, and colleagues can bridge the gaps brought on by social distancing (Usher et al., 2020). In fact, eye contact allows for deeper connection and fulfillment in relationships, so face-to-face video calls over phone calls is recommended (UCLA, 2020). As an alternative, in case of insufficient social network, professional helplines are particularly useful, if managed by qualified trained professionals (Fiorillo & Gorwood, 2020).
- Spend time in nature: A growing body of epidemiological evidence indicates that greater exposure to natural environments (such as parks, woodlands, and beaches) is associated with better health and well-being. One study found that individuals who reported spending at least two hours in nature in a week had consistently higher levels of both health and well-being than those who reported no exposure (White et al., 2019). People can take refuge in walking in their neighborhoods while practicing safe distancing from their neighbors. If a person is sheltering in place in an urban area and cannot easily access natural spaces, they can seek out nature videos and recordings of natural sounds or take a virtual tour of a National Park (APHA, 2020).
- Practice mindfulness: An increasing body of research supports physical and mental health benefits of participation in mindfulness training. For example, Mindfulness-Based Stress Reduction (MBSR), is an evidence-based practice that includes psychoeducational training for adolescents and adults with emotional or psychological distress, such as those due to medical conditions, physical pain, or life events. MBSR is designed to reduce stress, anxiety symptoms, and depression symptoms, increase self-esteem, and improve mood, general mental health, and functioning (Baer et al., 2006).

- Limit media consumption: It is recommended that individuals rely on a limited amount of official information sources only and to limit the time devoted to this activity, while disregarding information from unofficial channels and uncontrolled sources (Fiorillo & Gorwood, 2020).
- Focus on the positive: Being aware that this period in time is temporary can be helpful in managing stress. It is helpful to remember that this time of physical distancing is needed as people are not only protecting their own health but also protecting all others by stopping the epidemic, and therefore shaping our community's future.

## **2. Recommendations for Mental Health Services and Supports**

To provide psychological care for patients and their families, proactive guidelines should be implemented. "Progression of anxiety symptoms, anger, and aggression experienced in the early stages of natural disaster can be prevented by early mental health care. However, without early intervention, these symptoms may evolve into long-term PTSD. Thus, symptoms of anxiety and anger should be recognized early on and appropriate intervention needs to be implemented for improvement in symptoms in the short-term" (Jeong et al., 2016). Mollica and colleagues (2004) recommend that "Early mental health interventions should focus on supporting public health activities aimed at reducing mortality and morbidity, offering Psychological First Aid, identifying and triaging seriously ill patients who need specialized psychiatric care, and mobilizing community-based resiliency and adaptation to the new circumstances affecting people during the emergency".

In terms of mental health services and supports, providing psychosocial support to distressed individuals (for example, during the acute stage of the illness and before discharge) is critical; as is providing specialized mental health intervention for severely affected survivors (Shultz et al., 2015). People with severe mental disorders are especially vulnerable during emergencies and need access to mental health care and other basic needs. "International guidelines recommend services at a number of levels – from basic services to clinical care – and indicate that mental health care needs to be made available immediately for specific, urgent mental health problems as part of the health response" (WHO, 2020).

## **3. Additional Considerations for Mental Health Interventions**

### **a. Integrated Approach**

The integration of mental health services into primary care has been widely promoted, especially in developing countries. "Primary care practitioners are able to help traumatized patients by identifying and treating medical and psychiatric disorders during complex emergencies" (Mollica et al., 2004). Wang and colleagues (2020) provide additional suggestions:

Health professionals should take the opportunity to provide resources for psychological support and interventions for those who present with physical symptoms, especially during hospitalization. Providing psychological treatment and support may reduce the burden of comorbid mental health conditions and ensure the wellbeing of those affected.

### **b. Modification of Psychological Interventions**

In general, it is recommended that the content of psychological interventions be modified to suit the needs of the general population during the epidemic (Wang et al., 2020). Pfefferbaum and colleagues noted that "there should be a focus on interventions that address uncertainty, enhance resilience and

coping, and foster adaptive behavior in dealing with messaging and community mitigation strategies as well as the disease itself.”

Some emerging literature on COVID-19 emphasizes the need to carefully assess the mental health status of the client before starting formal psychological interventions (e.g. CBT, EMDR, etc.) right away (Inchausti et al., 2020). For example, it is noted that, “intervening in individual’s natural coping mechanisms too early can be detrimental. There is evidence that these interventions may be ineffective or even increase the likelihood of developing PTSD” (NICE, 2018). Other research shows that, “Special attention should also be paid to the potential for ‘re-traumatization’ of PTSD presentations where trauma-focused therapies are implemented without adequate psychotherapeutic frameworks and structures” (Duckworth & Follette, 2012). That said, interventions should not stigmatize or block access to a person’s process of identifying as a survivor of the pandemic, which can be empowering (Muldoon et al., 2019).

Inchausti and colleagues (2020) state that it is,

...crucial to ensure individuals affected by COVID-19 retain a sense of their overall identity, and that this is not subsumed into an explanatory model reduced to the illness. Any intervention should be based on a thorough assessment of possible risk factors that may maintain the problem, the patient’s prior state of mental health, the history of bereavement, the presence of a history of self-harm or suicidal behaviours in both the patient and his/her family, the history of previous traumas, and the socio economic context of the patient. At this stage it is also important to recognise the likely profound impact of COVID-19 on economic, social and political levels at all levels from the individual to international. This may therefore require mental health systems to adopt new ways of working with structural inequalities emerging from the aftermath of COVID-19 and consistent with a Social Determinants of mental health model.

The focus of therapeutic interventions should include not only self-regulation techniques but also the exploration of autonomy, and expanding the healthy self (Dimaggio et al., 2015). Inchausti and colleagues (2020) note that “in majority of cases where we have adjusted delivery of psychotherapy to fit the pandemic restrictions, patients are seeking a balance between acceptance of the current condition, whilst still trying to challenge maladaptive schemas and develop an emergent healthy part of the self.” They also recommend that once issues relating to the present crisis have been dealt with, the patient and therapist can then “explore how the current distressing conditions create suffering not only for their direct traumatic effects, but also because they may indirectly bring existing personality, cognitive and emotional vulnerabilities to the fore.” They go on to state that, overall, this approach allows the patients to “connect their present experiences to lifelong vulnerabilities, enabling therapeutic work to continue as they did before the emergency, albeit with specific adaptations.”

Inchausti and colleagues (2020) provide some key points for clinicians in adapting clinical practice during and after an epidemic such as COVID-19, which are listed below:

- Therapist should validate that reactions to distress are to a certain extent normal during a crisis (e.g. fear, rage, anxiety, obsessions, guilt, constriction, rebellion against authority, emotion and behavioral dysregulation, etc.), albeit transitory.
- Therapists should “note how experiencing fears for their own and their loved ones health is understandable, that to be worried about the future of the economy is reasonable, how to behave

with a certain degree of obsessions is adaptive (e.g. hand hygiene) or that unexpected losses of temper are to be expected in confinement, etc.” (Inchausti et al., 2020). This is aimed at reducing feelings of self-shaming, self-criticism stigma, or guilt for one’s own weaknesses.

- “The clinician must first and foremost help the patients understand that their suffering is human and mostly unavoidable, this is not to say that they should be ignored or minimised. When patients can note how their mind is overwhelmed by symptoms, affect or relational problems, this creates a basis for agreement to work on them.”
- Self-disclosure is stated to be one of the most powerful interventions which can be used and therapists to strategically disclose moments of their own personal vulnerability during the outbreak. Using this technique, “clinicians may consider disclosing moments in which they experienced momentarily feelings of fear, even moving closer to panic, worry, anger, sadness, rebellion and irritation than one ordinarily would” (Inchausti et al., 2020). The goal being to create a sense of connection, decrease self-blame, and help a client set realistic mental health goals.

### **c. *Providing Technological Alternatives for Mental Health Treatment***

Providing mental health services in the context of patient isolation is a challenge, which highlights the role of telehealth (through videoconference, e-mail, telephone, or smartphone apps). Simple communication methods such as e-mail and text messaging should be used more extensively to share information about symptoms of burnout, depression, anxiety, and PTSD during COVID-19, to offer cognitive and/or relaxation skills to deal with minor symptoms, and to encourage access to online self-help programs. For people with COVID-19, telehealth can be used to monitor symptoms and also to provide support when needed (Zhou et al., 2020).

Service providers employ technology to be accessible to people with disabilities, ensuring they have appropriate access.

Alternative, accessible communications need to be developed for people with disabilities, particularly populations with deafness or hearing loss, low-literate individuals, people with cognitive limitations, and other hard to-reach populations. Telephone messaging should be augmented with text message notifications that are useful to individuals with hearing loss or deafness. Individuals with poor vision or blindness will require information in auditory formats or alternatives to standard print communications, such as large print and Braille. Accessible Web pages should use large, high-contrast fonts, little color, few illustrations, and file formats that can be read by screen readers. (Campbell et al., 2009)

Assistive Technology such as screen readers, voice command functionality, text-to-speech software, and large character keyboards and specially designed mice are other helpful accommodations (SF Digital Equity Playbook, 2018).

### **d. *Traditional Medicine and Practices***

One study reported by Chew and colleagues (2020) found that alternatives such as traditional medicine and healers (ancient culture-bound practitioners) were sought when modern healthcare services were not accessible or not desired. Some patients pursued alternative treatment such as qi-gong when faced with the limitations of modern biomedical treatment. This strategy was reportedly empowering and reduced feelings of uncertainty by providing a sense of control over their health.

Primary care practitioners and traditional healers can partner to provide culturally competent, effective mental health services during a complex emergency:

Traditional medicine covers diverse health practices, approaches, knowledge, and beliefs incorporating plant-based, animal-based, or mineral-based medicines, spiritual therapies, massage techniques and exercises applied singularly or in combination to maintain the wellbeing of the patient, and to treat, diagnose, or prevent illness. Traditional medicine is widely accepted and practiced as a valid form of treatment worldwide. A traditional healer is often a religious healer, or family, or community, elder. Traditional medicine generally uses a local classification system for emotional distress consisting of folk diagnoses accepted by the community. The accessibility of these practitioners and confidence in their abilities to manage mental health disorders, combined with the reduced stigma and potential cost effectiveness, mean that traditional healers should be supported in complex emergencies. The evidence base for such interventions is growing, and randomized trials in settings other than complex emergencies show the clinical effectiveness of herbal medicines, acupuncture, and non-medication therapies in reducing some forms of depression, anxiety, insomnia, and pain. (Mollica et al., 2004)

#### **4. Recommendations for Special Populations at Higher Risk**

##### **a. Individuals Who Are (or Were) Infected with the Disease**

It is critical that the mental health needs be assessed as soon as possible for those who are infected with the disease. Some recommendations on specific interventions are demonstrated by a hospital in Canada that was impacted by Severe Acute Respiratory Syndrome (SARS). As reported by Maunder and colleagues (2003):

- At this hospital, patients with SARS received an initial visit from the psychiatric clinician nurse specialist, and either the consultation-liaison psychiatrist or a social worker familiar with the intensive care setting.
- In these screening assessment interviews, it was emphasized that a wide range of emotional responses is to be expected in the face of such an extraordinary situation. Concerns and feelings expressed were interpreted as expected, normal responses.
- Immediate concerns were reviewed, especially the patient's family situation, relationship with people on his or her "contact list," expectations and fears about their own medical condition, and current symptoms.
- When indicated and desired, subsequent supportive psychotherapy aimed to balance a permissive approach to expression of feelings with pragmatic attention to the particulars of the patients' external reality.
- For the patients who were both parents and health care providers, particular attention was given to issues of powerlessness and the conflicting responsibilities of these two roles.
- In some cases, the simple presence of a person with the time and willingness to visit was identified as most valuable, especially for patients with SARS who were "doing well" and thus receiving relatively less nursing contact.

### ***b. Individuals Who Are Isolated or Quarantined due to Having the Disease***

As discussed previously, isolation or quarantine can further impact the mental health of those with the disease. The sooner individuals placed in quarantine/isolation can be assessed and connected to mental health services, the better the long-term outcomes. “Mental health problems at four to six months after release from isolation might be prevented by providing mental health support to individuals with vulnerable mental health, and providing accurate information as well as appropriate supplies, including food, clothes, and accommodation” (Jeong et al., 2016).

During the Middle Eastern Respiratory Syndrome (MERS) epidemic in the Gyeonggi province in South Korea in 2015, the public mental health system implemented the following interventions that showed a positive impact (Yoon et al., 2016):

- Public Health Centers (PHCs) provided information to quarantined individuals during monitoring concerning managing psychological difficulties that might arise during quarantine and using the consultation service.
- Community Mental Health Clinics (CMHCs) also psychologically evaluated all quarantined individuals during monitoring. The mental health professionals asked key questions about depression, “for the last two weeks or after being in quarantine, do you feel depressed or hopeless? Do you feel loss of interest in any part of your life?”
- After the key questions, they provided psychological support, psycho-educational approach and information.
- Among 1,221 Gyeonggi people placed in quarantine and who experienced psychological and emotional difficulties, 350 required continuing services; 124 of this group received continuing services. That is, 35% of people who required psychological intervention received contact from service providers and received the required services.

Strategies to minimize other negative effects of quarantine include the following:

- Boredom and isolation can cause distress; people who are quarantined should be advised about what they can do to stave off boredom and be provided with practical advice on coping and stress management techniques (Brooks et al., 2020).
- One study suggested that “having a telephone support line, staffed by psychiatric nurses, set up specifically for those in quarantine could be effective in terms of providing them with a social network” (Mauder et al., 2003).
- The ability to communicate with one’s family and friends is also essential. Particularly, social media could play an important part in communication with those far away, allowing people who are quarantined to update their loved ones about their situation and reassure them that they are well (Brooks et al., 2020).
- It is also important that healthcare providers maintain clear lines of communication with people quarantined about what to do if they experience any symptoms. Brooks and colleagues recommend that “A phone line or online service specifically set up for those in quarantine and staffed by health-care workers who can provide instructions about what to do in the event of developing illness symptoms, would help reassure people that they will be cared for if they become ill” (Brooks et al., 2020).
- There is evidence to suggest that support groups specifically for people who are quarantined at home during disease outbreaks can be helpful. One study found that “having such a group and

feeling connected to others who had been through the same situation could be a validating, empowering experience and can provide people with the support they might find they are not receiving from other people” (Brooks et al., 2020)

- Other useful interventions are straightforwardly pragmatic, such as arranging for pizza to be delivered to a house under quarantine, or making a trip to the drug store for hygiene supplies for a patient in isolation (Maunder et al., 2003).

### ***c. Family Members of Individuals who are Infected, Isolated, and/or Quarantined***

Some strategies to support family members include the following:

- “Technological solutions to communication between patients and families should be supported—through encouraging video calls and reminders to bring phones and chargers on admission—with families given clear daily updates, including discussing the possibility of dying” (Yardley & Rolph, 2020).
- Listening, empathizing, and taking the time to care are often more gratefully received than clinical explanations, although these are also important as well (Yardley & Rolph, 2020).
- Identifying family members' needs, offering an opportunity to express feelings, and supporting effective coping strategies helps to enhance the families' sense of competence and control when one of their family members was diagnosed with an infection (Maunder et al., 2003).
- “Many relatives are further reassured by evidence of the care that professional teams show to each other” (Yardley & Rolph, 2020).

Contacts or survivors who have lost close relations should be considered at high risk of developing psychological distress or even psychological disorders. For example, Abdulaziz and colleagues (2015) wrote that during the Ebola (EVD) outbreak, “the loss of a relation is a traumatic experience that has been shown to be a predictor of PTSD, and depression among persons exposed to traumatic experience in Nigeria. Therefore, the psychosocial response team for EVD outbreak should prioritize this subgroup of contacts and survivors for special monitoring and evaluation.”

### ***d. Older People***

It is critical that health care systems and communities consider the mental health burden of social distancing for the elderly and find ways to keep them engaged and motivated. Some recommended strategies are listed below.

“Online technologies could be used to provide social support networks and a sense of belonging, although there might be disparities in access to or literacy in digital resources” (Armitage & Nellums, 2020). It is recommended that “cognitive behavioural therapies be delivered online to decrease loneliness and improve mental wellbeing” (Armitage & Nellums, 2020). In addition, Jawaid (2020) found that “Mainstream media can play an important role by including content focused on the elderly, as data indicates that the elderly view television as a medium to cope with depressive symptoms”

As well, “interventions could simply involve more frequent telephone contact with significant others, close family and friends, voluntary organisations, or health-care professionals, or community outreach projects providing peer support throughout the enforced isolation” (Armitage & Nellums, 2020). In California, for example, the pre-existing “Friendship Line” has been expanded. The Friendship Line is “a vital lifeline for people aged 60 years and older and adults living with disabilities to connect with a

caring, compassionate voice ready to listen and provide emotional support” (Institute on Aging Friendship Line, 2020). With the arrival of COVID-19, the Friendship Line is helping to address the emotional well-being issues social isolation can bring. Jawaid (2020) recommends that:

Mental health support hotlines could add outgoing calls during which mental health professionals could reach out to the elderly and screen for symptoms of anxiety and depression. These measures could improve older adults' compliance with social distancing and help reduce the impact of COVID-19 on their mental health.

#### **e. *Children/Youth***

As young people are more receptive towards smartphone applications, “health authorities could consider providing online or smartphone-based psychoeducation and psychological interventions” (Wang et al., 2020). Wang and colleagues go on to say:

Telemental health services are shown to be similarly effective as in-person services. However, not all school-based clinicians and not all families have the technology needed to implement this as a comprehensive immediate solution, but when possible, it can help in the short term. If school-based and other in-person mental health services are inaccessible to children and adolescents, it highlights the potential value for other technology-enabled interventions. Although there is limited effectiveness of mobile mental health apps for adolescents currently, this is an area in which innovative technologies could fill a substantial gap if demonstrated to be effective.

Virtual delivery means that clinicians must also adapt how they interact and provide therapy. Some of the recommendations provided by the Covid-10 Rapid Response Network (MHSAOAC, 2020) include:

- Be mindful of the importance of maintaining eye contact and “heightening animation and enthusiasm, which requires more voice modulation and hand movement.”
- Incorporate therapeutic activities, such as worksheets into telemental health sessions. These can include worksheets for families and clients to track escalations in behavior and handouts to reinforce treatment components.
- Remember that telemental health is an opportunity to provide structure, which is helpful for adolescents and youth who are struggling with disrupted routines, so have a regularly scheduled time. More frequent, shorter sessions may improve engagement. For example, two 30-minute visits can replace one 60-minute visit.
- It is important to not pretend as though things are “status quo”. Focusing on ways to ease a child’s distress concerning the new situation may result in improved engagement in sessions.

In addition, it is also important to provide resources for caregivers as changes in structure are equally challenging for caregivers as they are for children. Most often, children are not used to being at home with their parents all the time, and parents are used to having others to help deal with their child’s issues. It is recommended that clinicians provide a written list of emergency phone numbers and resources to caregivers, as well as crisis hotlines/text-lines, teen mental health hotlines and smartphone apps, and apps that offer parental support and advice (MHSAOAC, 2020).

As well, clinicians should be mindful that privacy considerations may hinder the use of telemental health services. “With physical distancing recommendations in place, some youth may be unable to

access telemental health services in a private setting away from parents and siblings. This barrier may be especially important for lower-income families with smaller living spaces” (Golberstein et al., 2019).

**f. *People with Pre-existing Mental Illness/Trauma***

People with severe mental disorders are especially vulnerable during emergencies and need access to mental health care and other basic needs. “International guidelines recommend services at a number of levels –from basic services to clinical care– and indicate that mental health care needs to be made available immediately for specific, urgent mental health problems as part of the health response” (WHO, 2020).

**g. *First Responders including Health Care Workers (HCWs)***

It is important to safeguard the morale and mental health of first responders as this can influence the success of service delivery. Recovery from the negative impacts of this pandemic must include plans for addressing the mental health issues inevitable to healthcare professionals (Usher et al., 2020). Clinical and nonclinical staff may be expected to work longer hours with a high risk of exposure to the virus, contributing to psychological distress and the need for sick or stress leave, which would have a negative impact on the capacity of the health system to provide services during the crisis (Zhou et al., 2020). Ho and colleagues (2020) state, “It is vital to identify those who are burned-out or have psychological distress so that timely intervention can be provided, and staff should be encouraged to step forward without fear of being blamed”

Factors that have been found to be helpful for healthcare workers during an epidemic include the following (Perrin et al., 2009):

- Having clear directives
- Feeling well-equipped and protected
- Having the ability to give feedback to and feeling supported by management
- Having support from colleagues and family
- Having someone to talk with
- Having religious convictions
- Having a good understanding of the risk scenario
- Having confidence that the organization will provide appropriate protective equipment
- Receiving timely information
- Having access to psychological support
- Belief in having been well-trained to cope with emergency responsibilities, including the ability to communicate risk to others
- Having the perception that their personal roles within the settings are important

A hospital in Canada that experienced a SARS epidemic in 2003 implemented the following interventions to support the mental health of their health care workers (Maunder et al., 2003):

- Staff were given clear information in repeated, succinct messages and at staff meetings.
- There was appropriate and adequate provision of equipment and supplies.
- Occupational therapists developed a pamphlet to help HCWs identify the signs of anxiety and stress and information resources.

- The now-vacant medical ambulatory care clinic was immediately modified and replaced with a drop-in lounge in an open setting with soothing music, comfortable chairs and snacks.
- Senior staff acted as role models by making use of this support service and bringing others with them.
- A confidential telephone support line staffed by inpatient psychiatric nurses was set up for all hospital staff and was used particularly effectively by those in quarantine.
- An informal network of mutual telephone contact and support was arranged by quarantined staff of the intensive care unit.
- Staff on home isolation who had email access were able to receive all communications from the hospital.

Mount Sinai Health System (MSHS) Workforce in New York implemented the following interventions to support the mental health of their health care workers during the COVID-19 epidemic (Ripp et al., 2020):

- Resilience and self-care materials
- Virtual mindfulness, yoga, music therapy via free apps
- Social networking groups via free apps
- Group debrief support groups
- Virtual social worker/psychologist-facilitated support groups
- Spiritual care support groups
- Individual brief support
- System-wide peer support hotline
- Employee Assistance Program counseling
- Spiritual care one-on-one counseling
- Government/nonprofit help lines
- Crisis management System-wide peer support hotline
- 24/7 Mental health crisis support
- Deployment of mental health providers to units in need (virtually or in person)

As a final example, one study discussed an educational intervention targeted to HCWs during the SARS epidemic, which consisted of a face-to-face group training session based on Folkman and Greer's model of coping.

The session focused on stressors associated with pandemic influenza and on organizational and individual approaches to building resilience and reducing stress. While most participants did not feel prepared to deal confidently with the pandemic before the session (35%), there was a higher proportion of participants who felt better able to cope after the session (76%). (Cabello et al., 2020)

#### **h. *Marginalized Communities***

Our literature review showed that there is limited information on mental health interventions specifically for marginalized communities during or after an epidemic. Ethnicity and culture, including ability, gender, sexuality, and so forth, have a major effect on mental health-seeking behavior and treatment outcomes and these effects will probably be intensified during a complex emergency (Mollica et al., 2004). Mollica and colleagues (2004) recommend that, "cultural competence should

characterize the mental health action plan's goals and procedures in a complex emergency." The California Pan-Ethnic Network and the California Healthcare Foundation have listed twelve characteristics of a culturally competent organization that can be directly applied to the setting of a complex emergency.

There were some related themes among recommended interventions for various marginalized communities. For example, it was recommended that before, during, and after a pandemic:

Understanding and addressing the unique historical contexts, cultures, and social networks, as well as the often low socioeconomic status, of many racial/ethnic minority populations is essential to preparing and responding to an pandemic in marginalized communities. Therefore, as a long-term strategy, public health professionals, emergency managers, and other stakeholders need to include representatives from marginalized communities to inform their planning and response and, where appropriate, to adapt strategies to the context of diverse minority communities. Participation of minority populations should include input that addresses the socioeconomic, cultural, educational, and linguistic barriers faced by these populations. (Hutchins et al., 2009)

## **B. Community Level Interventions**

Although difficult to achieve in a complex emergency, the patient and the community should be equal partners in a shared decision-making process. Community input and participation are also needed for psychosocial interventions that operate at the collective level (Mollica et al., 2004).

Community interventions refers to those that involve multi-sector partnerships, include community members as part of the intervention, and/or involve the delivery of services in community settings, for example schools and homes. Interventions can impact traditional mental health outcomes as well as a wider range of outcomes including mental health-related knowledge, quality of life, and social well-being. Effective approaches to healing a community include activating multi-sector coalitions in the planning and implementation of mental health services and research, activating community leaders to reduce public stigma and promote shared accountability for mental health, and enhancing knowledge, attitudes, and collective efficacy in mental health (Castillo et al., 2019).

Every community has something of a culture unique to itself. This includes its specific history, legacy, geography, racial and ethnic composition, as well as individual government, economics and demographic qualities. When a disaster or trauma occurs in any locale, the threat is perceived from a culturally-specific lens and the response is informed by cultural, political, and social specifics. Just as it is imperative to understand an individual's unique psychological characteristics before prescribing a treatment, it is equally necessary to understand the unique qualities—the culture—of a community before prescribing a course of action. Communities have different leadership structures, social institutions, limitations and assets, and protocols for facing challenges. Each has its own future as well, a trajectory that will be affected by the manner in which it responds to a traumatic event (Wicke & Cohen, 2006). It is important to include the needs and voices of persons from marginalized communities at all stages of the disaster management process, especially during planning and preparedness, in order to significantly reduce their vulnerability and increase the effectiveness of Government response and recovery efforts (United Nations, 2020).

Below are some strategies employed during or after an epidemic to engage and empower communities to support their mental health needs:

### **1. *Engage and Partner with Community Leaders, Faith-based leaders, and Community Organizations***

Tucci and colleagues (2017) stated that, “Emergency mental health needs call for the use of community leaders, community health workers, and religious partners (e.g., hospital pastoral care professionals) as culturally appropriate case management resources to combat the tide of mental illness for a convalescing county through building in-community resilience.” The role of local primary social institutions cannot be understated in the response to a community crisis.

The power of local institutions to mobilize, to calm, to direct their own communities, may provide a model and cause a reevaluation of the role of outside rescue agencies and current procedures during disasters and extreme events. Primary proximate social institutions pre-dated the crisis, shared a vested interest in the community, understood important cultural elements of the area, and will remain with the affected population long after the crisis has passed. Outside entities, including helping organizations, on the other hand, are transient, unknown and cannot appreciate the cultural intricacies of the community. (Wicke & Cohen, 2006)

In particular, religious leaders and faith-based organizations can be useful in engaging and strengthening their communities during an epidemic in various ways. As community members work together, they can create a sense of solidarity and build resilience after an epidemic (WHO, 2020):

- They can help combat self-isolation through regularly checking in on individual members, preferably via phone. This is particularly important to account for individuals who may be living alone, who are elderly, who have disabilities or are otherwise vulnerable.
- They can actively speak out against violence and can provide support or encourage victims to seek help. Where a child is concerned, religious leaders should be informed of child protection and safeguarding policies, including what to report, to whom, and how.
- They can provide faith communities with appropriate prayers, theological and scriptural reflections, and messages of hope.
- Religious leaders and faith communities can promote the sharing of resources to provide for those whose livelihoods are disrupted and who cannot provide for themselves and their families. Religious leaders can encourage those who have the financial means to make donations to those whose livelihoods have been affected by the pandemic.

Involving community input and participation in interventions can be an effective macro-level strategy to support a community’s mental health (Mollica et al., 2004). According to the Center for the Study of Traumatic Stress, providing tasks for community action can supplement needed work resources, decrease helplessness, and instill optimism during crises.

### **2. *Community Self-help and Social Support***

It is important to note that the most consistent indicator of psychological resilience in a disaster setting was found to be social support (Rodriguez-Llanes et al., 2013). The World Health Organization (2019) states that,

After a disaster, communities can be strengthened by creating or re-establishing self-help community groups in which members solve problems collaboratively and engage in activities such

as emergency relief or learning new skills, while ensuring the involvement of people who are vulnerable and marginalized, including people with mental disorders.

Because infectious disease outbreaks impact entire populations, self-help groups can offer emotional support and practical help with concerns shared by all the members. Among LGBTQ individuals in particular, connection to the LGBTQIA2-S community, for example in the form of self-help groups, has been found to buffer the impact of stigma on depression and suicidality (Kaniuka et al., 2019).

It is important for LGBTQ youth and those who support them to remember that physical distancing does not equate with social isolation. There is already a thriving online LGBTQ community that allows LGBTQ youth to experience connections with others like them. Further, LGBTQ youth should be encouraged to maintain existing connections through virtual means such as video calls and video conferencing. Youth should also be encouraged to participate in shared activities such as online gaming, watch parties, or physical activity classes. Those in positions to support or serve as role models to LGBTQ youth, including the media and LGBTQ organizations, should encourage them to maintain social connections virtually and practice self-care during COVID-19. Doing so may result in LGBTQ youth actively seeking and maintaining connections and engaging in wellness activities that will positively impact their mental and physical health. (Trevor Project, 2020)

### **3. *Community Mental Health Outreach and Education***

During an epidemic, the community needs to build their capacity to recognize, assess, and connect members to mental health services and support. Psychological First Aid, Mental Health First Aid, Emotional CPR, and the Community Resilience Model are community training programs designed to increase knowledge about mental illness symptoms and resources, as well as decrease mental health related stigma in communities. Through these interactive trainings (described below), community members build new knowledge, skills, and confidence to apply to their work of assisting community members who may be at risk of developing mental health or substance abuse problems during and after an epidemic.

- Psychological First Aid (PFA) is for distressed people who have been recently exposed to a serious crisis event. PFA involves factors that seem to be most helpful to people's long-term recovery (according to various studies and the consensus of many crisis helpers). These include: feeling safe, connected to others, calm, and hopeful; having access to social, physical, and emotional support; and feeling able to help themselves, as individuals and communities (WHO 2011).
- Mental Health First Aid (MHFA) is an evidence-based practice with proven effectiveness. MHFA is an 8-hour mental health literacy program in which laypeople learn the signs and symptoms of behavioral health problems and crises, ways to support those who are facing a crisis, and where to refer for appropriate professional care
- Emotional CPR (eCPR) aims to guide laypeople to help those who are experiencing a mental health crisis.
- The Community Resilience Model (CRM®) trains community members to not only help themselves, but to help others within their wider social network.

The primary focus of CRM® is to educate individuals about the biology and neurophysiology of toxic stress and trauma as well as teach simple biologically-based wellness skills, which can

help re-set and stabilize the nervous system. CRM®'s goal is to help to create “trauma-informed” and “resiliency-informed and focused” communities that share a common understanding of the impact of trauma and toxic stress on the nervous system and how resiliency can be restored or increased using this skills-based approach. CRM is a “research-informed” intervention as demonstrated by a State of California Mental Health Services Act Innovation’s Project, which yielded statistically significant reductions in depression and anxiety as well as reductions in hostility and somatic indicators. (TRI, 2019)

#### **4. Community Health Workers (also called Lay Health Workers, Promotores, Health Promoters)**

Community health workers (CHWs) are lay persons trained to assist in the communication or provision of health services and represent one method for extending health services, particularly in underserved or remote populations (Boyce & Katz, 2019). CHWs can work in partnership with local health departments and academic health centers to address community mental health needs at all stages of an epidemic. They can also partner to identify those with mental health needs in the community (Mollica et al., 2004).

Community health workers often represent a trusted voice in the community and thus also represent valuable assets for social mobilization and the distribution of health information during outbreaks. Engaging CHWs in risk communication strategies and plans could act to simultaneously expand the reach of communication networks and enhance the perceived validity of the information dispersed by them. This could help to reduce the risk of misinformation and rumors that can lead to fear, social unrest, and violence during an outbreak response. CHW interventions can also extend access and increase acceptability of mental health services by leveraging trusted relationships. For example, in one study, CHWs demonstrated the successful delivery of behavioral activation for depression through relatively brief training to a population with significant barriers to healthcare access (Boyce & Katz, 2019). Another study showed that CHWs, “elevate demand for services by increasing awareness of services and mental health literacy and by reducing stigma and barriers to care” (Barnett et al., 2018). Further, CHW interventions increase the supply of services in under-resourced areas by enlarging the workforce of culturally appropriate providers (Boyce & Katz, 2019).

One model that has been shown to be effective is the IMPaCT™ model, developed by the Penn Center for Community Health Workers. IMPaCT is “a standardized, scalable program that leverages community health workers –trusted laypeople from local communities– to improve health” (The Penn Center, 2020). Based on the website,

IMPaCT has become the most widely disseminated community health worker program in the United States; it is being replicated by organizations across 18 different states including Veterans Health Administration, state Medicaid programs; integrated healthcare organizations and even retailers such as Walmart. IMPaCT™ includes a suite of comprehensive work manuals for all roles and programs. These manuals include cost savings models, structured supervision guidelines, caseloads, standardized CHW interview guides and more. (The Penn Center, 2020)

Given that CHWs already play a role in pandemic preparedness, expanding their roles and responsibilities represents a practical means of improving pandemic and community-level resilience (Boyce & Katz, 2019). Thus, IMPaCT involves regular trainings for all staff, exposing them to best practices, and also provides automated reports so that HCWs can track metrics such as chronic diseases and patient satisfaction. “IMPaCT has been tested in three randomized controlled trials and improves chronic disease control, mental health and quality of care while reducing total hospital days by 65%” (Kangovi et al., 2018).

## **5. Community Capacity Building and Community Empowerment**

As a long-term strategy, community engagement and empowerment strategies can support community resilience in the recovery from an epidemic and preparedness for future epidemics. Approaches should focus on tapping into the inherent strength of communities, and emphasize resilience rather than vulnerability. “Interventions should be directed toward mobilizing resources for long-term physical, emotional, psychological, and spiritual healing with the goal to engage the extended social support systems that can help empower and inspire individuals, families, and communities to reconnect and identify resources for healing” (Landau, Mittal, & Wieling, 2008).

There is evidence that community empowerment is a viable public health strategy (Wallerstein, 2006). In fact, a greater sense of community (the strongest predictor), perceived neighborhood control, and neighborhood participation were independent predictors of better self-reported health and fewer depressive symptoms (Parker et al., 2001). Wallerstein (2006) states: “The most effective empowerment strategies are those that build on and reinforce authentic participation ensuring autonomy in decision-making, sense of community and local bonding, and psychological empowerment of the community members themselves.” Therefore, health promotion should address effective empowerment strategies, which include:

- Increasing citizens’ skills, control over resources, and access to information relevant to public health development
- Using small group efforts which enhance consciousness on public health issues, to build supportive environments and a deeper sense of community
- Promoting community action through collective involvement in decision-making, participation in all phases of public health planning, implementation and evaluation, use of lay helpers and leaders, advocacy and leadership training, and organizational capacity development
- Strengthening healthy public policy by organizational and inter-organizational actions, transfer of power and decision-making authority to participants of interventions, and promotion of governmental and institutional accountability and transparency
- Being sensitive to the health care needs defined by community members themselves

## **IV. Recommendations for LACDMH/mental health systems to implement best practices**

This section summarizes practices that have been found to be effective in previous epidemics or that have been recommended by subject matter experts. Recommendations are separated into four categories: (A) Engage in Surveillance, Assessment and Triage, (B) Provide and Evaluate Use of Interventions and Resources, (C) Multi-media messaging, and (D) Develop Infrastructure with more specific strategies summarized within each.

### **A. Engage in Surveillance, Assessment and Triage**

#### **1. Identify those at higher risk using the following strategies:**

- a. Use simple, ethnographically informed quantitative measures to assess mental health needs, especially for vulnerable populations. The measures should cover (1) macro-level factors (economic opportunities, social capital, and human rights violations), (2) mental health outcomes (symptoms and disability), and (3) available mental health resources. Existing tools to consider are listed below. Please note that these primarily assess mental health outcomes:

- General Outcome Measures: Short Form Health Survey (Ware & Sherbourne, 1992); Mental Health Screening Form III (Carroll & McGinley, 2001); The Mini-International Neuropsychiatric Interview (Sheehan et al., 1998); General Health Questionnaire (Goldberg et al., 1978)
  - Trauma Outcome Measures: Clinician-Administered PTSD Scale (Blake et al., 1990); Modified PTSD Symptom Scale (Falsetti et al., 1993); PTSD Checklist (Weathers et al., 1993); Stanford Acute Stress Reaction Questionnaire (Cardena et al., 2000); Impact of Event Scale (Horowitz et al., 1979; Weiss & Marmar, 1997); Trauma Symptom Inventory (Briere, 1995); Trauma Symptom Checklist for Children (Briere, 1996b); Harvard Trauma Questionnaire (Mollica et al., 1992)
  - Depression and Anxiety Outcomes Measures: Patient Health Questionnaire – 9 (Spitzer et al., 1999); Center for Epidemiologic Studies Depression Scale (Radloff, 1977); Beck Depression Inventory II (Beck et al., 1996); Hopkins Symptom Checklist-25 (Hesbacher et al., 1980); COVID-19 Anxiety Screener (Lee, 2020)
- b. Take advantage of technological platforms that can collect large amounts of data from individuals in a short amount of time. Apps such as Headspace and Gallup can collect data on users that give insights into the experiences and emotional health of large groups of people.
  - c. Pay special attention to at-risk sub-groups, particularly those referenced in this report, including individuals who test positive and are (or were) infected with the disease, individuals who are quarantined/isolated due to the disease, family members of infected/isolated/quarantined, older people children/youth, people with pre-existing mental illness/trauma, healthcare workers, and marginalized communities, such as people with disabilities, the LGBTQIA2-S community, racial/ethnic minorities, and larger body size (see Sections IIC and IIIA4 for more information).
  - d. Continue to monitor individuals over time. Ongoing negative life events may place certain people at higher risk for the negative mental health impact of an outbreak.

**2. *Partner with health services and local community resources to identify those in need of mental health services***

- a. Work with physicians, particularly general practitioners and Emergency Department doctors, to proactively screen for psychological issues in patients who come in for consultations.
- b. Partner with traditional healers and relief workers to identify those with mental health needs. Consider indigenous community resources that might be candidates for establishing sentinel surveillance capabilities (see Section IIIA3d for more information).
- c. Lay health advisors and the faith community should work in partnership with local health departments and academic health centers (see Section IIIB for more information).

**3. *Conduct local epidemiological research***

Have psychiatrists and public health specialists conduct local epidemiological research to describe mental health issues that arise concomitantly with any epidemic to provide the underlying basis for appropriate targeted intervention to be implemented.

**B. Provide and Evaluate Use of Interventions and Resources**

**1. *Telehealth***

- a. Use telehealth (through videoconference, e-mail, telephone, or smartphone apps) to help patients maintain psychological well-being and cope. Telehealth has been found to be effective for treating various disorders, including depression, anxiety, posttraumatic stress

- disorder (PTSD), and substance use disorders, across different age groups, including adults and children, and across diverse racial and ethnic groups (Gloff et al., 2015; Hilty et al., 2013). Research also suggests that telemental health interventions may be as effective as in-person treatment, produces similar satisfaction with services, and may ultimately be cost-saving (Bashshur et al., 2016). Note: for people with COVID-19, telehealth can be used to monitor symptoms and also to provide support when needed.
- b. Consider making technology available to those that do not have access to it. For example, the Oklahoma Department of Mental Health and Substance Abuse is providing every city-county health department in the state with an iPad for walk-in services and for in-home use. The iPad is set up to link individuals to community mental health providers in their area and to provide technical support for those less familiar with technology (Canady, 2020).

## **2. *Other forms of technology***

- a. Simple communication methods such as e-mail and text messaging should be used more extensively to share information about symptoms of burnout, depression, anxiety, and PTSD during COVID-19, to offer cognitive and/or relaxation skills to deal with minor symptoms, and to encourage access to online self-help and self-directed programs.
- b. Use apps such as Headspace to give staff access to resources that can be useful for them to practice coping and to use with their consumers as well.
- c. Plan for expanded crisis hotlines. Ensure that these hotlines are properly staffed and that there is adequate training, scripts, referral mechanisms, and equipment.
- d. Establish alternative means for people to “connect” outside of crisis situations. These could potentially include hotlines, warmlines, and interactive Web sites.
- e. Make resource lists and post to the organization’s website as well as distribute to behavioral health professional associations and stakeholder groups across the country and to state public health authorities.
- f. Virtual support groups can be a validating, empowering experience and can provide people with the support they might find they are not receiving from other people (see Section IIIB2 for more information).

## **3. *Deploying appropriate staff and monitoring wellness***

- a. Identify via psychological assessments and review of past performance those essential personnel who are most likely to excel in a crisis.
- b. Cross-train those most essential personnel in technical skills beyond their usual work to enable them to fill in behind their colleagues who might not be able to work. Identify less critical roles for those more vulnerable to crisis.
- c. Provide supplementary crisis management training and create technical assistance mechanisms to help train and guide staff.
- d. Define simple diagnostic and treatment algorithms for mental health and train staff in their use.
- e. Create alternative staffing plans—including redeploying staff from clinics, hospitals, and other agencies—to fill behind absent and incapacitated staff.
- f. Develop lists of private practitioners who can be available in a crisis.
- g. Attend to the emotional well-being of health care workers, especially monitoring for fatigue and overwork. Focus on motivating, protecting, and promoting the workforce by acknowledging, validating, and responding to their psychological needs. Prepare staff for the moral injuries they may have to face on the job. Consider holding forums to safely discuss the

emotional and social challenges of caring for patients and having managers regularly check in with supervisees (see Sections IIC and IIIA4g for more information)

**4. *Evaluation of interventions***

Administer outcome measures to assess the impact of mental health interventions. Use of technology can be a particularly helpful method to monitor these outcomes over time for a large group of individuals. Some applications and technologies may already monitor outcomes, or measures could be built into other technological systems.

**C. Multi-media messaging**

**1. *The “what” of messaging***

- a. Embed public education into existing disaster public education campaigns, resources, and initiatives.
- b. Use uncomplicated, empathically informed information on normal stress reactions and emphasize hope, resilience, and natural recovery.
- c. Information should be timely, accurate, and evidence-based to minimize the detrimental impact of “fake news”.
- d. Provide practical tips on how the public should react during the epidemic (e.g. hand hygiene and mask wearing) and emotionally cope with the fear and uncertainty of the virus (e.g. positive reframing of mindset). Messaging should include rationale, duration, and required actions on the part of institutional leaders and general citizens.
- e. Anticipate messaging issues that have high psychosocial impact, such as perceived scarcity of resources, varied implementation of federal guidance across state and local jurisdictions, and perceived fairness and equity.
- f. Involve community leaders and the general public in testing and revising messages. Review the messages for cultural content and impact.
- g. Create a bank of messages that address emergency actions (e.g., school and workplace closings, travel restrictions, rationing, quarantine, temporary morgues).
- h. Focus on altruism by reinforcing that quarantine is helping to keep others safe, including those particularly vulnerable (such as those who are very young, old, or with preexisting serious medical conditions), and that health authorities are genuinely grateful to individuals in quarantine.

**2. *The “when” of messaging***

- a. Issue updates on a regular basis, being mindful not to send too many messages at once as this can dilute information.
- b. Provide timely information when available.

**3. *The “who” of messaging***

- a. Identify community leaders (including faith-based leaders), spokespersons, and natural emergent leaders who can affect community and individual behaviors and who can endorse and model protective health behaviors. Consider those who have influence including corporations, the media and celebrity groups.
- b. Work with schools and local or regional experts to offer in-service training and to identify, or develop, and disseminate educational material for parents, including around bereavement and death notification.

**4. *The “how” of messaging***

- a. Consider providing information in a diagrammatic or audio format in simple languages to support those with no educational background during the epidemic.
- b. Consider providing online or smartphone-based psychoeducation about the virus outbreak, or to promote mental wellness and initiate psychological intervention.
- c. Create the messages in a wide variety of media (broadcast, Internet, print); and ensure that they are linguistically and culturally diverse and can be easily accessed by individuals with disabilities (see Section IIIA for more information).

**D. Develop Infrastructure**

**1. *Leadership***

Have contingency emergency succession plans that spell out those most qualified to assume leadership positions and to provide the necessary preparation for such a contingency (Manderschied, 2007).

**2. *Resources***

- a. Consider the maintenance of motivation, capital assets, equipment, and funding to continue preparedness efforts over the long term.
- b. Develop simple mechanisms to reprogram Federal funds for urgent mental health services and create mechanisms to waive any legal and regulatory barriers.
- c. Consider public–private partnerships and other creative associations and funding mechanisms to help meet the significant technical assistance needs the private sector will require.

**3. *Research***

Create a mental health research base that could be facilitated by leveraging opportunities for field studies that integrate mental health concerns in existing data collection efforts.

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