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Addressing mental health in patients and providers during the COVID-19 pandemic[☆]

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ABSTRACT

The pandemic, and the associated changes to pregnancy and postpartum experiences, can lead to profound psychological reactions including panic, hyperarousal, sleep disturbance, anxiety, depression, and traumatic stress disorders. Providers face compassion fatigue and shared trauma. In this article, we describe the mental health outcomes known to date in regard to the novel coronavirus disease 2019 pandemic for obstetric patients and their providers as well as therapeutic approaches, including our novel embedded mental health service, to address these mental health needs.

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Introduction

Before the Common Era, Deuteronomy, the tale of Gilgamesh, and works by Herodotus described the significant mental health consequences of traumatic experiences, and yet through the 20th century the absence of a palpable, identifiable organic lesion stalled recognition of this phenomena as well as early intervention and treatment.¹ Was it possible for a psychological experience, even one involving overwhelming fear, horror, helplessness, and dread, to dramatically affect a person's behavior, emotional well-being, and cognitive functioning? In the 1970s, almost a quarter of all soldiers sent to Vietnam between 1964 and 1973 required some form of psychological help. What was then called "Post-Vietnam Syndrome" led to the adoption and codification of Post-Traumatic Stress Disorder (PTSD) as a diagnostic category by the

American Psychiatric Association in the 1980 edition of the Diagnostic and Statistical Manual (version III).¹ Today we understand that people exposed to traumatic experiences versus those unexposed are at increased risk for PTSD, Acute Stress Disorder (See [Table 1](#)), depression, anxiety, and substance abuse problems. Those exposed also have higher rates of somatic symptoms and physical illnesses, in particular hypertension, asthma, and chronic pain conditions.² Evidence for mind (the psychological experience of trauma) to brain causality for PTSD and other mental health disorders³ comes from spectacular discoveries in molecular biology and neuroscience, including data showing cross-generational environmental alterations of HPA-axis sensitivity and DNA methylation of glucocorticoid receptor genes in children whose parents survived the Holocaust,⁴ and data linking childhood abuse to enhanced fear circuitry detected in MRI studies.⁵ These discoveries have led to the broad acceptance

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Table 1 – Symptom comparison between Acute Stress Disorder and Posttraumatic Stress Disorder.

	ACUTE STRESS DISORDER	POST TRAUMATIC STRESS DISORDER
Onset	Immediately following or shortly after direct or indirect exposure to a traumatic stressor	At least one month after direct or indirect exposure to a traumatic stressor
Duration	Symptoms occur for a minimum of 3 days and a maximum of 1 month	Symptoms occur for at least 1 month and may last for years
Clinical Picture	<ul style="list-style-type: none"> • Dissociation (sense of detachment from oneself) • Dissociative Amnesia (trouble recalling details from stressful event) • Anxiety • Flashbacks (intrusive memories of the stressful event) • Difficulty Sleeping & Nightmares • Poor Concentration • Hypervigilance • Avoidance of people, places or experiences related to stressful event 	<ul style="list-style-type: none"> • Dissociation (sense of detachment from oneself) • Dissociative Amnesia (trouble recalling details from stressful event) • Anxiety • Flashbacks (intrusive memories of the stressful event) • Difficulty Sleeping & Nightmares • Re-experiencing • Hypervigilance • Avoidance of people, places or experiences related to stressful event • Changes in mood and cognition
Usual Treatment	Short-term psychotherapy and/or medication	Long-term psychotherapy and/or medication

of mental health conditions as a consequence of trauma. Moreover, because new research shows that the interactions between physical and mental health are protean and complex, impacting pathophysiology as well as social policy and health care systems, mental health is increasingly included as a health care topic on equal footing with other health care topics. We are beginning to accept that there is no health without mental health.⁶

In this article, we review the mental health outcomes for obstetric patients and their providers known to date in relation to the SARS-CoV-2 virus and associated pandemic (COVID-19), drawing as well on knowledge gained from prior widespread traumatic events (e.g., the 9/11 terrorist attacks, Ebola epidemic). We also review effective treatment approaches to aid OBGYN Departments in obtaining appropriate help for their patients and providers. Finally, we include a brief summary of, and lessons learned from, our novel, mental health service in the OBGYN practice at Women's Mental Health @ Ob/Gyn (WMH @Ob/Gyn) embedded within the Department of Obstetrics and Gynecology at Columbia University Irving Medical Center, which has facilitated a nimble, successful, and varied approach to caring for the mental health needs of obstetric patients and providers working throughout the department, especially in the time of COVID-19.

COVID-19's impact on mental health

The SARS-CoV-2 virus has affected the global psyche in unprecedented ways not seen since the 1918 influenza pandemic. COVID-19 stirred psychological reflexes of panic, hyperarousal, sleep disturbance, anxiety and depression throughout the world.⁷ The emergence of widespread disease tends to foster uncertainty, fear, anxiety and stress levels that have the capacity to exhaust coping mechanisms and contribute to trauma.⁸ Associations have been established between pandemics and elevated symptoms of stress, anxiety, contamination worries, health concerns, post-traumatic stress, and suicidality.⁹ In the absence of targeted treatment of, or a cure for, COVID-19, many nations have responded by implementing strict quarantine and isolation measures to slow transmission rates—these measures have contributed to the risk of mental health consequences. As the incidence of new infections

continue to decline, a potential rise in mental health sequelae is anticipated signaling a need for responsive, accessible and efficient mental health relief systems, particularly for vulnerable populations and patients with pre-existing mental health conditions. To date, research findings emphasize the medical aspects of COVID-19. These studies do not adequately capture the looming global mental health crisis.¹⁰ Descriptions of psychological responses to previous pandemics provide a framework for understanding COVID-19's likely profound mental health effects. Reflecting on psychological responses to earlier infectious disease outbreaks further facilitates insight in to resilience and protective factors in times of acute stress.

Mental health for all

Typical rates of psychiatric morbidity of general populations are relatively well-established. For example, in the United States (U.S.), one in every five adults cope with mental illness.¹¹ Specifically, the population prevalence of mental disorders for the most recent year tabulated (2018) are as follows: major depressive disorder 7.1%; any anxiety disorder 19.1%; and PTSD 3.6%—all of these statistics show higher rates in women at 8.7%, 23.4% and 5.2%, respectively.¹¹ Studies largely outside the U.S. indicate high rates of psychological distress and stress-related mental health disorders in the context of other health crises such as Ebola virus disease (EVD), severe acute respiratory syndrome (SARS), Middle East respiratory syndrome (MERS), avian influenza (H5N1) and Zika virus.^{8,12} Clinically significant post-traumatic stress symptoms were identified in 25% of the general population in Singapore following the SARS outbreak. Descriptions of psychological responses to COVID-19 among general populations in China echo that of earlier health crises showing upticks in prevalence rates.⁸ Wang et al., (2020) surveyed 1210 people living in 194 cities in China and found that more than 50% rated the psychological impact of COVID-19 as “moderate or severe” based on the Impact of Event-Scale Revised (IES-R). In this survey distributed between January 31 and February 2, 2020, 16.5% of the population endorsed moderate to severe depressive symptoms, 28.8% moderate to severe anxiety symptoms, and 8.1% severe stress levels based on the Depression, Anxiety and Stress Scale (DASS-21).¹³ Overall, negative emotions and cognitions are pervasive in descriptions of previous outbreaks of infectious

disease, and psychological themes of vulnerability, helplessness, hopelessness, grief, and depression often are long-lasting.⁸

Current quarantine strategies have been critical to mitigating the spread of COVID-19. The shut-down of nearly all major cities has changed social behaviors and isolated individuals. Mundane routines, traditions, and celebrations have been reshaped or simply placed on hold in a time of social distancing. Quarantine has been shown to contribute to feelings of confusion, anger, and increased stress, which may lead to an increased risk of violence and uptake in substance use as a coping measure.¹⁴ Moreover, prescribed behavior changes in the context of social distancing may diminish an individual's sense of safety, control or social support. Simultaneously, there is perhaps almost universally a pervasive but ambiguous loss associated with isolation. Dwindling access to mental health services deemed non-essential (see below for strategies to maintain access to mental health care), restrictions on social gatherings, religious services and other community supports have effectively disarmed individuals of external coping mechanisms.¹⁵ The absence of familiar and adaptive coping skills in the context of isolation can be expected to have a negative effect on mental health.¹⁵ Any of these factors may amplify levels of distress and individual risk for developing mental health disorders.

The obstetric patient

The perinatal period is a time when many women become more susceptible to psychiatric illness.¹⁶ Non-psychotic mental disorders are the most common morbidities experienced during the perinatal period.¹⁷ Psychosocial vulnerabilities such as substance use, intimate partner violence (IPV) and hormonal mediated mood changes can have profound lasting effects on maternal mental health, child development and the dyadic bond.¹⁸ Current literature supports the association between increased stress experienced during the perinatal period and long-term mental health sequelae.¹⁶ Psychiatric illness during pregnancy is associated with inadequate prenatal care and poor maternal health.

In the U.S., mental health disorders during the perinatal period are common with a prevalence of 25.3% during pregnancy and 27.5% during the postpartum phase.¹⁹ Depression is common during the prenatal period with a period prevalence of 21.9%.²⁰ Nevertheless, treatment and diagnostic rates are low (14%) compared to the general population.²⁰ Often overlooked, perinatal anxiety disorders are common with a reported prevalence of 13% in the U.S.¹⁷ It is estimated that in the US, 152,000 to 324,000 pregnant women experience some form of abuse each year¹⁷ and in the context of pregnancy, IPV is associated with adverse birth outcomes. One multicenter study conducted in Sydney, Australia found IPV to be associated with an increased risk of perinatal depression, preterm birth, and/or non-exclusive or non-initiated breastfeeding at time of discharge.²¹ The association between IPV and mental health is bidirectional, such that IPV is associated with the increased risk of psychiatric illness, which itself is a risk factor for IPV.²² According to the 2012 Survey on Drug Use and Health, and in order of frequency in use, 5.9% of pregnant women engage in illicit drug use, 8.5% consume

alcohol, 15.9% smoke cigarettes with some studies citing polysubstance use as high as 50%.²³

No data exist to date specifically on the impact of COVID-19 on mental health in pregnancy and postpartum women; however, pre-pandemic population rates of depression and other mental health conditions are known, and emerging findings during the early stages of COVID-19, as well as the potential effects of significant new life stressors, indicate the impact on perinatal mental health will be dramatic. Accordingly, the incidence of perinatal psychiatric morbidity is expected to increase in the context of COVID-19 related stressors, including quarantine, rising unemployment rates, economic hardship, and IPV. This increase will most likely have graver mental health implications for minority and underserved communities and those who have experienced structural racism and other forms of adverse discrimination. There is evidence in the literature suggesting disasters have a disparate impact on maternal mental health with some studies suggesting an effect on birth outcomes, including neonatal birth weight and increased risk of preterm labor and births.^{24,25} A recent nationwide survey in China examining mental health sequelae of COVID-19 revealed that women compared to men were more likely to experience psychological distress, including increased incidence of symptoms of PTSD.^{7,26} In 2016, high levels of stress, anxiety and depression were identified among women at risk for becoming infected with Zika virus in Brazil and Puerto Rico.¹²

Clinical protocols targeting management of labor and delivery during COVID-19 are actively disseminated and updated,²⁷⁻²⁹ yet the mental health impact of these changing policies, and ways to address their impact, have received less research and academic attention. In response to the critical shortage of personal protective equipment (PPE), testing equipment, and rising incidence of asymptomatic cases of COVID-19 in obstetric patients, some labor and delivery units restricted all visitors, including support persons and birthing partners. At some New York hospitals, the obstetrics and gynecology teams collaborated with reproductive mental health clinicians to promote psychological resilience as these changes were implemented.³⁰ Strategies to support women's psychosocial well-being included increased nursing staff, redeployment of patient-facing research staff to function as support persons in L&D and postpartum, and assistance in connecting patients virtually with family members and mental health services offering individual and group psychotherapy.³⁰ Policies and systems such as these have an essential role in mitigating the effect of policy changes affecting obstetric patients. Risk factors for negative psychological outcomes, even in times of crisis, remain malleable.

Gravid patients may also be at particular risk during periods of medical crises, such as the COVID-19 pandemic, as they still require ongoing prenatal care and follow-up while the world retreats into isolation. Routine prenatal care discussions, which typically center on fetal movements, ultrasounds, and weight management, are now overshadowed by questions surrounding the uncertain nature of vertical transmission. The frequent anxieties associated with birth increase in the face of the added stress and threat of COVID-19, including the virus' still unclear effects on the unborn child. The need to access perinatal care continues amidst the

call for social distancing, anticipation of visitor and birth support person(s) restrictions, and potential separation of mother from baby in cases of severe infection— all of these factors can contribute to acute episodes of anxiety, depression, substance use, loneliness, hyperarousal, and, consequently, IPV.²⁴ Patients can become frustrated by the lack of clarity concerning the perinatal implications of COVID-19 and rapidly changing care protocols and policies. As such, prenatal and postpartum care, as well as treatment protocols for COVID-19 patients, should consider psychological assessment and the biopsychosocial needs of each patient to decrease the psychological burden of the threat of COVID-19 and prevent long-term negative mental health outcomes³¹ (see more below).

Health care personnel

Psychological distress following a human disaster among the “helpers” who respond to tragedy is well documented.³² Following 9/11, an increased awareness exists that a “communal disaster” may adversely impact those who witness suffering as part of an occupational responsibility.³² Research describes this concept as compassion fatigue, secondary traumatic stress, vicarious trauma and shared trauma.³² Following the events of 9/11, researchers estimated 5–23% of World Trade Center responders met diagnostic criteria for PTSD.³³ The prevalence of trauma in this population is thought to have stemmed in part, from a “double exposure” of trauma in both professional and personal domains.³² Health care professionals working during COVID-19 are also likely to experience this phenomenon.

Health care professionals face the same stressors as those in the general population in addition to those tied to their professional roles. Increasing mortality rates related to COVID-19 have exposed health care workers to excessive death and dying. Frequent exposure to death, and frequently evolving COVID-19 information (particularly information related to viral transmission), has fostered fear in some health care workers.¹⁵ Extreme shortages in PPE may exacerbate experiences of fear and psychological distress.¹⁵ Adding to this stress, providers are overwhelmed with increased caseloads and evolving clinical protocols. Many doctors and nurses have been redeployed, and are working outside of their areas of expertise with rapidly evolving treatment guidelines.¹⁵ Within obstetrics and gynecology, clinicians who have previously worked in outpatient areas are joining their colleagues on the front lines in hospitals. Those who remain in their usual practice areas cope with navigating the complexities of delivering novel virtual care. Simultaneously, administrators and others are working to create viable financial models to sustain their practices.¹⁵ Limitations on health care providers’ capacity to deliver care creates risk of moral injury. Moral injury is a form of psychological distress that unfolds in the aftermath of actions or inactions that contradict one’s own code of ethics or values, and is marked by intense feelings of shame, guilt or disgust.³⁴

The full effect of COVID-19 on the mental health of individuals working in health care, and specifically within the field of obstetrics and gynecology, is not yet known. A 2020 survey of 15,000 physicians reported that 15%–18% of the population

experienced depression.¹⁵ The same survey also reported that 21% to 22% of physicians had suicidal ideations and 1% to 2% had attempted suicide.¹⁵ Prevalence of depression and other mental disorders among those in health care is thought to be underreported, and relevant literature is sparse.¹⁵

There is growing concern that these baseline numbers will increase as health care workers experience stress and adversity during COVID-19.³⁵ Psychological distress has been reported in more than 70% of health care workers in China.¹⁵ A cross sectional study of 1257 physicians and nurses in China reported prevalence of psychological symptoms during COVID-19 manifesting as anxiety (44.6%), depression (50.4%), insomnia (34.0%), and emotional distress (71.5%).³⁶ An additional study of nurses and physicians at a hospital in Fujian, China correlated exposure to COVID-19 patients with experiences of fear, anxiety and depression.³⁷ Notably, an additional study of nurses working in Wujan, China reports vicarious trauma related to COVID-19 disproportionately burdens non-frontline nurses (those not working directly with COVID-19 patients).³⁸

To date there is a lack of robust literature describing the psychological experience of COVID-19 on the family and partners of health care workers. During the outbreak of SARS, perception of risk for contracting the infection and the concern for the health of one’s family were found to be predictive of psychological distress.⁸ SARS-related discrimination has also been reported among individuals with family members who were health care workers during that epidemic.⁸

Health care professionals have a unique insight into their own vulnerabilities during a “communal disaster” such as COVID-19 due to their proximity to the suffering of others.³⁹ Indirectly, partners and family members of health care workers share in the “double exposure” to COVID-19 related stress.³² The families and partners of health care workers during a health crisis have an enhanced view of their loved ones’ suffering. This population may also hold their own distinctive burden of fear that their loved ones may contract COVID-19 or spread the virus in their home. The prevalence of asymptomatic cases of COVID-19 likely contributes to uncertainty and fear around viral transmission in home environments.⁴⁰ When fear of health care workers spreading the virus extends to communities, experiences of isolation may be compounded for health care workers and their partners and families.

Mental health interventions

A common management approach focuses on prevention and early intervention to prevent long-term mental health consequences resulting from extended isolation, panic and fear of the unknown. Several studies have proposed steps to reduce the burden of psychological distress triggered by COVID-19, as well as coping strategies for affected patients, to fill the void of mental health solutions to the looming crisis.^{24,41} Overall, strategies apply to the general population as well as to pregnant and postpartum women — below we highlight when approaches are specific to the obstetric patient.

Treatment approaches for the general population/obstetric patients

Strategies for evaluating, distinguishing, and diagnosing COVID-19 related psychological symptoms will be crucial in the months ahead as the world seeks treatment and answers to quell the psychological fallout from the pandemic. The COVID-19 Anxiety Scale (CAS), a 5-item scale, was developed as a mental health screener for adults experiencing dysfunctional anxiety as a result of COVID-19. Elevated CAS scores were associated with: COVID-19 diagnosis; negative religious coping; feelings of hopelessness; substance use as a coping mechanism; suicidal ideation; and, negative attitudes towards President Trump and products manufactured in China.⁴² The scale is the first published measure of COVID-19 psychopathology based on a large sample ($n = 775$) found to be highly reliable (90% sensitivity and 85% specificity).⁴²

In addition to innovations in screening, the mental health community quickly pivoted to the use of telehealth to address mental health. Several studies have shown the benefit of telehealth care even during times of disaster. Telehealth offers an incredibly flexible solution to issues of access and feasibility, especially during periods of social distancing, and has shown high patient satisfaction given its convenience and accessibility of care.^{43,44} To further facilitate mental health care during COVID-19, Medicare, which tends to establish policy that other insurance carriers follow, expanded coverage of telehealth services to provide coverage for mental health counseling and telehealth with psychologists and social workers (CMS 2020). Health care systems both in the public and private sector, including our institution (see below), have identified carriers that deliver medications to patients' homes to reduce exposure.⁴⁴

Behavioral telehealth interventions possess the potential to minimize the long-term mental health effects experienced by survivors of crises.^{43,44} Following the water crisis in Flint, Michigan, community health centers prioritized the need for mental health services, making counseling and evaluation services widely available to the community through the use of tele-mental health, filling a critical gap in mental health care in a community with a dearth of mental health clinicians.⁴³ Virtual visits can include mental health evaluations and screenings by phone and video allowing providers to adequately assess, treat and diagnose patients. Maintaining structure during isolation is key to patients' wellbeing, and telehealth gives structure and voice to those coping with the physical and psychosocial consequences of a global health crisis. Tele-mental health routine check-ups, and virtual group visits for patients who rely on group therapy to alleviate the feeling of loneliness and triggers, may also be encouraged.

Significant health care disparities in COVID-19 infections have been reported⁴⁵ with the most inequity likely to appear within the mental health sector. Online tools have been reported to be less accessible to individuals with lower socioeconomic status.⁴⁶ Hotlines offer a more accessible alternative to vulnerable patients with limited internet access for non-medication interventions. COVID-19 support hotlines have been established nationwide to support individuals in crisis offering support, referrals for long-term care, and

access to emergency psychiatric response. The Substance Abuse and Mental Health Services Administration (SAMHSA) has created a disaster distress hotline for individuals in the U. S. seeking support due to an acute stress response to COVID-19.⁴⁷ The National Suicide Prevention Lifeline has tailored their crisis services to include COVID-19 specific concerns and crisis.⁴⁸ The Crisis Text Line provides a texting platform with trained crisis counselors for individuals in the U.S., Canada, the UK and Ireland.⁴⁹ The New York State Office of Mental Health (<https://omh.ny.gov/omhweb/covid-19-resources.html>) has established an emotional support hotline for residents alongside a website with mental health resources and education.

To reduce the risk of negative psychological consequences of the COVID-19 outbreak, the National Health Commission of China (NHC) has integrated a centralized approach to addressing the psychological ramifications of the outbreak into its overall medical response to COVID-19.⁵⁰ On 27th January 2020, the central health authority in China launched 'Principles for Emergency Psychological Crisis Intervention for COVID-19 Pneumonia Epidemic', establishing guidelines for mental health professionals to implement throughout the country, including a mandate for mental health-related national associations and academic societies to adopt emergency psychological protocols, provide psychological counseling, and establish psychological assistance within the context of working groups to provide professional oversight and streamline coordination with health authorities.⁵⁰ Online educational articles, videos, and interventions for managing mental health symptoms have also been provided to the public using WeChat and other internet platforms along with strategies for addressing the varied psychological responses and vulnerabilities among specific populations, including pregnant women.⁵⁰ This streamlined approach was based on continuous epidemiological monitoring and mental health screening, with a pipeline for referrals to qualified mental health providers.⁷ This coordinated effort demonstrates that mental health outcomes are — at long last — on equal footing with other health sequelae related to COVID-19.

Institutionally there exists an opportunity to increase capacity for early detection of COVID-19 related mental health symptoms for obstetric patients through the training of non-clinical staff in providing supportive communication about changes in L&D policies and identifying early signs of depression and acute anxiety. This training could be particularly useful upon admission into labor and delivery units in light of restricted visitor policies. At WMH @Ob/Gyn, support staff, following training to assess early psychological effects of COVID-19 during the perinatal period, were redeployed into the postpartum and antepartum units to provide support to mothers in the absence of support persons due to hospital visitor restrictions.

Although the global response has been swift in addressing the mental health sequelae of COVID-19 through increased access to behavioral education and tele-mental health support, there remains a need to address the mental health needs of the most psychologically vulnerable. These populations include victims of IPV, individuals with pre-existing chronic mental health illness, and women at risk of developing perinatal depression and related mood disorders. These

vulnerable populations, which typically rely on and/or are in need of more direct care and supportive, safe services, may have difficulty accessing such care and support while stay-at-home orders are in place. Approaches to provide adequate patient mental health care exist; implementation during a public health crisis poses specific and complex challenges.

Treatment approaches for providers

As health care providers, including obstetrics and gynecology (OBGYN) providers, continue to provide quality care to their patients on the front lines during COVID-19, they are likely to develop mental health symptoms secondary to exposure to high stress situations and limited resources for care. While the burden of infection control increases, there is additional pressure on providers to be vigilant, potentially leading to an increase in stress and anxiety. The necessity for interventions to address the mental health needs of frontline providers are highlighted in the literature, and emphasize the importance of prevention and education, clear communication, opportunities to debrief and promote resilience, and access to one-on-one or group counseling. It is critically important that institution and departmental leaders come together to make prevention measures, psychoeducation, and mental health interventions available and accessible to providers. Further, these leaders share a responsibility to address stigma that may arise from seeking mental health care services from one's place of employment, which may deter providers from getting the help they need.

During this global health crisis,³⁵ Goldberg suggests that the role of mental health providers is to provide crisis-oriented intervention to frontline providers by offering support, education, and assistance in the development of coping skills. He suggests that there is a clear need for outreach, stating that mental health providers should provide support and validation to frontline providers around overall uncertainty and risk of exposure³⁵ using interventions such as yoga, mindfulness, meditation, and participation in groups and cognitive interventions with the goal of reframing strongly held negative beliefs.

To address mental health challenges, Ripp et al. (2020) outline the role of a task force in a large New York City hospital system. The task force identified three main priority areas, including meeting clinician basic daily needs (e.g., donated food, adequate PPE, offsite housing), increased communication with frontline providers, and development of psychosocial and mental health support options. The task force emphasized using "wellness messages" from mental health experts providing suggestions about managing COVID-19 related anxiety as a form of increased communication. These messages were also used to thank providers for their work and highlight heroism on the front lines. The task force also highlighted access to mindfulness activities, virtual support groups, one-on-one counseling, and 24/7 crisis management support for frontline providers.⁵¹

OBGYN providers on the front lines have less time for family and friends, self-care, and physical activity, making it difficult to "maintain resilience."⁵² Bansal et al. (2020) note that mental health support suggestions that can be applied to OBGYN providers on the front lines can also be used to

enhance resilience.¹⁵ They stress the Strength-Focused and Meaning-Oriented approach to Resilience and Transformation. This approach, often used in post-crisis situations, emphasizes growth through pain, and encourages individuals to explore the strengths that may develop by using a mind, body, and spirit connection. In addition, Zhang et al. (2020) suggest that interventions should be focused on story sharing, affording providers a safe space to share experiences, gain support from others, and emphasize each other's strengths.⁵³

OBGYN providers who have been exposed to COVID-19 and require isolation may experience feelings of guilt around not being able to work with their colleagues on the front lines.⁵² Greenberg et al. (2020) suggest that the experience of "moral injury"³⁴ can be mitigated through support from team leaders when challenging decisions arise, such as conducting debriefings following treatment and staffing determinations. These challenging decisions are especially relevant in OBGYN as OBGYN providers are faced with difficult decisions regarding ways to ensure safe labor and delivery when maternal-fetal health is at risk due to COVID-19, including restrictions on support persons during labor and delivery. Due to the nature of this work, OBGYN providers are at increased risk of secondary trauma and burnout. Mental health providers should encourage frontline providers to speak about feelings of guilt and shame if they arise providing a non-judgmental context to voice and the opportunity to reflect on these feelings. In addition, education around symptoms of burnout should be discussed.²⁷

A major Chinese medical center established a support program for frontline providers consisting of an online mental health self-assessment, PHQ-9, free text, and ways to request psychological support via psychotherapy. Unfortunately, only 69 frontline providers out of over 8000 responded to the survey suggesting that there may be inhibitions related to stigma and/or receiving mental health treatment from their place of work. Despite this, as indicated above, guidelines in China involving mental health practices currently outline the need for hotline and online psychological crisis interventions. These guidelines support the presence of a "psychological response team" consisting of mental health providers on each unit to provide frontline staff with needed support.⁵⁴ Huang et al. (2020) also introduced an online self-assessment for frontline workers to help providers identify their mental health symptoms and connect to a telephone or online counselor.⁵⁵ A hospital, Hong Kong East Cluster, has implemented a support program, Support of You (SOY), that includes an online mental health self-assessment, and provides opportunities to request psychological support.⁵⁴ SOY is innovative in its approach to providing anonymous assessment and connection to care to health care workers.⁵⁴ The effectiveness of self-assessment is not yet well documented, however it may hold potential in linking health care workers to care without fear of stigma. Self-assessment may also facilitate a sense of empowerment and self-efficacy known to be therapeutic for trauma survivors.

There are many examples of online resources, such as apps, to address frontline provider mental health. For example, Huang et al. (2020) found that circulating psychological advice in the media helped to ease stress of frontline

providers.⁵⁵ They also offered psychological interventions through online games. Kanga et al. (2020) found that frontline providers with subthreshold or mild symptoms identified media resources helpful; however, providers with more severe symptoms preferred access to mental health professionals.⁵⁶ Ripp et al. (2020) also suggest that the use of free apps through which providers can share concerns and get feedback, join social networking groups with frontline staff, and participate in online yoga and mindfulness classes can be effective.⁵¹

A final intervention strategy suggested by Raven et al. (2018) outlines a preventative medicine approach, including primary, secondary, and tertiary strategies, initially applied to frontline providers experiencing mental health symptoms during the EVD epidemic in West Africa.⁵⁷ They suggest that primary prevention include briefings prior to deployment into the field and preparatory training with an aim of promoting strong connections between leaders and frontline staff; secondary prevention include peer support training with a goal of decreasing stigma and increasing access to help; and tertiary prevention include evidence-based treatments for trauma, including trauma-focused cognitive behavioral therapy (TF-CBT) and eye movement desensitization and reprocessing (EMDR). This model suggests that interventions begin prior to the onset of mental health symptoms so that OBGYN and other frontline providers have access to training and education about potential mental health effects before deploying to the front lines.

Women's mental health @Ob/Gyn: a novel, new service meeting patient & provider needs

WMH @Ob/Gyn (<https://www.columbiaobgyn.org/about-us/divisions/womens-mental-health-ob-gyn>) is a new mental health service embedded within the Department of Obstetrics and Gynecology at Columbia University Irving Medical Center. WMH @Ob/Gyn provides comprehensive, episode-based mental health care to women across all stages of life, including fertility treatment, miscarriage or pregnancy loss, gynecologic cancer, pregnancy, postpartum and menopause. A mental health service taking insurance, a rarity in behavioral health treatment in the US, WMH @Ob/Gyn provides high quality care, including psychotherapy, support groups, and medication management for women who may not otherwise have access to treatment. The initiative launched in May 2019 with two clinical psychologists. As of January 2020, the team includes an additional clinical psychologist, two clinical social workers, two psychiatric nurse practitioners, and a care coordinator. In close collaboration with the providers and administrators in the Department of Obstetrics and Gynecology, patient referrals from providers are received and screened over the phone by a clinician from WMH @Ob/Gyn within 48 h, followed by an initial consult, diagnosis, and formulation of a treatment plan with their assigned provider.

Beginning March 13, 2020, and days in advance of New York State mandating a stay-at-home order, all mental health services provided by WMH @Ob/Gyn transitioned to telehealth. The transition to telehealth reduced risk of exposure

to COVID-19 for patients and providers, and allowed continuation of care to a patient population at increased risk of psychological distress during COVID-19 due to pregnancy and/or pre-existing mental health conditions.⁵⁸ Telehealth visits were performed using Epic Haiku. Patients accessed appointments via the NYP Connect app on their mobile phones. The WMH @Ob/Gyn Care Coordinator was available to guide patients through set-up of the Connect app. For existing patients, the transition to telehealth was implemented with minimal difficulty and treatment progressed with little interruption. Under typical circumstances, initial consults with the WMH @Ob/Gyn take place in-person to establish therapeutic alliance and accurately assess and evaluate patient needs.⁵⁹ With the onset of COVID-19, initial consults occurred virtually allowing WMH @Ob/Gyn to promptly address an increasing number of mental health referrals. New patients expressed appreciation for the ease and access to care. With 100% of care currently being provided via telehealth, WMH @Ob/Gyn has been able to respond to increasing patient demand while freed of constraints due to limited office space and risk of exposure to COVID-19. Since transitioning to telehealth, the average weekly total number of mental health visits has increased approximately 40%.

With respect to group treatment, two existing patient groups, *Diabetes Mellitus Management in Pregnancy* and *Fertility Support*, moved to virtual platforms. Attendance for these virtual groups has remained relatively consistent with attendance for in-person groups. The fertility group saw a doubling in attendance likely based on added anxiety and depressive symptoms related to the abrupt COVID-19 related suspension of fertility services. WMH @Ob/Gyn expanded virtual group offerings to address patient distress in the context of COVID-19. Virtual groups are provided at no cost to patients. Virtual groups include: Meditations (10-minute relaxation exercises); Mindfulness, Meditation & De-stressing Sessions (30 min skills based groups); and a COVID-19 Support Group (45 min). Groups are offered at various times throughout the week. To achieve large-scale impact, groups for patients need provider endorsement and direct outreach and targeted communication to patients.

Due to increased exposure to COVID-19, longer work hours, and shifting job responsibilities OBGYN clinical and non-clinical providers are at risk of "stress, anxiety, burnout, depressive symptoms, and the need for sick or stress leave".³¹ To address these risk factors, WMH @Ob/Gyn began offering brief, twice daily, virtual de-stressing sessions for staff. At the request of staff, WMH @Ob/Gyn facilitated support groups for different provider teams related to re-deployment into a clinical setting, a grief session for a team mourning the death of a colleague, and a support group for family members of staff. We found that a targeted approach, focused on a specific population within the OBGYN department with an identified need, increased the rate of participation and engagement in support groups for health care personnel.

Conclusion

Individual histories and current functioning have etiological relevance to psychological morbidity in COVID-19, and yet

health care policy and systems often make a greater contribution to risk and long-term health outcomes. This is evidenced by effective prevention models implemented in populations and communities at risk for diseases such as HIV and SARS. Modifying risk for mental illness begins with creating an environment that supports resilience and provides access to mental health care. Innovative embedded health care models in OBGYN are being used to prevent psychiatric sequelae of COVID-19 for patients as well as all health care personnel.

REFERENCES

- Crocq MA, Crocq L. From shell shock and war neurosis to posttraumatic stress disorder: a history of psychotraumatology. *Dialogues Clin Neurosci*. 2000;2(1):47–55.
- Yehuda R. Post-Traumatic Stress Disorder. *New England Journal of Medicine*. 2002;346(2):108–114.
- Kendler KS. Toward a philosophical structure for psychiatry. *Am J Psychiatry*. 2005;162(3):433–440.
- Yehuda R, Daskalakis NP, Lehrner A, et al. Influences of maternal and paternal PTSD on epigenetic regulation of the glucocorticoid receptor gene in Holocaust survivor offspring. *Am J Psychiatry*. 2014;171(8):872–880.
- Jedd K, Hunt RH, Cicchetti D, et al. Long-term consequences of childhood maltreatment: altered amygdala functional connectivity. *Dev Psychopathol*. 2015;27(4 Pt 2):1577–1589.
- Prince M, Patel V, Saxena S, et al. No health without mental health. *The Lancet*. 2007;370(9590):859–877.
- Qiu JY, Zhou DS, Liu J, Yuan TF. Mental Wellness system for COVID-19. *Brain Behav Immun*. 2020.
- Chew QH, Wei KC, Vasoo S, Chua HC, Sim K. Narrative synthesis of psychological and coping responses towards emerging infectious disease outbreaks in the general population: practical considerations for the COVID-19 pandemic. *Singapore Med J*. 2020.
- Wheaton MG, Abramowitz JS, Berman NC, Fabricant LE, Olantunji BO. Psychological Predictors of Anxiety in Response to the H1N1 (Swine Flu) Pandemic. *Cognit Ther Res*. 2012;36(3):210–218.
- Mahase E. Covid-19: mental health consequences of pandemic need urgent research, paper advises. *Bmj*. 2020;369:m1515.
- NIMH. Mental Health Information: statistics. <https://www.nimh.nih.gov/health/statistics/index.shtml>. Published 2018. Accessed May 5, 2020.
- Tucci V, Moukaddam N, Meadows J, Shah S, Galwankar SC, Kapur GB. The Forgotten Plague: psychiatric Manifestations of Ebola, Zika, and Emerging Infectious Diseases. *J Glob Infect Dis*. 2017;9(4):151–156.
- Wang C, Pan R, Wan X, et al. Immediate Psychological Responses and Associated Factors during the Initial Stage of the 2019 Coronavirus Disease (COVID-19) Epidemic among the General Population in China. *Int J Environ Res Public Health*. 2020;17(5).
- Brooks SK, Webster RK, Smith LE, et al. The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *Lancet*. 2020;395(10227):912–920.
- Bansal P, Bingemann TA, Greenhawt M, et al. Clinician Wellness During the COVID-19 Pandemic: extraordinary Times and Unusual Challenges for the Allergist/Immunologist. *J Allergy Clin Immunol Pract*. 2020.
- Dickens MJ, Pawluski JL. The HPA Axis During the Perinatal Period: implications for Perinatal Depression. *Endocrinology*. 2018;159(11):3737–3746.
- Howard LM, Molyneaux E, Dennis CL, Rochat T, Stein A, Mlrogrom J. Non-psychotic mental disorders in the perinatal period. *Lancet*. 2014;384(9956):1775–1788.
- Gentile S. Untreated depression during pregnancy: short- and long-term effects in offspring. A systematic review. *Neuroscience*. 2017;342:154–166.
- Vesga-Lopez O, Blanco C, Keyes K, Olfson M, Grant BF, Hasin DS. Psychiatric disorders in pregnant and postpartum women in the United States. *Arch Gen Psychiatry*. 2008;65(7):805–815.
- Wisner KL, Sit DK, McShea MC, et al. Onset timing, thoughts of self-harm, and diagnoses in postpartum women with screen-positive depression findings. *JAMA Psychiatry*. 2013;70(5):490–498.
- Chaves K, Eastwood J, Ogbo FA, et al. Intimate partner violence identified through routine antenatal screening and maternal and perinatal health outcomes. *BMC Pregnancy Childbirth*. 2019;19(1):357.
- Chapman A, Monk C. Domestic Violence Awareness. *Am J Psychiatry*. 2015;172(10):944–945.
- Forray A, Foster D. Substance Use in the Perinatal Period. *Curr Psychiatry Rep*. 2015;17(11):91.
- Harville E, Xiong X, Buekens P. Disasters and perinatal health: a systematic review. *Obstet Gynecol Surv*. 2010;65(11):713–728.
- Pierce-Williams RAM, Burd J, Felder L, et al. Clinical course of severe and critical COVID-19 in hospitalized pregnancies: a US cohort study. *American Journal of Obstetrics & Gynecology MFM*. 2020.
- Liu N, Zhang F, Wei C, et al. Prevalence and predictors of PTSS during COVID-19 outbreak in China hardest-hit areas: gender differences matter. *Psychiatry Res*. 2020;287:112921.
- Wilson AN, Ravalidi C, Scoullar MJL, et al. Caring for the carers: ensuring the provision of quality maternity care during a global pandemic. *Women Birth*. 2020.
- Breslin N, Baptiste C, Gyamfi-Bannerman C, et al. COVID-19 infection among asymptomatic and symptomatic pregnant women: two weeks of confirmed presentations to an affiliated pair of New York City hospitals. *Am J Obstet Gynecol MFM*. 2020 100118.
- Sutton D, Fuchs K, D'alton M, Goffman D. Universal screening for SARS-CoV-2 in women admitted for delivery. *New England Journal of Medicine*. 2020.
- Hermann A, Deligiannidis KM, Bergink V, et al. Response to SARS-Covid-19-related visitor restrictions on labor and delivery wards in New York City. *Arch Womens Ment Health*. 2020.
- Zhou X, Snoswell CL, Harding LE, et al. The Role of Telehealth in Reducing the Mental Health Burden from COVID-19. *Telemed J E Health*. 2020;26(4):377–379.
- Baum N. Shared traumatic reality in communal disasters: toward a conceptualization. *Psychotherapy: Theory, Research, Practice, Training*. 2010;47(2):249.
- Bromet E, Hobbs M, Clouston S, Gonzalez A, Kotov R, Luft B. DSM-IV post-traumatic stress disorder among World Trade Center responders 11–13 years after the disaster of 11 September 2001 (9/11). *Psychol Med*. 2016;46(4):771–783.
- Greenberg N, Docherty M, Gnanapragasam S, Wessely S. Managing mental health challenges faced by healthcare workers during covid-19 pandemic. *Bmj*. 2020;368:m1211.
- Goldberg JF. Psychiatry's Niche Role in the COVID-19 Pandemic. *J Clin Psychiatry*. 2020;81(3).
- Lai J, Ma S, Wang Y, et al. Factors Associated With Mental Health Outcomes Among Health Care Workers Exposed to Coronavirus Disease 2019. *JAMA network open*. 2020;3(3):e203976.
- Lu W, Wang H, Lin Y, Li L. Psychological status of medical workforce during the COVID-19 pandemic: a cross-sectional study. *Psychiatry Res*. 2020;288:112936.
- Li Z, Ge J, Yang M, et al. Vicarious traumatization in the general public, members, and non-members of medical teams aiding in COVID-19 control. *Brain Behav Immun*. 2020.

39. Baum N. Trap of conflicting needs: helping professionals in the wake of a shared traumatic reality. *Clin Soc Work J*. 2012;40(1):37–45.
40. Dong L, Bouey J. Public Mental Health Crisis during COVID-19 Pandemic, China. *Emerg Infect Dis*. 2020;26(7).
41. Qiu J, Shen B, Zhao M, Wang Z, Xie B, Xu Y. A nationwide survey of psychological distress among Chinese people in the COVID-19 epidemic: implications and policy recommendations. *Gen Psychiatr*. 2020;33(2):e100213.
42. Lee SA. Coronavirus anxiety scale: a brief mental health screener for COVID-19 related anxiety. *Death Stud*. 2020:1–9.
43. Lurie N, Carr BG. The Role of Telehealth in the Medical Response to Disasters. *JAMA Intern Med*. 2018;178(6):745–746.
44. Ryan BJ, Franklin RC, Burkle FM Jr., et al. Reducing Disaster Exacerbated Non-Communicable Diseases Through Public Health Infrastructure Resilience: perspectives of Australian Disaster Service Providers. *PLoS Curr*. 2016:8.
45. Dorn AV, Cooney RE, Sabin ML. COVID-19 exacerbating inequalities in the US. *Lancet*. 2020;395(10232):1243–1244.
46. Yao H, Chen JH, Xu YF. Rethinking online mental health services in China during the COVID-19 epidemic. *Asian J Psychiatr*. 2020;50:102015.
47. SAMHSA. Disaster Preparedness, Response, and Recovery. <https://www.samhsa.gov/disaster-preparedness>. Published 2019. Accessed May 17, 2020.
48. NationalSuicidePreventionLifeline. National Suicide Prevention Lifeline. <https://suicidepreventionlifeline.org/>. Published 2020. Accessed May 17, 2020.
49. CrisisTextLine. How to Deal with Suicide. Crisis Text Line. 2020 <https://www.crisistextline.org/topics/suicide/?msclkid=c74-f05abd901136d5b305b12b57988bc#how-to-get-help-if-youre-thinking-about-ending-your-life-1>. Published 2020. Accessed May 5, 2020.
50. Li W, Yang Y, Liu Z-H, et al. Progression of Mental Health Services during the COVID-19 Outbreak in China. *Int. J. Biol. Sci*. 2020;16(10):1732–1738.
51. Ripp J, Peccoraro L, Charney D. Attending to the Emotional Well-Being of the Health Care Workforce in a New York City Health System During the COVID-19 Pandemic. *Academic medicine: journal of the Association of American Medical Colleges*. 2020.
52. Chua M, Lee J, Sulaiman S, Tan HK. From the frontline of COVID-19 - How prepared are we as obstetricians: a commentary. *Bjog*. 2020.
53. Zhang WR, Wang K, Yin L, et al. Mental Health and Psychosocial Problems of Medical Health Workers during the COVID-19 Epidemic in China. *Psychother Psychosom*. 2020:1–9.
54. Chung JPY, Yeung WS. Staff Mental Health Self-Assessment During the COVID-19 Outbreak. *East Asian Arch Psychiatry*. 2020;30(1):34.
55. Huang J, Liu F, Teng Z, et al. Care for the psychological status of frontline medical staff fighting against COVID-19. *Clin Infect Dis*. 2020.
56. Kang L, Ma S, Chen M, et al. Impact on mental health and perceptions of psychological care among medical and nursing staff in Wuhan during the 2019 novel coronavirus disease outbreak: a cross-sectional study. *Brain Behav Immun*. 2020.
57. Raven J, Wurie H, Witter S. Health workers' experiences of coping with the Ebola epidemic in Sierra Leone's health system: a qualitative study. *BMC Health Serv Res*. 2018;18(1):251.
58. Lebel C, MacKinnon A, Bagshawe M, Tomfohr-Madsen L, Giesbrecht G. Elevated depression and anxiety among pregnant individuals during the COVID-19 pandemic. 2020.
59. Aziz A, Zork N, Aubey JJB, CD, et al. Telehealth for High-Risk Pregnancies in the Setting of COVID-19 Pandemic. 2020.