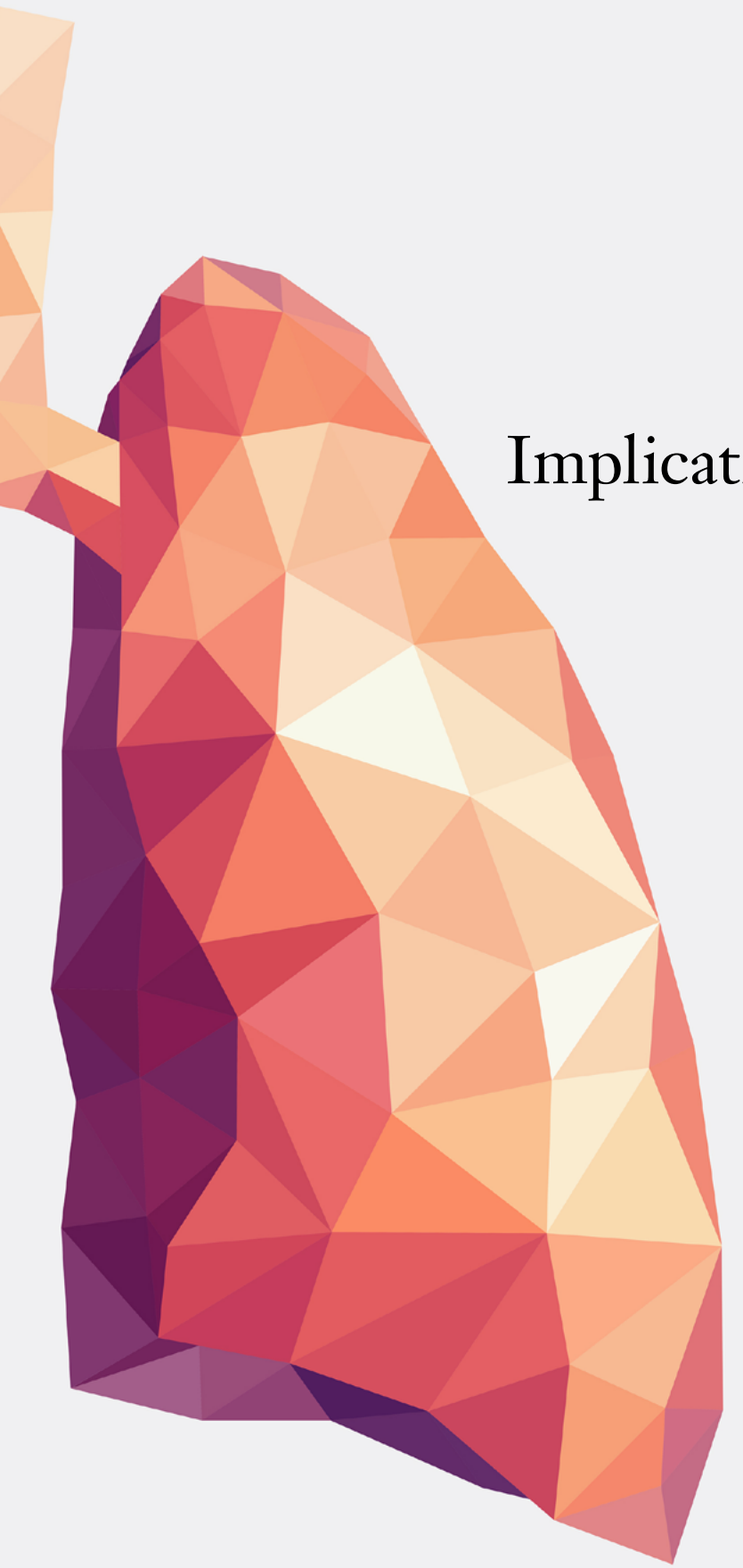
COVID-19–RELATED COMPLICATIONS



Implications for Massage Therapy

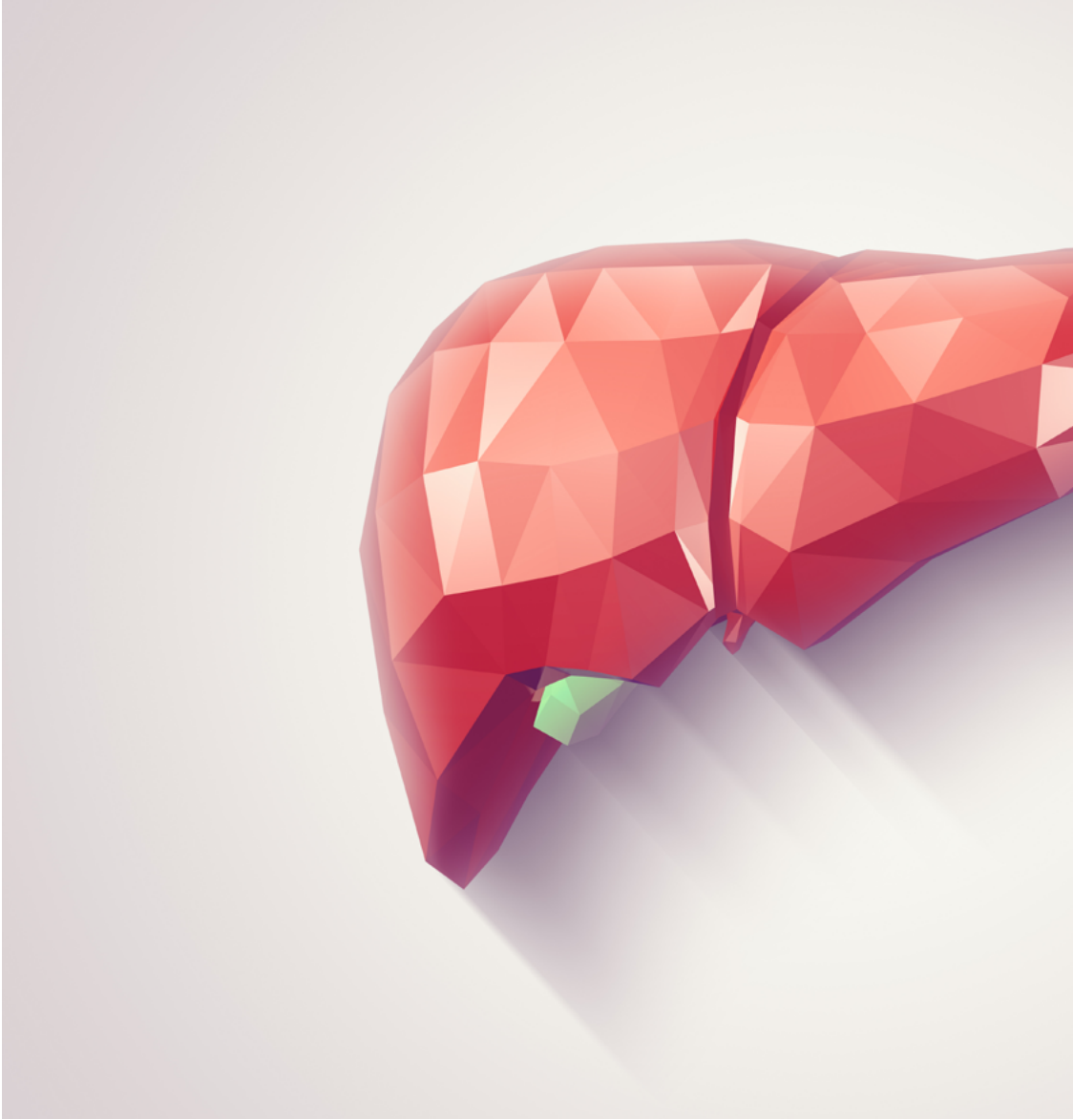
By Ruth Werner

By the time this article is published, many massage therapists will be back to work in one form or another, and we will have a new population of clients who may seek us out: COVID-19 survivors. Because the SARS-CoV-2 virus affects so many tissues in so many ways, and because its effects can be long-lasting, massage and bodywork clients who have had this infection—even those with mild versions—may bring with them some health concerns that are relevant to our decision-making process.

This article will cover some complications related to SARS-CoV-2 infections as we currently understand them. This isn't a comprehensive discussion that will cover every possible situation. Instead, I have chosen conditions that are common enough to be reported in the medical literature, and that are most likely to impact massage therapy clinical decisions. This discussion is informed by what we understand as of early summer 2020. Because virtually everything about COVID-19 is a moving target, I will look forward to revisiting this topic later, to see how (or if) post-COVID complications continue to affect patients.

The list of resources that accompanies this article provides input from physicians and scientists whose job it is to try to unravel all the ways COVID-19 affects human function. However, what we see in the technical literature seldom captures the immediacy of human experience. So I also want to voice my gratitude to the many members of Survivor Corps (www.facebook.com/groups/COVID19survivorcorps), a Facebook page specifically for COVID-19 patients to share with and support each other as they recover. The descriptions of their experiences shine an important humanizing light on the technical information. Further, this community shows us that we don't yet know very much about how to help people who survive this infection. Their long-term experiences have not yet been studied or pursued for treatment, so in many ways they are very much on their own.

Our clients who are recovering from COVID-19, hospitalized or not, are sailing in uncharted waters. Massage therapy could be a supportive and life-affirming part of the recovery process—with the caveat that it must be done with great care and in incremental steps toward pre-COVID levels of intensity. Until we and our clients know what their resilience is like, we must offer our gentlest work, post-COVID, and be diligent about checking back for any unexpected responses or reactions.



COVID-RELATED COMPLICATIONS

When we look at COVID-related complications organ by organ, or system by system, we see that a combination of factors is probably at work.

- Viral attack: A direct viral attack on cells with ACE-2 receptors (the target cells of the SARS-CoV-2 virus) is responsible for some damage. These cells are found in the alveoli—often an early site of attack—and also in the capillaries that wrap the alveoli. Damage here interferes with lung function and blood oxygen levels and may lead to collapsed alveoli and acute respiratory distress syndrome.
- Immune system response: A normal immune system response prompted by viral invasion of various tissues can cause more cellular damage. In other respiratory tract infections, like cold or flu, immune system activity causes most of the symptoms: our white blood cells and antibodies are set up to kill infected cells and their neighbors as we try to get control of an aggressive viral infection.
- Exaggerated inflammation: On top of an aggressive viral infection (along with a normal, healthy, but similarly aggressive immune system response), some COVID-19 patients experience outsized and prolonged inflammatory reactions that cause much more tissue damage than would otherwise occur.

The combination of these three factors—viral invasion, immune response, and exaggerated inflammation—gives rise to a host of potentially life-threatening consequences. Following are some of the most relevant ones for massage therapists.

Massage therapy could be a supportive and life-affirming part of the recovery process—with the caveat that it must be done with great care and in incremental steps toward pre-COVID levels of intensity.

COAGULOPATHY

Blood-clotting disorders connected to COVID-19 are the focus of my July/August 2020 Pathology Perspectives article, "COVID-19-Related Coagulopathy: Blood Clotting Through Thick and Thin" (page 32). This situation is complex, nuanced, and obviously has big implications for decisions about massage therapy. Coagulopathy may affect tiny capillaries or major vessels, and it is a factor in some of the other situations on this list. Many bodywork practitioners are legitimately nervous about the risks of hidden clots in veins, which may lead to pulmonary embolism, or in the arteries, which may lead to heart attack, stroke, or other injuries. This is why we must always gauge our massage to fit within our clients' ability to adapt to environmental challenges. This is called *allostatic capacity*, which is discussed in detail at www.abmp.com/updates/blog-posts/staying-stable-being-variable. Working within the limits of a client's daily activities isn't a new concept, but it takes on fresh importance in the context of COVID-19 survivors and their potential for subtle blood-clotting problems.

Implications for Massage Therapy

Get the clearest possible sense of the client's typical activity levels, and keep bodywork challenges within their allostatic capacity. Watch for skin signs (COVID-toe, petechiae, or other rashes). If the skin is injured, these are local contraindications, and only the gentlest massage is appropriate until these have resolved. Ask about signs of cardiopulmonary distress (edema, shortness of breath, chest pain, headache, cramping in a new pattern), and encourage—or insist—that the client report these to their doctor before proceeding with massage.

A hematologist familiar with our work also suggests asking and looking specifically for signs of deep vein thrombosis: unilateral pain, heat, swelling, and/or redness in one leg. This is also a reason to delay massage and refer the client to their health-care team.

ACUTE LIVER INJURY

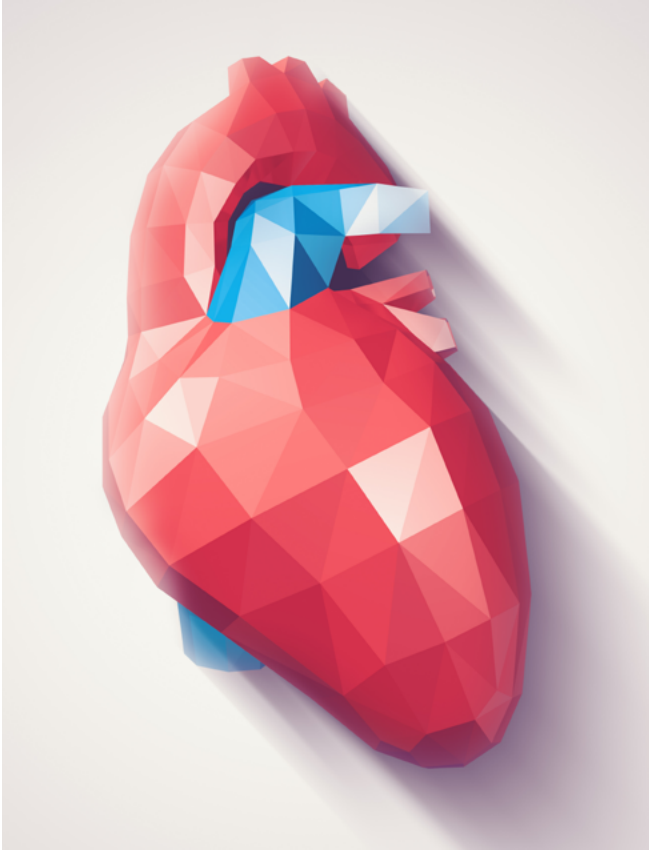
Some post-COVID patients have elevated enzymes that indicate liver damage, especially in the aftermath of severe infection. It is not clear whether the liver damage is from direct viral attack, an extreme inflammatory response, or other factors. One possibility is liver toxicity related to medication use—this is called drug-induced liver injury, or DILI.

At this point, we don't know whether preexisting chronic liver disease (specifically hepatitis B or C, or nonalcoholic fatty liver disease) increases the risk of long-term liver damage related to this virus, but some liver problems make patients more-than-usually susceptible to DILI.

COVID-19 patients who develop mild liver problems may not require treatment, and can probably expect full recovery of liver function. But in more severe cases, drugs that support the liver may be prescribed.

Implications for Massage Therapy

Because the liver is a keystone for healthy fluid management, liver dysfunction is an important factor in making decisions about massage therapy. If the client is using liver-supporting medications, find out whether this is a temporary measure, and consider delaying any challenging bodywork until this part of their recovery is over. If their liver dysfunction limits normal activities or causes edema in the abdomen or elsewhere, then massage therapy needs to be especially gentle, and prone work may not be possible. Also, be aware that liver-supporting drugs may have side effects, and these may also influence choices about massage therapy.



> This disease impacts function in ways we are still discovering, and adding any challenge to a person's already-limited capacity for adaption will not do them any favors. But stress-relieving, non-challenging massage may be a powerful addition to our clients' coping strategies.

HEART PROBLEMS

COVID-19 is a particularly dangerous condition for anyone with preexisting cardiovascular problems, like heart disease or diabetes; this group has a higher mortality rate than most others. In addition, some COVID-19 patients develop new heart problems that appear to persist after the acute phase of the infection has subsided. Altogether, about 20 percent of survivors who were hospitalized for their infections have heart problems connected with the virus, and many of them have no history of heart disease.

Several issues related to the virus can cause heart damage. Hypoxia (low oxygen levels in the blood) is a consequence of lung damage, and it forces the heart to push through more blood with less oxygen to meet the needs of the tissues. The virus may directly attack myocardial cells, or inflammation related to an exaggerated immune system response and cytokine storm may interfere with heart function; this can also cause arrhythmia. And finally, the coagulopathy seen with many COVID-19 survivors can affect the coronary arteries and arterioles (causing multiple tiny infarctions), and it also means the heart is pushing blood that is unusually thick and sticky through the system. All this can lead to stress cardiomyopathy, and the release of hormones that temporarily boost function while weakening the heart in the long run. Some survivors of COVID-19 develop heart failure that may be permanent.

Implications for Massage Therapy

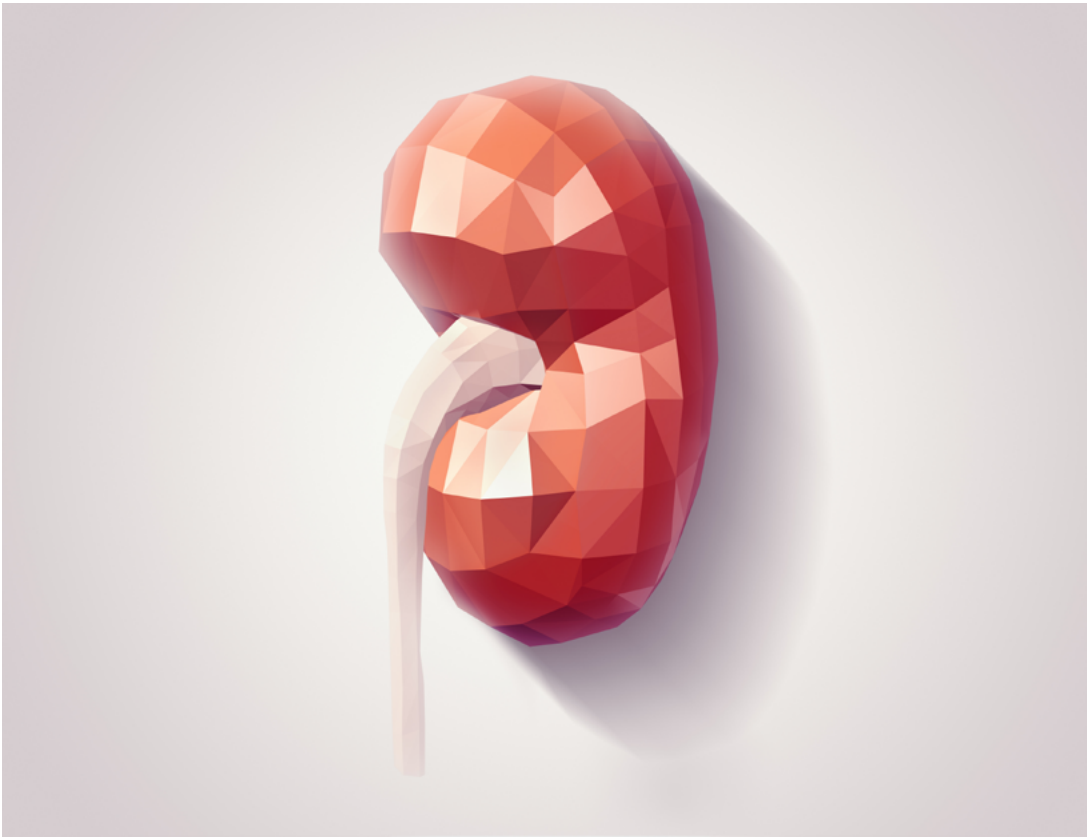
If heart damage is part of a patient's post-COVID profile, they will probably go through a cardiac rehabilitation program to rebuild stamina and strength. During this time, any massage therapy must be carefully gauged to be supportive, but not challenging, to the cardiovascular system and allostatic capacity. This is yet another reason to have a very clear picture of our clients' general activities of daily living and resilience so we can design sessions for the best possible outcomes.

Be aware that some of the drugs used to treat heart problems create side effects that could influence massage therapy choices. These include frequent urination, dizziness, light-headedness, and fatigue.

MUSCLE AND JOINT PAIN

The muscle pain (myalgia) and joint pain (arthralgia) seen with COVID-19 infection and occasionally in post-infection patients is a topic of particular relevance to massage therapists. The pain we're referring to here is deep, severe, and unrelated to recent physical activity. While it may drive people to seek massage therapy, it can also be a sign of a problem.

Watch "Covid Screening Questions"



Several COVID-related processes can cause muscle and joint aches. Some patients develop severe fatigue with muscle pain after the acute stage passes. This version of myalgia is probably safe for gentle massage. However, hypoxia and blood-clotting problems can lead to poor tissue perfusion, which can also cause pain in muscles and joints. Severe infections can cause rhabdomyolysis—a situation where muscles degenerate, and their by-products damage the kidneys, leading to renal failure. And of course, deep, severe muscle and joint pain can also be signs of systemic inflammation that has rebounded, or not yet subsided—although typically this would be accompanied by fever. Disrupting any of these problems with the challenge of vigorous massage is not appropriate.

Implications for Massage Therapy

This is a tricky one to parse. If a person's pain is widespread and not focused in one particular area, then it is probably *not* rhabdomyolysis. Gentle massage and stretching may help ease pain while not disrupting compromised capillary activity deep in the tissues. However, if someone complains of increasing localized pain and *any* signs of kidney problems (changes in urination, edema, headaches, altered mental state), then it is necessary to refer them to a primary care provider because of the imminent risk of kidney damage.

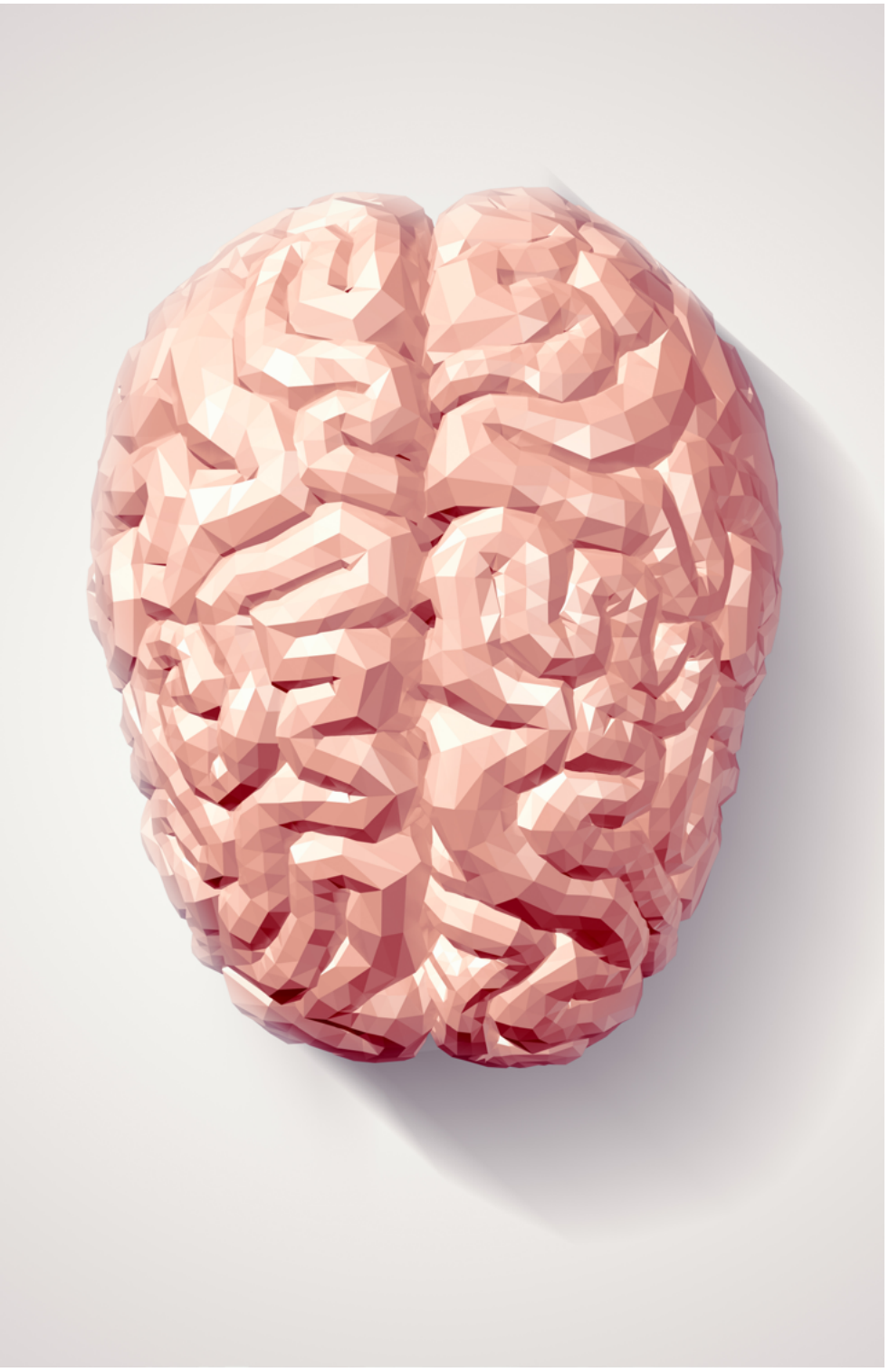
ACUTE KIDNEY INJURY

Patients with preexisting kidney disorders, especially related to diabetes, are at risk to develop new kidney problems with COVID-19, as are some people with no history of renal impairment. As we see with heart, liver, and central nervous system (CNS) problems, kidneys can be damaged through tiny clots and infarctions (this time clogging the glomeruli), low tissue perfusion due to hypoxia, direct viral attacks on the nephrons, and extreme inflammation with immune system overreactions leading to tissue damage, scarring, and loss of function.

Many hospitalized COVID-19 patients require dialysis while they are in the acute phase of the infection, but some need it during recovery and may require long-term treatment.

Implications for Massage Therapy

As with any client with kidney problems, any bodywork that focuses on fluid movement could be overwhelming to a compromised system. This is a situation that calls for consultation with the health-care team, conservative and relaxing massage, and follow-up communications to check for unexpected responses.



NEUROLOGICAL PROBLEMS

SARS-CoV-2 affects neurological function for many patients, but we are still figuring out all the ways this can happen. Not surprisingly, patients with severe CNS complications related to the virus also have a poorer prognosis for recovery compared to those without major CNS involvement.

Some reports suggest the virus can attach to olfactory nerve endings in the nasal sinuses and travel to the CNS via axonal transport. ACE-2 receptors have been found on glial cells and within the cerebral blood vessels. Damage here may break down the blood-brain barrier that normally shields the CNS from pathogenic invasion. In some cases, viral particles have been found in cerebrospinal fluid, even while the standard diagnostic tests were negative.

Early COVID-19 symptoms for some patients include the loss of smell and taste, possibly for several months, and these suggest sensory nerve impairment. Some people report numbness, tingling, or other types of paresthesia in various areas after their infection has peaked, which also indicates that the virus may have a direct and lingering effect on sensory nerves.

Specific brain and brainstem problems may develop as well. Factors may include a direct viral attack on nerve or glial tissue, or cerebral hypertension from an extreme immune response and inflammation. This is essentially a form of encephalitis, and it can depress the respiratory drive, creating a vicious cycle of poor oxygen saturation and further difficulties with breathing. In addition, pressure and inflammation inside the CNS can cause dizziness, nausea, vomiting, headaches, and seizures.

We see that many COVID-19 survivors are vulnerable to ischemic or hemorrhagic strokes related to coagulopathy, and this may occur in people much younger than those usually at risk. COVID-related strokes can cause permanent CNS damage and require a long rehabilitation process that may or may not be completely successful.

To see more of Ruth Werner's COVID-19 materials, go to www.abmp.com/updates/blog-posts/helpful-covid-19-and-pathology-resources-abmp-and-ruth-werner.

To make things even more complicated, hypoxia and inflammation can affect various parts of the brain to cause neuropsychiatric symptoms, including agitation, memory loss, altered mental state, loss of cognition, and other problems. These issues do not appear to be permanent, although many patients report ongoing struggles with concentration and the ability to focus long after the acute phase of the infection subsides.

Implications for Massage Therapy

Consult with clients' health-care providers (if they give permission) to establish what their risks are for stroke, encephalitis, or other CNS complications. Clients who have cerebral hypertension need to delay any impactful massage until this situation is resolved, although they may appreciate gentle, educated touch. If a client is in recovery from a stroke, we may be able to coordinate our work with their physical or occupational therapists for an enhanced recovery process.

Any impairments in sensation and any other ongoing symptoms might require other accommodations. It isn't possible to anticipate every circumstance here, but this is where we can rely on pathology education to offer some suggestions and guidance.

MENTAL AND MOOD CHALLENGES

The stress of living under the long-term threat of pandemic has led to heightened levels of anxiety and depression in many people, and these conditions take a serious toll on quality of life. However, COVID-19 survivors—especially those who have had very severe infections that required hospitalization and ventilation—are vulnerable to mental and emotional challenges that don't affect others.

Post-intensive care syndrome (PICS) is a frequent consequence of time spent in an intensive care unit for any reason. This condition involves physical, psychological, and cognitive effects of being in a high-stress environment, often while constrained and heavily sedated. Delirium, nightmares, and paranoia are common consequences, and these effects can persist for weeks or months after a patient is released from the ICU.

People recovering from COVID-19 have some added vulnerability for PICS because the anxiety related to breathing problems can trigger a whole-body sympathetic reaction. Added to this are the stress of isolation, touch deprivation, separation from loved ones, fear of getting other people sick, and the many unknowns about what recovery looks like and what long-term consequences might be. Anxiety, depression, and posttraumatic stress disorder (PTSD) are also predictable issues for people who have been through COVID-19, as well as those who care for them.

Implications for Massage Therapy

Mood disorders in general tend to respond well to educated, welcomed, non-task-oriented touch. Special focus on breathing and promoting a sense of inner strength will be particularly helpful for COVID survivors who struggle with PICS and other emotional challenges. As with other situations, it is important to work for incremental changes and to check back frequently for any unexpected responses.

OTHER POST-COVID ISSUES

The list I've provided here focuses on the COVID complications that have been discussed in the medical literature, and that are likely to have the biggest impact on clinical decision making for massage therapists. However, other complications have been noted, both by the medical community and by the many hundreds of thousands of people who are in recovery. Some of these are also likely to influence massage therapy choices, which is why it is important to ask about any and all post-COVID health changes.

These conditions might include:

- Relapsing episodes of acute symptoms
- Benign paroxysmal positional vertigo: a situation where the displacement of otoliths in the inner ear causes episodes of sudden-onset and potentially debilitating vertigo
- Shingles: a resurgence of varicella zoster that is often seen at times of great stress and immune system overwhelm
- Chronic fatigue syndrome/fibromyalgia syndrome: these may be flares of preexisting problems, or the beginning of a new pattern of pain, fatigue, and a host of other quality-of-life limiting symptoms (that fortunately often respond well to massage)
- Autoimmune disease flares: people with rheumatoid arthritis, autoimmune vasculitis, and other autoimmune diseases report flares
- Problems with blood glucose control and a risk of new-onset diabetes
- Guillain-Barré syndrome, a peripheral nerve demyelinating disease that is usually temporary but can be very serious
- Severe muscle wasting that goes beyond simple deconditioning
- … and many more

WHAT CAN WE DO?

We have no history or tradition to pull from for our work with COVID-19 survivors. Massage therapists will have to return to basic principles of identifying potential risks, hoped-for benefits, and appropriate accommodations that will minimize risks

COVID-19–RELATED COMPLICATIONS REFERENCES

Associated Press. "Surviving the Coronavirus is One Thing. Recovering is Another." *Los Angeles Times*, May 13, 2020. Accessed July 2020. www.latimes.com/science/story/2020-05-13/suriving-the-coronavirus-is-one-thing-recovering-is-another.

Berstein, Lenny. "A Long Road Home: Hugo Sosa Survived the ICU. But for Coronavirus Patients Like Him, That's Just the Start of Recovery." *The Washington Post*, June 9, 2020. Accessed July 2020. www.washingtonpost.com/health/2020/06/09/coronavirus-ventilator-rehabilitation.

"Caring for Patients with COVID-19 and Post-Intensive Care Syndrome." May 22, 2020. Accessed July 2020. http://clinicalconnection.hopkinsmedicine.org/news/caring-for-patients-with-covid-19-and-post-intensive-care-syndrome.

Centers for Disease Control and Prevention. "What to Know About Liver Disease and COVID-19." May 5, 2020. Accessed July 2020. www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/liver-disease.html.

Citroner, George. "What to Know About COVID-19 and Strokes." *Healthline*, May 20, 2020. Accessed July 2020. www.healthline.com/health-news/what-to-know-about-covid-19-and-strokes.

Conversation with Dr. Yaser Diab, pediatric hematologist at Children's National Hospital, Washington, D.C.

Conversation with Dr. Michael Mina, Assistant Professor of Epidemiology at Harvard T. H. Chan School of Public Health, Assistant Professor in Immunology and Infectious Diseases at HSPH, and Associate Medical Director in Clinical Microbiology (molecular diagnostics) in the Department of Pathology at Brigham and Women's Hospital, Harvard Medical School.

Guo, Tao et al. "Cardiovascular Implications of Fatal Outcomes of Patients with Coronavirus Disease 2019 (COVID-19)." *JAMA Cardiology*, published online March 27, 2020. Accessed July 2020. https://doi.org/10.1001/jamacardio.2020.1017.

Hamilton, John. "After The ICU, Many COVID-19 Survivors Face A Long Recovery." *NPR*, April 21, 2020. Accessed July 2020. www.npr.org/sections/health-shots/2020/04/21/840343240/after-the-icu-many-covid-19-survivors-face-a-long-recovery.

Jin, Min, and Qiaoxia Tong. "Rhabdomyolysis as Potential Late Complication Associated with COVID-19." *Emerging Infectious Diseases* 26, no. 7 (July 2020a): 1618–20. Accessed July 2020. https://doi.org/10.3201/eid2607.200445.

Jin, Min, and Qiaoxia Tong. "Table: Rhabdomyolysis as Potential Late Complication Associated with COVID-19." *Emerging Infectious Diseases* 26, no. 7 (July 2020b): 1618–20. Accessed July 2020. wwwnc.cdc.gov/eid/article/26/7/20-0445-t1.

Kingsland, J. "COVID-19 Patients Experience Neurological Symptoms." *Medical News Today*, June 1, 2020. Accessed July 2020. www.medicalnewstoday.com/articles/covid-19-patients-experience-neurological-symptoms.

La Jolla Institute for Immunology. "Detailed Analysis of Immune Response to SARS-CoV-2 Bodes Well for COVID-19 Vaccine." *ScienceDaily*, May 15, 2020. Accessed July 2020. www.sciencedaily.com/releases/2020/05/200515092007.htm?fbclid=IwAR37S4SL_XbToODNr-v8cgH6ateiGqgKP4fVe0o6sCUjLOqrlRm9Vn5TeCs.

Lee, Agnes Y. Y. et al. "COVID-19 and Coagulopathy: Frequently Asked Questions." Last reviewed June 23, 2020. Accessed July 2020. www.hematology.org:443/covid-19/covid-19-and-coagulopathy.

Li, Hao, Qun Xue, and Xingshun Xu. "Involvement of the Nervous System in SARS-CoV-2 Infection." *Neurotoxicity Research* 38 (May 13, 2020): 1–7. Accessed July 2020. https://doi.org/10.1007/s12640-020-00219-8.

Matacic, Catherine. "Blood Vessel Attack Could Trigger Coronavirus' Fatal 'Second Phase.'" *Science*, June 2, 2020. Accessed July 2020. www.sciencemag.org/news/2020/06/blood-vessel-attack-could-trigger-coronavirus-fatal-second-phase.

Michos, Erin Donnelly, ed. "Can Coronavirus Cause Heart Damage?" April 24, 2020. Accessed July 2020. www.hopkinsmedicine.org/health/conditions-and-diseases/coronavirus/can-coronavirus-cause-heart-damage.

Miller, Greg. "Loss of Smell, Confusion, Strokes: Does COVID-19 Target the Nervous System?" *Discover Magazine*, May 19, 2020. Accessed July 2020. www.discovermagazine.com/health/loss-of-smell-confusion-strokes-does-covid-19-target-the-nervous-system.

Papa, Alfonso, Anna M. Salzano, and M. Teresa Di Dato. "Images in Practice: Painful Cutaneous Vasculitis in a SARS-Cov-2 IgG-Positive Child." *Pain and Therapy*, published online May 21, 2020. Accessed July 2020. https://doi.org/10.1007/s40122-020-00174-4.

Pathak, Neha. "The Great Invader: How COVID-19 Attacks Every Organ." *WebMD Health News*, April 23, 2020. Accessed July 2020. www.medscape.com/viewarticle/929284.

Pathak, Neha. "Life after COVID-19: The Road to Recovery." *WebMD Health News*, May 14, 2020. Accessed July 2020. www.medscape.com/viewarticle/930547.
Phend, Crystal. "The Case for Organized Post-COVID Care." *MedPage Today*, June 15, 2020. Accessed July 2020. www.medpagetoday.com/infectiousdisease/covid19/87061.
Ries, Julia. "COVID-19 Can Attack the Heart in Addition to the Lungs." *Healthline*, May 20, 2020. Accessed July 2020. www.healthline.com/health-news/how-covid-19-triggers-heart-conditions.
Rogers, Jonathan P. et al. "Psychiatric and Neuropsychiatric Presentations Associated with Severe Coronavirus Infections: A Systematic Review and Meta-Analysis with Comparison to the COVID-19 Pandemic." *The Lancet Psychiatry* 7, no. 7 (July 2020): 611–27. Accessed July 2020. https://doi.org/10.1016/S2215-0366(20)30203-0.
Sheraton, Mack et al. "A Review of Neurological Complications of COVID-19." *Cureus* 12, no. 5 (May 2020): e8192. Accessed July 2020. https://doi.org/10.7759/cureus.8192.
Smith, Dana G. "Coronavirus May Be a Blood Vessel Disease, Which Explains Everything." *Medium*, May 29, 2020. Accessed July 2020. https://elemental.medium.com/coronavirus-may-be-a-blood-vessel-disease-which-explains-everything-2c4032481ab2.
Sperati, C. John. "Coronavirus: Kidney Damage Caused by COVID-19." May 13, 2020. Accessed July 2020. www.hopkinsmedicine.org/health/conditions-and-diseases/coronavirus/coronavirus-kidney-damage-caused-by-covid19.
Stam, Henk J., Gerold Stucki, and Jerome Bickenbach. "Covid-19 and Post Intensive Care Syndrome: A Call for Action." *Journal of Rehabilitation Medicine* 52, no. 4 (April 2020). Accessed July 2020. https://doi.org/10.2340/16501977-2677.
Vastag, Brian, and Beth Mazur. "Researchers Warn Covid-19 Could Cause Debilitating Long-Term Illness in Some Patients." *The Washington Post*, May 29, 2020. Accessed July 2020. www.washingtonpost.com/health/could-covid-19-cause-long-term-chronic-fatigue-and-illness-in-some-patients/2020/05/29/bcd5edb2-a02c-11ea-b5c9-570a91917d8d_story.html.
Zhang, Chao, Lei Shi, and Fu-Sheng Wang. "Liver Injury in COVID-19: Management and Challenges." *The Lancet: Gastroenterology and Hepatology* 5, no. 5 (May 2020): 428–30. Accessed July 2020. https://doi.org/10.1016/S2468-1253(20)30057-1.

and maximize benefits. To help us down that path, I created a short list of screening questions with rationales and decision points for these clients, available at www.abmp.com/updates/blog-posts/questions-clients-who-have-had-covid-19. This is just a starting place; we all have to be ready to adapt as more information becomes available. I also discuss these questions in the video that accompanies this article (see QR code on page 49).

The repeating message in the "Implications for Massage Therapy" sections of this article is that we must proceed with great caution. This disease impacts function in ways we are still discovering, and adding any challenge to a person's already-limited capacity for adaption will not do them any favors. But stress-relieving, non-challenging massage may be a powerful addition to our clients' coping strategies. Focus on easy, stress-free breathing for those who have struggled with lung function, anxiety, or post-intensive care syndrome. Bring your best, undemanding, soothing touch to this difficult situation, and you will be a great gift to our clients.

I recommend only incrementally adding intensity to massage sessions as you and your clients explore how they respond. Follow-up calls to check for how people respond to their massage—and whether they have any unexpected reactions or repercussions—will be especially important. And finally, I want to emphasize the importance of detailed documentation. People who work with COVID-19 survivors are in a unique position to explore the best roles for massage therapy. I hope to see case reports on this topic soon: we need them to inform future research and practice for massage therapy. **m&b**

Ruth Werner is a former massage therapist, a writer, and an NCBTMB-approved continuing education provider. She wrote *A Massage Therapist's Guide to Pathology* (available at www.booksofdiscovery.com), now in its seventh edition, which is used in massage schools worldwide. Werner is available at www.ruthwerner.com or wernerworkshops@ruthwerner.com.

Listen to Ruth Werner's new podcast *I Have a Client Who . . .* on The ABMP Podcast network at www.abmp.com/podcasts.