

LEHIGH COUNTY

# Health & Medicine

Official Publication of The Lehigh County Medical Society



## Return-to-Play Post COVID-19 Infection

PLUS

COVID-19'S IMPACT ON MEDICAL EDUCATION  
THE SCIENCE-BASED BENEFITS OF MINDFULNESS



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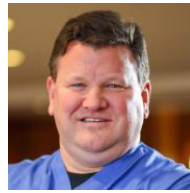
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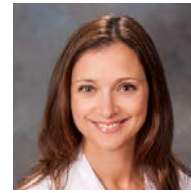
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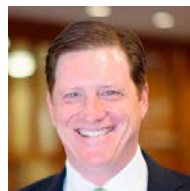
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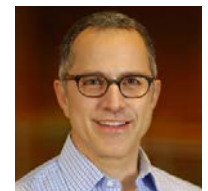
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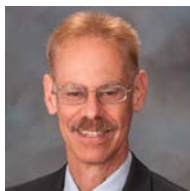
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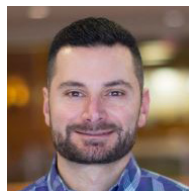
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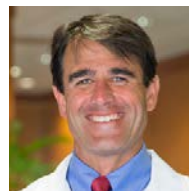
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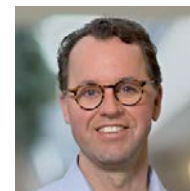
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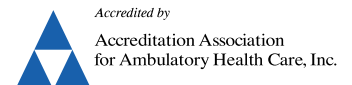
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## IN THIS ISSUE

Spring may finally be in the air! It is hard to believe that it has been a year since our world was turned upside down due to the Covid-19 pandemic.

In this issue we have a wide range of informative articles that I hope you find informative. As just one example, we have seen that those practicing medicine have really stepped up during this pandemic. What you may not know is that the numbers of individuals interested in attending medical schools has increased. Read on to learn how the pandemic has affected the education and career choice of many people.

Also read on to learn more about the Four Pillars of Wellness. This pandemic affects all of us, and this article can help.

If spring makes you think of cleaning, you might want to keep the article “Spring Cleaning – Watch Your Fingertips” in mind. Remember, doing it fast isn’t always your best bet. Should you happen to injure one of those fingers, this article might help you know what to do and expect.

March is National Kidney Month. Do you know what Chronic Kidney Disease is? We share an excellent article on Chronic Kidney Disease and how it is diagnosed, what can cause it and how to treat it.

March is also Save Your Vision Month. With this in mind we offer an article on Glaucoma: “Not your Grandmother’s Glaucoma!” You will find so much information on glaucoma that you might just make an appointment to see your eye doctor.

We continue to hope you also are enjoying the exchange about how medicine and wellness can help us form strong communities in Lehigh County.

Thank you for reading! +

# CHRONIC KIDNEY DISEASE

## WHAT YOU NEED TO KNOW

BY HINA K. TRIVEDI, DO,  
NEPHROLOGIST

**C**hronic kidney disease (CKD) is a common diagnosis in the United States. In fact, 15% of the American adult population has CKD. Patients often feel overwhelmed when informed of their diagnosis. Here, we review what it means to have chronic kidney disease. CKD is defined as the kidneys' inability to perform one or more of their various jobs, functionally or structurally, for at least three months.

*Continued on page 6*

### KIDNEYS ARE RESPONSIBLE FOR THE FOLLOWING:

- removing toxins and waste products
- balancing electrolytes (sodium, potassium and magnesium to name a few)
- helping maintain our body fluid, blood pressure, and acid/base balance
- releasing a hormone called erythropoietin which helps us produce red blood cells
- producing an active form of Vitamin D to maintain bone health



### DIAGNOSING KIDNEY DISEASE

Blood tests, urine testing and kidney imaging are the three ways in which healthcare providers diagnose CKD.

On blood testing, a level called a serum creatinine (sCr) is used to determine the kidneys' level of function. People are born with two kidneys: the sCr reflects their combined function. Normal sCr can vary from person to person as age, gender, and muscle mass all play a role. Generally, a serum creatinine of 1 mg/dL is considered normal. However, a doubling of someone's normal sCr suggests a 50% loss of functioning. Each individual patient is unique, so prior labs to trend sCr levels help to determine someone's normal, or baseline, range. For example, a petite woman's normal serum creatinine could be 0.7 mg/dL whereas a tall muscular male of the same age and ethnicity could have a normal serum creatinine of 1.2 mg/dL. These values are very different but reflect normal levels for each of the individuals.

There are a variety of equations that account for height, weight, age, gender and ethnicity to determine the combined function of a person's kidneys. The function is called the estimated glomerular filtration rate, or eGFR. eGFR, measuring in milliliters/

minute, is used to determine a patient's stage of chronic kidney disease. Healthy kidneys filter about 120ml/min. There are 5 stages of CKD. Stage 3 is split into stages 3a and 3b (see table 1). Patients with CKD stages 1-3 are often asymptomatic while symptoms present in later stages of CKD. CKD stage 5 is often when dialysis is considered based on the patient's wishes, clinical status and blood work results.

Another important way to evaluate kidney functioning is urine testing. A urinalysis with microscopy helps providers evaluate whether or not microscopic blood or protein are present. As blood and protein in urine are not normal, persistence could suggest chronic kidney disease. Urine protein is often quantified to help further determine staging of kidney disease.

Kidney imaging, in the form of a renal ultrasound or CT scan, is also considered in diagnosing CKD. Imaging helps health care providers determine if there is any structural issue that could be causing abnormal function. For example, discovering kidney stones, masses, cysts, or a congenital solitary kidney, are all instances in which CKD could be present or a person is at risk of developing CKD.

### CAUSES OF KIDNEY DISEASE

Patients are often referred to a nephrologist, a kidney specialist, when CKD or abnormal urine testing is present. Nephrologists will work with patients to determine what stage of CKD is present, and what can be done to slow down progression of CKD. Diabetes and hypertension are the most common causes of chronic kidney disease in the United States, as well as natural aging of the kidneys.

Other causes of CKD include recurrent acute kidney injury, for example, from dehydration. Frequent daily use of medications such as high dose NSAIDs can be toxic to kidneys. NSAIDs include medications such as ibuprofen, naproxen, celebrex, diclofenac and indomethacin. Always ask your doctor if it is safe to take any over the counter or herbal medications when you have kidney disease. Obesity, family history of CKD, smoking, kidney stones, autoimmune diseases, frequent UTIs and exposures such as to heavy metals can all contribute to progression of kidney disease as well.

### TREATING CKD

To slow down progression of CKD, control of blood pressure and blood sugars is vital. Avoiding caffeine, getting a good night's rest each night, exercise, and following

a low sodium/salt diet are all important ways to improve blood pressure. Adequate sleep, exercise, weight loss and smoking cessation can all slow down worsening of kidney function. Nephrologists can help look for secondary causes of elevated blood pressure as well as manage hypertension with various medications. Patients should check their blood pressure at home with a home blood pressure device to achieve control through medications and reducing sodium/salt intake. Patients can also work with their primary care physicians or endocrinologists to help lower elevated blood sugars. Those with either type 1 or type 2 diabetes mellitus are at risk of kidney disease. As kidney function declines, nephrologists can help manage complications medically. The earliest sign of kidney disease due to diabetes is increased protein in the urine in the form of albumin. The presence of albumin often appears earlier than bloodwork abnormalities so annual monitoring for albumin in the urine is important. Blood pressure lowering medications called angiotensin converting enzyme inhibitors (ACEis) and Angiotensin II receptor blockers (ARBs) have been shown to slow the loss of kidney function. ACEis and ARBs end in -pril or -sartan and help lower protein in the urine. Working closely with endocrinology, as well as a kidney doctor, will help keep a patient's kidneys working as long as possible.

Common signs of kidney disease include weight gain and ankle swelling from the inability to remove extra water from the body. For example, increased swelling or shortness of breath from fluid overload can be managed with water pills called diuretics. Some examples of diuretics are furosemide, torsemide or bumetanide. Kidneys are responsible for potassium excretion. As kidneys fail, particularly in later stages of CKD, potassium levels in the blood can rise. High potassium levels, also called hyperkalemia, can lead to cardiac conduction abnormalities, potentially leading to arrhythmia, low blood pressure and even death. Nephrologists and patients can work together to help control elevations in potassium levels with diet and medications. As kidneys are responsible for acid/base balance, some primary care

Table 1: Stage of Chronic Kidney Disease

Stage	Description	GFR (mL/min/1.73 m <sup>2</sup> )
1	Normal kidney function with urine findings or structural abnormalities/genetic traits	>90
2	Mildly reduced kidney function with urine findings or structural abnormalities/genetic traits	60-89
3a	Moderately reduced kidney function	45-59
3b	Moderately reduced kidney function	30-44
4	Severely reduced kidney function	15-29
5	End stage kidney failure	< 15

providers or nephrologists will provide sodium bicarbonate tablets to raise low serum bicarbonate levels to normal range. Low serum bicarbonate levels can put patients at risk of bone loss and fractures. Patients can develop anemia in late stage CKD as well. IV iron, oral iron and/or medications that stimulate the bone marrow to produce more blood are utilized to manage anemia. Nephrologists or hematologists generally order these medications.

Patients often do not know they have kidney issues as labs can be abnormal without patients having symptoms. Because chronic kidney disease occurs slowly over time, patients can get accustomed to these slow deleterious changes. Symptoms related to kidney disease are more often felt by patients when there is a sudden change in kidney function or when patients are experiencing late stage chronic kidney disease (stage 4 or 5). Later signs of kidney disease include nausea, vomiting, loss of appetite, weakness, fatigue, itching, muscle cramps and anemia. If volume status, electrolytes, acid/base status and/or symptoms of toxin buildup cannot

be managed medically, dialysis is pursued according to the patient's goals of care.

Monitoring bloodwork, urine testing and ensuring close follow up with a primary care provider and/or nephrologist will allow for better management of chronic kidney disease to determine its cause and slow progression to preserve renal function whenever possible. +

#### RESOURCE

<https://www.cdc.gov/kidneydisease/publications-resources/2019-national-facts.html>

# Mitigating Risk Through Disability Income Insurance

Disabilities that affect someone's ability to work can be a serious issue for businesses and organizations of all sizes. Whether you're a business owner or a benefits manager, disability income (DI) insurance can help replace a portion of your employees' income if they become too ill or injured to work. Businesses can use DI as an effective planning tool to mitigate risk. Offering DI can also help you to recruit and retain employees.

## Income Protection for Employees

If you offer group long-term disability benefits, the coverage may only protect about half of an employee's net monthly income. You can help your employees reduce the coverage gap by making supplemental individual DI insurance policies available to them. By offering this valuable coverage as a voluntary benefit, your employees can have added protection to help them meet their financial obligations during a disability, at little or no cost to the business. MassMutual offers different DI products to meet the needs of both small and large businesses and organizations. Depending on your company's needs, a DI offering can be either voluntary or employer-paid, and might be eligible for simplified underwriting. Regardless of the design, your employees enjoy discounted premiums and policy portability.

## Retirement Protection for Employees

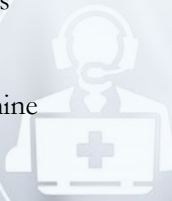
Your employees have worked hard to save for retirement, and you can offer a way to help them protect the nest eggs they have built. A major derailer for many people approaching retirement can occur if they become too sick or hurt to work, and are forced to tap into their retirement savings to meet the expenses of everyday life. A disability income policy can not only replace a portion of one's income when a disability occurs, but it can also be designed to help your employees continue saving for retirement if they become too sick or hurt to work. In this way, offering DI policies can help your business attract talent and build loyalty.

## Protect Your Business and Select Employees

For a small business, a key employee's disability can impact the company's bottom line. However, if you choose to continue paying that employee's salary without having a pre-existing plan in place, tax reporting issues may arise as the Internal Revenue Service (IRS) would generally not recognize those payments as a business expense. A Qualified Sick Pay Plan (QSPP), which is recognized by the IRS and can be funded with DI, sets company policy before a disability occurs. Funding a QSPP with DI, you transfer the risk of a portion of that employee's salary to MassMutual. The owner can choose which employees will be included in a QSPP, making it ideal for family businesses looking to offer disability income protection for non-owner family members.

## Fund Buy-Sell Agreement

If your business has multiple owners, you can use DI to fund a buy-out option if one partner becomes disabled, allowing for an orderly transition of ownership. Additionally, this allows the insurance carrier to serve as an objective third party to determine whether a disability has occurred. If you're in a partnership that has an existing buy-sell agreement, it's important that you review the agreement to ensure that disabilities are addressed and funded.



## Cover Business Overhead Expenses

As a business owner, you have expenses to pay and obligations to meet. So if you were to become disabled, the future of your company could be in jeopardy. However, with a business overhead expense (BOE) disability policy in place, the business can continue to operate even while you are unable to work. A BOE policy can help by paying a portion of overhead expenses, such as leases and salaries, in the event of a business owner's disability. Premiums for a BOE policy are generally tax deductible and the benefits paid, which are subject to taxation, are used to pay for expenses that are commonly tax deductible.

## Employee Benefits for All Shapes and Sizes

MassMutual offers a comprehensive suite of employee and executive benefit solutions that includes life insurance, disability income insurance and retirement plan services. Learn how our workplace benefit solutions can help your employees secure their financial future and protect the ones they love.

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# COVID-19's IMPACT ON MEDICAL EDUCATION

BY DONNA BAVER ROVITO  
AND ANGELIC RODGERS, PHD

**P**hysicians and other health care professionals on the “front lines” of the COVID-19 pandemic have received a lot of attention in 2020 – and rightfully so. Medical professionals have stepped up to every plate this insane year has tossed at their feet.

Perhaps not surprisingly, when physicians are making such a huge difference in peoples’ lives, more students than ever have applied to our nation’s medical schools. According to the Association of American Medical Colleges (AAMC), applications for the 2021 academic year are up a whopping 18 percent from this time last year.

David J. Skorton, MD, president and CEO of AAMC, commented on their website: “The pandemic is spotlighting the extraordinary services that physicians provide on the front lines. It’s heartening to see that more students want to pursue a career in medicine in order to serve their communities and make a difference.”<sup>1</sup>

In light of impending physician shortages, predicted even before the pandemic, having more people aspire to become physicians is undoubtedly a good thing. But there is no doubt that COVID-19 has significantly impacted physicians in training and their families.

Authors Catherine R. Lucey, MD, and S. Claiborne Johnston, MD, PhD, in a recent article in the *Journal of the American Medical Association (JAMA)* “The Transformational Effects of COVID-19 on Medical Education,”<sup>2</sup> suggest that COVID-19 may be the spark which ultimately transforms medical education: “Despite the disruption of the pandemic, medical students not only continued to learn but, in many circumstances, accelerated their attainment of the types of competencies that 21st-century physicians must master to meet this pandemic and address other complex problems in health and health care...schools and learners pilot tested new methods of instruction, rethought their approach to assessment, identified different methods to build community, and adopted new strategies for recruitment and admission in a travel-constricted world. All of these new approaches have the potential to catalyze the modernization of US medical education that is underway, with faculty, learners, and staff increasingly recognizing that new approaches may be better than the old.”

It’s obvious the pandemic has created significant challenges for tomorrow’s physicians. Organizations which support them have developed resources to help students, residents and fellows navigate this unprecedented situation.

The American Medical Association has developed a COVID-19 Resource Center<sup>3</sup>

and Physician’s Guide to COVID-19<sup>4</sup> and collected resources for medical students, residents and fellows<sup>5</sup>. AMA’s vice president for undergraduate medical education innovations Kim Lomis explained in a statement released by the AMA<sup>6</sup>: “It is important to acknowledge that clinical students are more than learners – they serve many value-added roles in the provision of care. As the U.S. health system responds to this challenge, we may well rely upon our talented, dedicated students as a critical element of our provider workforce. We have been preparing them for this.”

The organizations which represent the nation’s allopathic and osteopathic medical schools and coordinate applications have posted extensive resources. The American Association of Medical Colleges (AAMC) has developed a Coronavirus (COVID-19) Resource Hub<sup>9</sup> while the American Association of Colleges of Osteopathic Medicine (AACOM) has created a Coronavirus Resource Center<sup>10</sup>.

The Accreditation Council for Graduate Medical Education, which regulates residency programs, devoted a section of its website to Well-Being in the Time of COVID-19<sup>7</sup>: “We take pride in how the medical community has risen to this challenge with dedication, innovation, and flexibility, delivering hope to those in need. Nonetheless, this collective resolve in the face of challenge does not immunize us from the negative impacts of exposure to stress and trauma.” Additionally, they’ve created a Guidebook for Promoting Well-Being During the COVID-19 Pandemic<sup>8</sup>. “The residents and fellows who comprise a critical part of the physician workforce shoulder this responsibility alongside the rest of the medical community, facing the same challenges and assuming the same risks. While ready for the rigors of training, little has prepared them for the demands of the COVID-19 pandemic. Yet they answer the call to care for those in need and are meeting this challenge with courage.”

Physician families are making their own way through the pandemic, sharing

experiences and frustration on various social media hubs, including our own Physician Family Community<sup>11</sup> and AMA Alliance<sup>12</sup> Facebook groups. The AMA Alliance instituted a series of Zoom calls, some for all members, some for state and county leaders, featuring experts on various topics and connection amid the pandemic’s isolation. More information can be found on the AMA Alliance website<sup>13</sup>.

*Physician Family Magazine*<sup>14</sup> reached out on several social media platforms for more personalized information. A first-year medical student had this to say: “Doing gross anatomy semi-virtually is difficult. Sure, we can look at a dissected cadaver online, but you lose the perspective of seeing it in person and in three dimensions. Another problem has been technology and the fact that some of our professors, brilliant though they are, aren’t entirely comfortable with the virtual platforms. We’re also missing out on in-person ‘patient’ encounters, which we’re doing virtually, but it’s not the same. Hopefully, with the release of the vaccine, we’ll be able to get our educational experience back on track by our second year.”

A third-year student emphasized the tremendous delay to take Step 1 and how clinical rotations have been shortened. Their class essentially had two months off at the end of MS2 as the schools and the nation adjusted. A COVID-19 diagnosis of someone with whom the student had no interaction during a surgery rotation also upset the schedule and caused additional remote work.

Another third-year student said that the second year STEP test, which was supposed to be in April, was delayed multiple times, impacting the review and study process. The beginning of third year was delayed, causing rotations to be changed and shortened. Several rotations have been short of patients because of changes in outpatient health care and patient reluctance to seek routine care. Additionally, some hospitals are currently not taking students at all because they don’t want extra outsiders on site.

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*Continued on page 12*



allowing for improved work-life integration for physicians and a better experience and outcome for physician families.”

Physician families will likely remember 2020 as a year of challenges – but also a year during which the nation’s health care community MET those challenges head on, with compassion and care. +

Donna Baver Rovito and Angelic Rodgers, PhD, serve as editor and associate editor of *Physician Family Magazine*. This piece was originally published in the Winter 2021 edition of *Physician Family Magazine*.

### RESOURCES

1. <https://www.aamc.org/news-insights/press-releases/enrollment-us-medical-schools>
2. <https://jamanetwork.com/journals/jama/fullarticle/2770075>
3. <https://www.ama-assn.org/delivering-care/public-health/covid-19-2019-novel-coronavirus-resource-center-physicians>
4. <https://www.ama-assn.org/delivering-care/public-health/physicians-guide-covid-19>
5. <https://www.ama-assn.org/delivering-care/public-health/resident-medical-student-covid-19-resource-guide>
6. <https://www.ama-assn.org/delivering-care/public-health/covid-19-how-virus-impacting-medical-schools>
7. <https://dl.acgme.org/pages/well-being-in-the-time-of-covid-19>
8. <https://dl.acgme.org/learn/course/covid-19-well-being-resource-library/organizational-well-being/guidebook-for-promoting-well-being-during-the-covid-19-pandemic>
9. <https://www.aamc.org/coronavirus-covid-19-resource-hub>
10. <https://www.aacom.org/coronavirus#MedEd>
11. <https://www.facebook.com/groups/PhysicianFamilyCOMMUNITY>
12. <https://www.facebook.com/groups/amaalliancemembergroup>
13. <https://amaalliance.org/>
14. <https://www.physicianfamilymedia.org/>

The assistant director of an obstetrics and gynecology program offered significant insight. “Initially, due to concern for PPE shortage, we only allowed one resident per surgery; typically, we would have more than one so that the upper-level could teach the lower-level skills. Also, because of shutting down ORs and decreased clinic volume, we placed our residents onto two teams and only one team worked each week. This was partially because of decreased volume, but also to cohort our groups should people fall ill with COVID-19 or need to be quarantined. We resumed normal schedules and volumes in the summer/early fall, but have again started to see decreases in the ORs, which again decreases the surgical volume and training our residents are getting. Luckily, we are a high surgical volume residency and should not have any issues with graduating numbers, but I predict our graduating seniors will have lower numbers than would have been anticipated in non-COVID-19 years. We are able to double scrub surgical cases now because PPE is not as much a concern. At the beginning of the pandemic, residents were not allowed to see COVID-19 positive patients to limit the number of providers being exposed. This was short lived as COVID-19 numbers rose and we realized our residents would lose significant numbers

if we continued this. Also, we learned that our PPE was proving to be safe while seeing these patients.”

The pandemic has also impacted another important step in physician training – interviewing for medical school, residency, fellowship and employment, says Sarah Gan in Lexington, KY: “My husband interviewed for fellowship this fall. While it was nice to not spend money on flights and hotels and food, we really wish we could have traveled to where he interviewed to meet people and explore/get a feel for the town. In the end we still matched to his top choice but our ‘feelings’ about the people and place were severely limited.”

Two Canadian physician spouses and members of the AMA Alliance, Hayley Harlock and Julie Petrera, noted a rare silver lining for their own families: “From the onset of medical school, family time together always seems to be scarce. The pandemic has resulted in many innovations and efficiencies that have replaced traditional time-consuming practices. Examples include remote patient consults, online teaching for medical students and residents, as well as Zoom meetings with colleagues near and far. The result has been reduced travel time,

# the science- based benefits of mindfulness

Research says that engaging in mindfulness meditation can reduce chronic pain as well as symptoms of depression and anxiety and can be a building block to a happier mind.

**BY SUSAN WILEY, MD,** MINDFULNESS PROGRAM MANAGER,  
PREFERRED EAP, AND CO-FOUNDER, CENTER FOR MINDFULNESS,  
LEHIGH VALLEY HEALTH NETWORK

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**W**ith a stronger awareness of mental health during COVID-19, the term “mindfulness” has appeared more often in news stories and social media. This awareness and increasing acceptance are bolstered by a growing body of scientific evidence that is giving mindfulness new credibility and respect beyond the yoga studio to broader practical applications for wellness and adjunctive treatment.

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*Continued on page 14*



To start a conversation about mindfulness, it's helpful to understand exactly what it is. Many view mindfulness as a form of meditation, which it can be. Meditation typically refers to a formal, seated intentional practice, where you use focus to increase calmness, concentration, awareness, and emotional balance. Mindfulness is the simple act of paying attention and being present in whatever you're doing. You can practice mindfulness in a formal way (seated, in a class setting, or on your own, for example), or informally anytime, anywhere.

We often go about our daily lives with our minds wandering away from the activity or conversation at hand to other thoughts, desires, fears, or wishes. When we're mindful, we are actively involved with all our senses in the present moment. Practicing mindfulness is paying attention, on purpose, to the present unfolding moment, with an attitude of curiosity or acceptance. As the mind wanders away, which it will, we gently redirect attention back to observing whatever is happening right now.

### A new perspective

Mindfulness meditation has its roots in Buddhist philosophy. It was not appreciated as a potent adjunct to medical treatment until the 1980s. At that time, Jon Kabat Zinn, professor emeritus of medicine and creator of the Center for Mindfulness in Medicine, Health Care, and Society at the University of Massachusetts Medical School, developed Mindfulness-Based Stress Reduction, a standardized curriculum of mindfulness training. The intervention was reproducible and its effects could be measured in a variety of clinical settings. In one early seminal randomized controlled trial, he was able to show that 15 minutes of mindfulness meditation improved rates of healing in patients with psoriatic rash.

Perceptions altered as science began to test mindfulness. Backed by data, it emerged as an effective adjunctive treatment modality for some conditions. The number of randomized controlled trials jumped into the hundreds since about 2013 and thousands



of scientific papers are recorded on research lists. More recently, interest in mindfulness has grown further into the mainstream as more people are experiencing stress due to the pandemic.

### Treatment for depression and anxiety

Although the results of the efficacy of mindfulness as a treatment modality are varied, a few key areas are notable. When the well-designed, well-run studies are examined, they show promising outcomes for patients with recurrent depression, anxiety, and chronic pain.\* A 2014 study in the *Journal of Clinical Psychiatry* found that MBSR was associated with a significant reduction in anxiety and distress, and an increase in positive self-statements. The same study measured left-sided activation in several anterior regions of the brain, which is observed during certain forms of positive emotion. It was found that MBSR decreased anxiety and increased this positive affect. The study also showed that left-sided anterior activation is associated with enhanced immune function, and that such improvements remain four months after the intervention.

Studies based on group intervention and training that have focused on depression and mindfulness-based cognitive therapy, showed similar positive results especially in reducing relapse. They showed that patients with recurrent depression could be taught to change their relationship to the negative self-talk that is the common internal narrative among people who suffer with this

disorder. Through mindfulness they learned to see their thoughts as a constellation of habitual patterns of the mind and not truths. This insight allowed patients to change this negative narrative, which seems to correlate with reductions in relapse in patients with recurrent depression.

Another study, with results published in *Nature Reviews Neuroscience* in 2015, showed actual changes in brain structure after mindfulness meditation. Positive outcomes included enhanced attention, improved emotion regulation, reduced stress, and improved present-moment awareness. Current research is investigating the relationship between these findings and enhanced emotional resilience with promising results.

### Managing chronic pain

Evidence has been found that regular mindfulness practice reduces a person's pain experience. The work of Fadel Zeidan, PhD, and his colleagues in 2015, which involved brain imaging studies, showed those who received mindfulness as treatment had less activation in the parts of their brains that manage pain messages. Their research also showed that some participants were able to reduce and, sometimes, eliminate, the use of pain medications through ongoing daily mindfulness practice, though this was not always the case for all.

The Mayo Clinic provides an explanation of how this occurs: "Mindfulness exercises help people to focus their mind and body in the moment without judgment. Daily

mindfulness practice can be helpful for people living with chronic pain because sometimes there are negative or worrisome thoughts about the pain. These thoughts are normal and can affect mood and increase pain. Being able to focus on relaxing the body, noticing the breath and body sensations as being there just as they are, can help manage pain, as well as reduce depression and anxiety symptoms.”\*\*

### Practice leads to a happier mind

When discussing the scientific perspective on mindfulness, it's important to mention Richard Davidson, PhD, founder and director of the Center for Healthy Minds at the University of Wisconsin. Research at the center focuses on the plasticity of the brain and how we can change the brain through training; much of the work there involves practices of mindfulness and compassion meditation. In Dr. Davidson's Ted Talk\*\*\* recorded in January 2019, he identifies four pillars of a healthy mind. These include meta-awareness, or awareness of what the mind is doing; connection and the qualities of compassion, appreciation and kindness which grow from this; insight into the internal narrative of how we speak to ourselves; and purpose. Dr. Davidson and his team suggest we can change our health by changing our brains, that these changes are durable, and they can help humanity to flourish.

Dr. Davidson often refers to a laboratory study titled “A Wandering Mind is an Unhappy Mind,” where Harvard psychologists Matthew Killingsworth and Daniel Gilbert discovered that an unnervingly large fraction of our thoughts – almost half – are not related to what we're doing. Beyond that, the study showed that people were less happy when their minds were wandering than when they were not. This supports Dr. Davidson's belief that the training that occurs during mindfulness meditation can ultimately lead to greater happiness. He suggests that if we integrate mindfulness into our usual daily activities, as we do with brushing our teeth or eating a meal, we can begin to reduce distractibility and improve awareness. He suggests just three minutes a day of informal mindfulness practice – where we pause the usual habits of the brain, relax our body and mind, pay attention to the unfolding present moment, and notice what is happening inside and outside of ourselves with an attitude of curiosity and investigation – can bring change. And the data increasingly backs up his claim. +

### RESOURCES

\*<https://news.harvard.edu/gazette/story/2018/04/harvard-researchers-study-how-mindfulness-may-change-the-brain-in-depressed-patients/>

\*\*<https://www.mayoclinichealthsystem.org/hometown-health/speaking-of-health/use-mindfulness-to-cope-with-chronic-pain>

\*\*\*[https://www.ted.com/talks/richard\\_j\\_davidson\\_how\\_mindfulness\\_changes\\_the\\_emotional\\_life\\_of\\_our\\_brains\\_jan\\_2019?language=en](https://www.ted.com/talks/richard_j_davidson_how_mindfulness_changes_the_emotional_life_of_our_brains_jan_2019?language=en)



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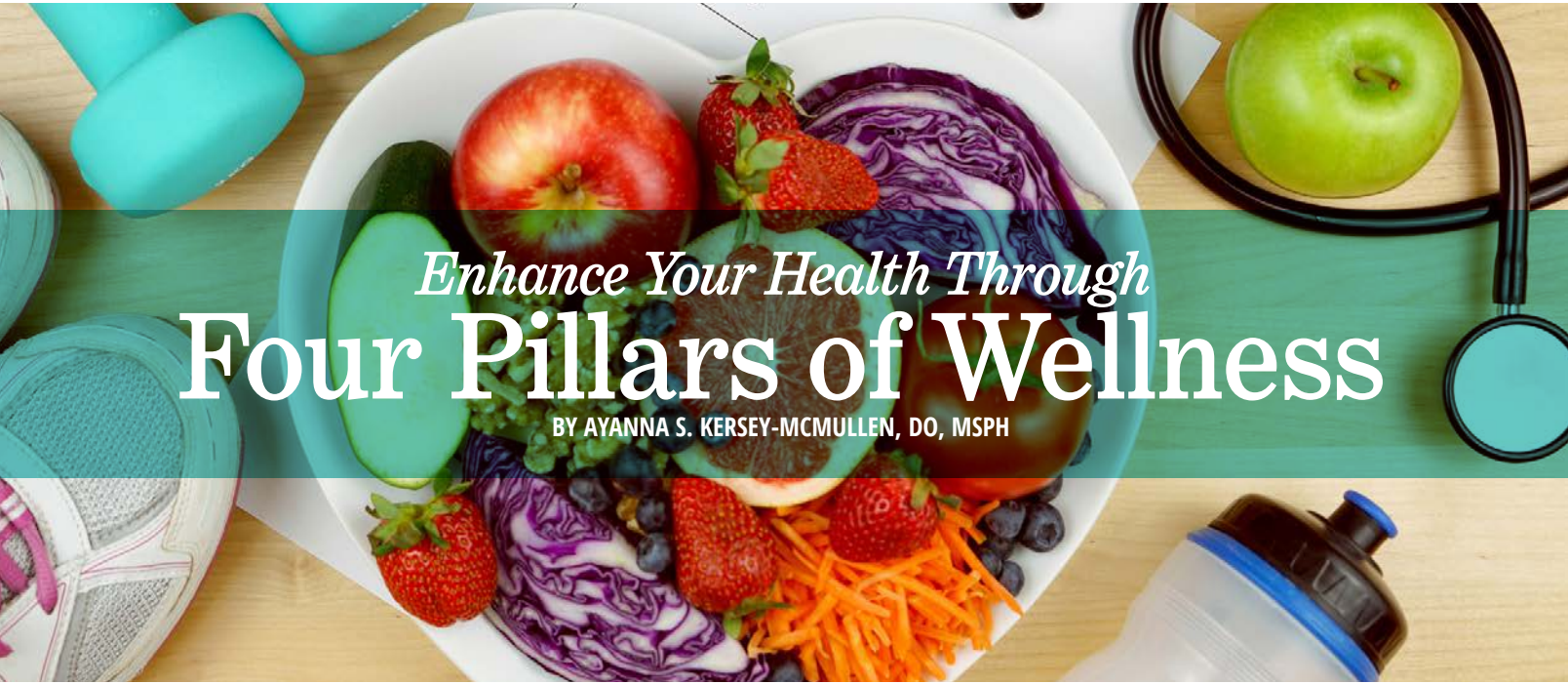
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# Enhance Your Health Through Four Pillars of Wellness

BY AYANNA S. KERSEY-MCMULLEN, DO, MSPH

**F**or many people, the last year has presented new challenges for how we maintain our health and wellness. One key step in doing so has been examining what it means to be “well.”

The Western perspective on health and wellness often tends to compartmentalize it as a physical state of being, defined by the absence or presence of disease. However, wellness is not simply the absence of disease. It also integrates components of physical, financial, social, occupational, emotional, intellectual and spiritual health.

Physical medicine and rehabilitation (PM&R) is a field of medicine that focuses primarily on enhancing and restoring function and quality of life in people who have experienced developmental disability, spinal cord injury, brain injury, stroke, amputation and orthopedic/musculoskeletal injury. PM&R also aligns with other areas of medicine to provide holistic solutions to chronic diseases such as diabetes, heart disease, obesity, chronic pain and general deconditioning by addressing health, wellness and recovery.

These solutions are best achieved by integrating The Four Pillars of Wellness, which include:

## Traditional Medicine

PM&R, like other medical specialties, uses evidence-based approaches for the treatment

of both acute and chronic injury and disease. Such interventions include:

- Oral and topical medication therapy for injury, disability and pain
- Osteopathic manipulative treatment for musculoskeletal pain and headaches
- Injections for the treatment of muscle, skeletal or nerve problems
- Treatment of adverse outcomes, such as spasticity or abnormal muscle tone, that occur as a result of neurologic injury
- Holistic approaches to the prevention of catastrophic illness, obesity or reducing the risk of repeat injury are all impactful ways of serving patient needs and facilitating healing and wellness.

## Psychology and Mental Wellness

According to the Kaiser Family Foundation, after the start of the COVID-19 pandemic in 2020, 53 percent of U.S. adults reported greater worry and stress in their lives compared to 39 percent the previous year. This increase highlights the importance of addressing issues of mental health and having access to resources to do so.

## Nutrition

Food is medicine. The majority of chronic diseases that are leading causes of death and illness in the United States are directly related to lifestyle. Nutrition is a key component to disease reversal and the maintenance of health

and wellness. Observing a diet that leans into whole foods (minimally processed, fresh and complex) and plants (fruits and vegetables) is an important tool for maintaining health and wellness.

## Exercise

Exercise also is medicine. Exercise is not only important for managing body weight, but alongside exercise-based therapy, it helps to protect against chronic disease; improve mood and cognition; lower blood pressure and improve cardio vascular health; improve the quality of sleep; boost sex drive; prevent muscle loss and function; build bone density; reduce experiences of pain; reduce the risk for injury; and reduce the risk of developing diabetes.

As we continue to find new and creative ways to maintain our health and enhance our sense of wellness, I challenge you to start first with your perspective. In doing so, you may find empowerment in identifying new priorities for your health, exploring new resources for reaching your goals and making impactful changes in your life. +

*Ayanne S. Kersey-McMullen, DO, MSPH, is a physical medicine and rehabilitation (PM&R) physician with Good Shepherd Rehabilitation Network in Allentown. A member of the Good Shepherd Physician Group, Dr. Kersey-McMullen serves as medical director for stroke rehabilitation, integrative wellness and wellness in the arts programs.*

*Two Lehigh Valley Health  
System Medical Residents Receive*

# 2020 HUMANENESS IN MEDICINE AWARD

*from*

**LEHIGH COUNTY  
MEDICAL  
SOCIETY**

**E**very year, the Lehigh County Medical Society (LCMS) presents its Humaneness in Medicine Award to one or more Lehigh County medical residents or fellows who have best displayed the ideals of outstanding compassion in the delivery of care, respect for patients, their families, and health care colleagues, as well as demonstrated clinical excellence. In 2021, LCMS is proud to announce that Lisa Kurth, M.D., and Michael Chen, M.D., have been selected as the 2020 Humaneness Award recipients.

Dr. Lisa Kurth is a surgical resident at the Lehigh Valley Health Network who is described as “an advocate of values-based and patient-centered care.” An active listener, she focuses on the needs and preferences of her patients and their families, and advocates for those needs within the medical system. One of only a few residents trained in physician wellness and support, Dr. Kurth also serves as a peer-to-peer mentor. And as a trustee of the Lehigh Valley Health Network Resident Association, she routinely emphasizes physician wellness in her work and presentations. During the pandemic, Dr. Kurth has been serving as a COVID front line caregiver in the ICU, volunteering to handle overflow lines and ICU care.

In nominating Dr. Kurth, a colleague wrote: “Not only is she an excellent physician, but her effective leadership, mentorship and ability to connect with patients and convey compassion make her a role model for medical students and residents across all specialties. As I progress in my own career, I will strive to give my patients the same level of care I have witnessed from Dr. Kurth.”

Michael Chen is a 2nd year adult psychiatry resident with the Lehigh Valley Health Network. Nominated by his residency program director, Dr. Chen is described as a physician who excelled at his clinical rotations and has exhibited particular enthusiasm in inpatient psychiatric care. He is the kind of doctor who spends the extra time talking with patients and their family members to gather the necessary information to properly assess the patient, seeks advice from other physicians, and develops care plans to provide the best possible level of care and support. He has become a mentor to other residents, and is the first to volunteer to swap shifts to support residents who are ill. During the pandemic, he worked closely with other physicians to make sure his patients could be treated directly in the ER at times when the hospital was full and unable to take new patients.

Dr. Chen was nominated by his director of residency training, who describes him as a standout in terms of compassion. In describing Dr. Chen, she provided an example of a case where Dr. Chen worked closely to help a young patient and the patient’s mother by spending time getting both perspectives and that of an outpatient provider, and then seeking guidance from several physicians within the department to make sure he was developing the most appropriate and effective treatment plan.

LCMS is proud to have Dr. Kurth and Dr. Chen be the recipients of this important award.

Located in Allentown, PA, LCMS represents physicians of all specialties on local issues. In coordination with the Pennsylvania Medical Society, LCMS also works to address health issues at the state capitol.✚

# Return-to-Play Post COVID-19 Infection

ELISA GIUSTO D.O., LVHN FAMILY MEDICINE PGY-3

**C**ompetitive and elite athletes recovering from COVID-19 face a unique challenge; when is it safe to return to play? The *British Journal of Sports Medicine* offers insight into this topic from the experts of sport and exercise medicine physicians. To understand the recommendations, it is first essential to recognize the mechanism of the disease. The SARS-COV-2 virus binds to the ACE2 receptor, commonly found in the lungs and heart, and can cause direct toxic effects within those organs such as myocarditis. Exercising with myocarditis can increase viral replication and inflammation in the heart causing

permanent damage or sudden death. Diagnosing myocarditis can be a challenge, though, as it is reliant on histology from a biopsy or cardiac MRI. Elevated Troponin, a serum biomarker of heart damage, is nonspecific to myocarditis. Electrocardiogram (ECG) changes seen in the electrical conductivity of the heart, such as T wave inversions and ST elevations or depressions, are also nonspecific to myocarditis. COVID-19 related respiratory disease is also a concern and can be associated with damage to the pulmonary airspaces, interstitium, and pulmonary vascular interface. Thromboembolic disease can be indicated by elevated C reactive protein (CRP) and D-dimer, but more definitely seen on CT chest.

Athletes who recovered at home from COVID-19 and have no symptoms for 7 days with 10 days from symptoms' onset should have a thorough clinical assessment along with an ECG and Echocardiogram (ECHO), heart ultrasound. If abnormalities are observed, a cardiac MRI should be done to exclude myocarditis. Cardiopulmonary exercise testing, troponin level, or 24-hour Holter monitor may be considered as well.

Athletes with persistent COVID-19 symptoms for 14 days since symptoms, such as fatigue, cough, chest pain, shortness of breath, should have a thorough clinical assessment along with an ECG and cardiac MRI. A chest Xray, pulmonary function tests, CRP, D-dimer, and troponin level should also be done. If all are normal, then proceed to cardiopulmonary exercise testing and 24-hour Holter monitor. If there are abnormal pulmonary results (signs of pneumonia, pulmonary embolism, or postinflammatory bronchoconstriction), a CT chest and cardiopulmonary exercise testing should be done. If there are abnormal cardiac results, training should be restricted and myocarditis guidelines should be followed.

Athletes who were hospitalized with COVID-19 should automatically have an ECG, cardiac MRI, 24-hour Holter monitor, cardiopulmonary exercise testing, CRP, D-dimer, and troponin level. If there are abnormal cardiac results, training should be restricted and myocarditis guidelines should be followed.

## COVID-19 GRADUATED RETURN TO PLAY FOR PERFORMANCE ATHLETES: GUIDANCE FOR MEDICAL PROFESSIONALS

### INDICATORS OF COVID-19 INFECTION

SHORTNESS OF BREATH, NEW, PERSISTENT DRY COUGH, FEVER, GI SYMPTOMS SUCH AS DIARRHOEA & NAUSEA, LOSS OF TASTE AND SMELL

THIS GUIDANCE IS AIMED AT ATHLETES WITH MILD TO MODERATE SYMPTOMS OF COVID-19. ATHLETES SHOULD FOLLOW LOCAL GOVERNMENT GUIDELINES OF COUNTRY OF RESIDENCE FOR MANAGEMENT OF SYMPTOMS INCLUDING ISOLATION AND TESTING PROCESSES. ATHLETES WHO HAVE MORE COMPLICATED INFECTIONS, OR REQUIRED HOSPITAL SUPPORT SHOULD HAVE A MEDICAL ASSESSMENT BEFORE COMMENCING GRTP. ASSESSMENT MAY INCLUDE:

- BLOOD TESTING FOR MARKERS OF INFLAMMATION (HS-TROP BNP, CRP), CONSIDER RENAL & HAEMATOLOGY MONITORING
- CARDIAC MONITORING (ECG, ECHO, ETT, CARDIAC MRI)
- RESPIRATORY FUNCTION ASSESSMENT (SPIROMETRY)

REST FROM ONSET (10 DAYS) & AT-LEAST SYMPTOM FREE (7 DAYS) & OFF ALL TREATMENT, E.G. PARACETAMOL → GRTP GRADUATED RETURN TO PLAY PROTOCOL

### GRADUATED RETURN TO PLAY PROTOCOL UNDER MEDICAL SUPERVISION

	STAGE 1 10 DAYS REST	STAGE 2 3 DAYS WALKING	STAGE 3A 1 DAY WALKING	STAGE 3B 1 DAY WALKING	STAGE 4 3 DAYS WALKING	STAGE 5 EARLIEST DAY 12	STAGE 6
ACTIVITY DESCRIPTION	MINIMUM REST PERIOD	LIGHT ACTIVITY	FREQUENCY OF TRAINING INCREASES	DURATION OF TRAINING INCREASES	INTENSITY OF TRAINING INCREASES	RESUME NORMAL TRAINING PROGRESSIONS	RETURN TO COMPETITION IN SPORT SPECIFIC TIMELINES
EXERCISE ALLOWED	WALKING, LIGHT ACTIVITIES OF DAILY LIVING	WALKING, LIGHT JOGGING, STATIONARY CYCLES, NO RESISTANCE TRAINING	SIMPLE MOVEMENT ACTIVITIES E.G. RUNNING DRILLS	PROGRESSION TO MORE COMPLEX TRAINING ACTIVITIES	NORMAL TRAINING ACTIVITIES	RESUME NORMAL TRAINING PROGRESSIONS	
% HEART RATE MAX		<70%	<80%	<80%	<80%	RESUME NORMAL TRAINING PROGRESSIONS	
DURATION	10 DAYS	<15 MINS	<30 MINS	<45 MINS	<60 MINS	RESUME NORMAL TRAINING PROGRESSIONS	
OBJECTIVE	ALLOW RECOVERY TIME, PROTECT CARDIO-RESPIRATORY SYSTEM	INCREASE HEART RATE	INCREASE LOAD GRADUALLY, MANAGE ANY POST VIRAL FATIGUE SYMPTOMS	EXERCISE COORDINATION AND SKILLS/TACTICS	RESTORE CONFIDENCE AND ASSESS FUNCTIONAL SKILLS	RESUME NORMAL TRAINING PROGRESSIONS	
MONITORING	SUBJECTIVE SYMPTOMS, RESTING HR, I-PPRS	SUBJECTIVE SYMPTOMS, RESTING HR, I-PPRS, RPE	SUBJECTIVE SYMPTOMS, RESTING HR, I-PPRS, RPE	SUBJECTIVE SYMPTOMS, RESTING HR, I-PPRS, RPE	SUBJECTIVE SYMPTOMS, RESTING HR, I-PPRS, RPE	SUBJECTIVE SYMPTOMS, RESTING HR, I-PPRS, RPE	

ACRONYMS: I-PPRS (INJURY - PSYCHOLOGICAL READINESS TO RETURN TO SPORT); RPE (RATED PERCEIVED EXERTION SCALE)  
NOTE: THIS GUIDANCE IS SPECIFIC TO SPORTS WITH AN AEROBIC COMPONENT

Logos: UK Home Countries Institutes of Sport, English Institute of Sport, Athlete Health, Sportscotland, Sport Institute

INFOGRAPHIC CREATED BY UK HOME COUNTRIES INSTITUTES OF SPORT, ELLIOTT, N., ELLIOTT, J., BISWAS, A., MARTIN, B., HERON, N.

A suggested graduated return to play protocol can help guide the introduction of physical activity in a stepwise fashion. It is important to note that if any symptoms occur, athletes must return to the previous stage and can only progress after a 24-hour period of rest with no symptoms. Besides focusing on physical wellbeing, it is also crucial to consider the psychological impact of prolonged recovery and deconditioning on athletes. With the support of their physician, family, teammates, and coaches, athletes can safely return to play with these recommendations.+

### RESOURCES

Elliott N, Martin R, Heron N, et al. Infographic. Graduated return to play guidance following COVID-19 infection. *British Journal of Sports Medicine*. 2020;54:1174-1175.

Wilson MG, Hull JH, Rogers J, et al. Cardiorespiratory considerations for return-to-play in elite athletes after COVID-19 infection: a practical guide for sport and exercise medicine physicians. *British Journal of Sports Medicine*. 2020;54:1157-1161.

# NOT YOUR GRANDMOTHER'S GLAUCOMA!

## IMPROVED TECHNOLOGY:

*New methods of diagnosis, new lasers and new types of eyedrops have changed the way we diagnose and treat this blinding disease. It doesn't have to be the blinding thief in the night anymore—it can be caught and treated early, and your vision can be saved.*

BY LISA S. BUNIN, M.D.  
OPHTHALMOLOGIST

**W**hen I was training at the Wilmer Institute at Johns Hopkins over 25 years ago, I learned that Glaucoma was a disease of high eye pressure. The only test we had of optic nerve function was a Goldman Visual Field, and though we knew we could lose 35-50% of optic nerve fibers before we saw real changes on the visual field, we wouldn't treat unless there was visual field loss. That's because we only had eye drops that caused a lot of side effects and patients hated taking them, especially when they couldn't see or feel Glaucoma. Thus, we were starting people on treatment far too late in the disease, and they would progress from there, needing risky filtering surgery that

caused cataracts, macular swelling, hypotony, and infections, and didn't cure the disease.

Fast forward to 2021, and things are significantly different! We understand that Glaucoma is a disease of damage to the optic nerve, and can happen at ANY eye pressure, even very low pressure. It is a combination of poor circulation, mechanical factors, heredity, and effects of medication and lifestyle. There are over 35 different types of Glaucoma, and I am diagnosing and treating people in their 20s and 30s with lots of years to live and hoping to enjoy a lifetime of good vision. With early detection, treatment, and monitoring, they can have good vision for a lifetime!

So, what is Glaucoma? Glaucoma is a silent, blinding, neurodegenerative disease of the optic nerve. It is not diagnosed at a single point in time, but is a timeline of slow, gradual loss of nerve fibers. It affects over 3 million people in the United States, with over 120,000 people blind from Glaucoma.

Yet over half the people with Glaucoma don't even know they have it starting! Even if you don't have a family history of Glaucoma, it could be happening to you, because your family may be undiagnosed as well. Glaucoma creates significant morbidity and decreases health-related quality of life, and the World Health Organization lists it as the second cause of blindness worldwide.

It is very important to be diagnosed early, so that you can be treated very early! In early cases we can not only slow the progression of the disease but may even be able to halt it! Newer tests allow much earlier diagnosis, and newer treatments are safe and tolerable so we can intervene earlier. Technology has improved, medicines have improved, so we can get better results!

## WHY IS GLAUCOMA SO INSIDIOUS?

We are born with 1.2 million nerve fibers in the optic nerve, and generally lose about 5000 nerve fibers a year due to natural aging. So, we have a nice cushion to see well for our whole life if nothing accelerates that loss. But with Glaucoma the relative pressure of the fluid in

the eye (not an absolute number as was taught years ago) is too high for the eye, and presses on the delicate nerve fibers. This damages then kills them, resulting in loss of small spots in the side vision at first, then larger areas, and then, lastly, complete blindness. The central vision remains unaffected until very late in the disease, so people don't notice anything is happening. Then suddenly it's too late and, when they have very few nerve fibers left, they go blind.

If you think of each nerve fiber serving a pixel in a picture, you can understand why going from 13 megapixels to 8 megapixels would go unnoticed to a patient. Since we use both eyes together, it is easy for the brain to fill in small gaps and the picture to seem normal even with moderate Glaucoma. Patients cannot tell something is wrong until quite late in the disease, like the 53-year-old woman who came in to me because she had failed her driver's test—not because she couldn't see (she read 20/20 with each eye), but because she had lost so much side vision that she didn't meet the visual field requirements to drive. This was a permanent loss and could not be improved with glasses, medicine or laser, and all we could do was to aggressively treat and try to save what vision she had left.

## SO, HOW DO WE SCREEN PATIENTS FOR GLAUCOMA?

Checking intraocular pressure (IOP). Yet half of all Glaucoma patients have low or "normal" pressure. (Also, please note that "air-puff" tonometry used at some offices is not very accurate).

Measurement of corneal thickness. Patients with thin corneas (after LASIK or PRK, or high myopes) may have falsely low pressures, so Glaucoma may be missed on screening.

Most important: examination of the optic nerve through pictures, exam, and several tests including an OCT (ocular coherence tomography) and visual field test. Both structural and functional assessments are integral to patient care.

## HOW AND WHEN TO TREAT GLAUCOMA

Glaucoma isn't a single yes or no point, it's a timeline of optic nerve damage. The earlier

glaucoma is detected and treated, the better it is for prognosis and preservation of sight.

Newer medicines are safer and better tolerated than older treatments, making earlier treatment easy and practical. Now SLT (selective laser trabeculoplasty) is considered first line treatment. SLT is a safe laser treatment that is painless, repeatable, and doesn't depend on patient compliance.

## WHAT ARE OTHER RISK FACTORS FOR GLAUCOMA?

Besides having a family history of Glaucoma or any history of blindness, patients with vascular and lung disease (e.g. asthma/COPD, migraines, vasospasm, diabetes, cardiovascular disease), use of steroids (even inhaled and nasal), or history of ocular trauma are at increased risk. Hispanics and Afro-Americans are known to have more aggressive disease, so should be checked earlier. Patients who are high myopes, or who have had LASIK or PRK are associated with a falsely low IOP measurement due to thinning of the cornea, so often go undiagnosed. Doctors must be suspicious of Glaucoma if they see changes in the optic nerve on exam or testing.

## FREQUENCY OF TESTING FOR GLAUCOMA

Because Glaucoma is asymptomatic till late in the disease, we must rely on monitoring patients via frequent tests and exams. The American Glaucoma Society suggests four exams per year (2 dilated, and two pressure checks), visual field testing 1-3 times per year, and OCT twice a year. If Glaucoma is uncontrolled, then even more frequent tests are needed until control is achieved. Treatment is individualized and depends on test findings and patient compliance.

I treat everyone as I would want to be treated, and as I have treated my family. My father and my grandmother had Glaucoma, and they both retained excellent visual fields for their entire lives using this approach.

We are living longer and have access to better technology and better treatments. So, Glaucoma doesn't have to be the blinding thief in the night anymore—catch and treat it early and your vision can be saved! +



**WATCH YOUR FINGERTIPS!**

## the dangers of spring cleaning

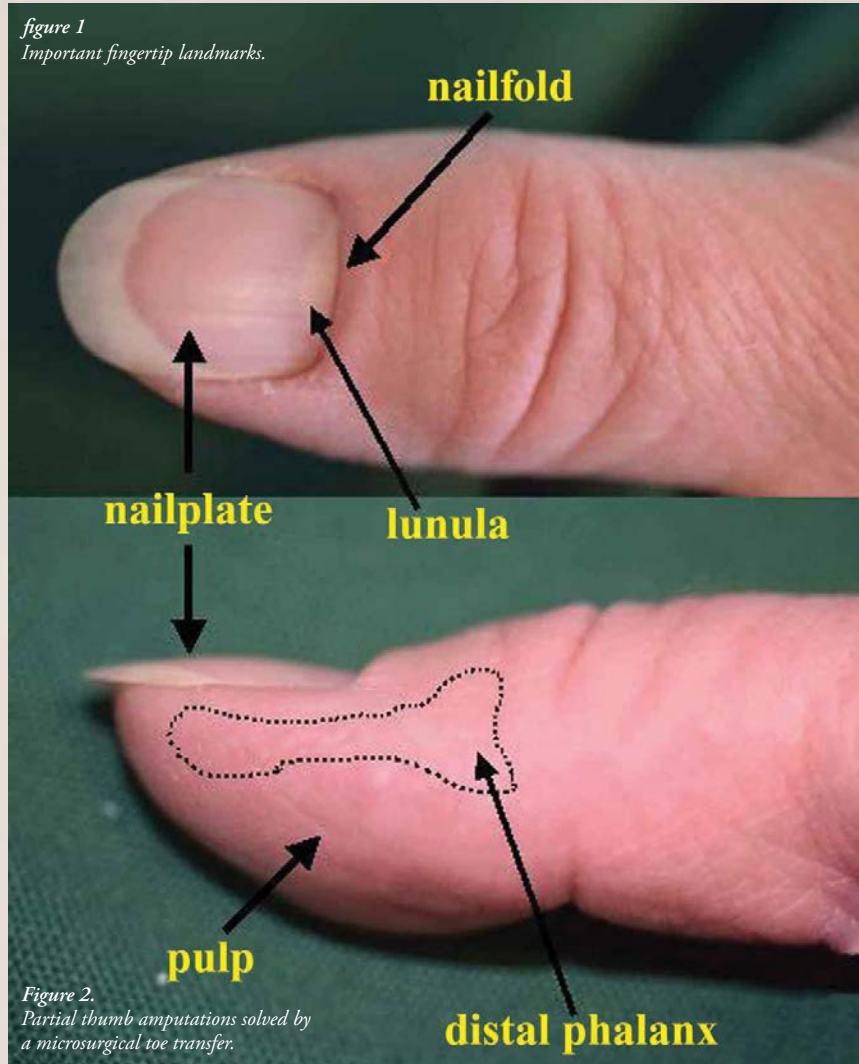
**BY GEOFFREY G. HALLOCK, M.D.**  
DIVISION OF PLASTIC SURGERY, ST. LUKE'S HOSPITAL,  
SACRED HEART DIVISION, ACTIVE STAFF

**S**pring has sprung, and once again cleanup time will be on everyone's agenda after a long winter. Leaves somehow blown in from your neighbor's yard have piled up, still moist from the melting snow. Sticks and stones must be cleared from sidewalks, stairs, and long driveways. Low lying tree branches should be carefully pruned. Not to mention all the chores undone indoors. Hopefully, the snowblower has at last been put away, but replaced by the equally dangerous lawnmower when clogged. Must a chainsaw be necessary, or instead just a table saw? Pruners, clippers, hatchets, axes, shovels, chisels, hammers, pliers, the list of toys goes on. Will an overhaul to reclaim working order be necessary for any?

So much to do. The days may be longer, but so little time. Speed and efficiency becomes the buzzword for their completion. A warning then is apropos—beware of haste and shortcuts. Accidents happen, and injuries will result. Scrapped, stomped, sliced, shredded, or just punctured, torn, or avulsed. Many may appear inconsequential, and usually the fingertip suffers most. After all, the human differs from the ape in their prehensile capabilities, a fancy word for being able to pinch a thumb to the other fingers to enable fine grasp, dexterity, and hand coordination. It is true that the fingertip injury is probably the second most common surgical diagnosis in the local emergency room—right after burns.

Once seeking help, make sure your tetanus status is up to date. Antibiotics will depend on the mechanism and extent of injury, as will the need for an x-ray to see if there are any broken bones or dislocations. Even the simplest fingertip injury can result in edema or swelling of the whole hand. Consequently, one of my idiosyncrasies is that since any ring or ornament even on an uninjured finger once swelling begins can compress that digit compromising blood flow, much like a tourniquet, so should be removed ASAP even if need be cut off! Function including joint movement and

*figure 1*  
Important fingertip landmarks.



*Figure 2.*  
Partial thumb amputations solved by  
a microsurgical toe transfer.

loss of sensation must then be assessed. After that, local anesthesia to numb the nerves at the base of the digit will make further evaluation and repair of any wounds more feasible. Now treatment of any soft tissue open wounds can begin, while those involving tendon or bones must be another story for another day.

On the palmar side of the fingertip, any persistent bleeding from the pulp [Figure 1.] can be expected to recur from even a superficial laceration [cut] upon movement, so sutures may be the best way to close the wound to stop this. A little loss of skin [ $< \frac{1}{2}$  in.<sup>2</sup>] will heal spontaneously. This may take a few weeks as the wound must contract closed, thereby pulling glabrous, tough, yet sensate tissue into the defect—far better than a skin graft from elsewhere that would only accomplish quicker

healing yet deficient in replacing like-with-like.

On the nailplate side, a subungual hematoma [blood collecting under the nail] can be very painful; and often resolved by puncturing the nailplate to make drain holes. However, more often than not, this is not just due to a cut in the nailbed to which the nailplate attaches. Since the nailbed is also intimately attached to the distal phalanx [fingertip bone], this may be a sign that that may have been broken with the sharp bone pieces disrupting the nailbed. If the bleeding is significant or if the nail itself has been split or torn off, the nailplate should be removed in toto to allow visualization of the nailbed in its entirety. Only in this way can any nailbed lacerations be repaired carefully in a smooth

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## FEATURE

fashion to enhance the chance that when a new nailplate grows back from the regenerating cells found in the lunula [the crescent moon shaped area next to the nailfold], that the nail will still be able to attach once again to the nailbed and not split or not adhere about a scar as it grows toward the end of the finger (1). This process is very slow, and in an adult may take up to 6 months to be completed.

As an important aside, whenever a nailplate has been torn off the nailbed or removed by the physician, make sure that it is found and never discarded until absolutely sure that it is not needed. The nail itself, since it conforms perfectly to that individual's finger from which it came, is the best splint to hold any minor distal phalanx fragments together while protecting the traumatized nailbed while it heals. The nailplate should also always be put under the nailfold when reinserted so that the latter does not heal to the lunula and block protrusion as the new nail tries to grow out. A simple way to affix the nailplate is to put medical grade superglue around its edges, although sutures can be a substitute but are more difficult to place since the nailplate usually is very hard (2).

More significant injuries with soft tissue loss resulting in bone or tendon exposure or even amputation may require a flap [a piece of tissue having its own blood supply] for coverage so that further shortening of the digit can be avoided. This would best be done by a surgeon with hand expertise, as sometimes not so simple to accomplish. Take for example partial amputation of a thumb. The thumb provides 50% of overall hand function, so extreme measures to preserve length to allow adequate prehensile capabilities is justifiable. Depending on culture and expectations, this can realistically be accomplished by the transfer of part or all of a great or second toe for replacement of missing parts (3). Nailplate, bone, flexor and extensor tendons, and/or glabrous skin can be moved using microsurgical techniques to connect nerves, arteries, and veins of the toe to corresponding structures of the thumb to reestablish blood flow. The result can be a strong, mobile, and sensate digit with restoration of normal function, although form and appearance can be satisfactory also [Figure 2.]—the same goals for the treatment



*Donor toe: A to C—great toe, D to F—2nd toe. In the center is the appearance of the donor foot when the great toe was used [left], or second toe [right]. Note when compared to the contralateral foot, most people will not even notice a missing 2nd toe, just as in the comic strips where hands & fingers have only 4 digits! In all cases, none of these patients had any problems walking even with their toe missing!*

of any fingertip injury no matter how difficult or how simple.

Dressings after any fingertip repair are chosen to minimize bloody ooze and swelling, immobilization as indicated, and for comfort. For a small avulsion, pressing an absorbable gelatin sponge on the wound [every ER has this] will initiate clotting to stop bleeding, then covered with a bandaid. A splint will prevent stretching soft tissues apart, while perhaps even more important protect the fingertip as a shield to deflect any unexpected impacts that always will be very painful, since a disproportionate number of sensory nerves endings may be found in the pulp as that is our tactile connection to the world. Keep the entire hand elevated afterwards to facilitate by gravity reduction of the expected edema. Dressing changes, suture removal and further wound management should be at the discretion of your treating physician. Difficulties in joint mobilization, scarring, edema, and sometimes discomfort can often be overcome with an occupational therapy consultation for

help as needed. The take home message for all this is that as sure as the snowflakes will disappear in Spring, someone will unexpectedly injure their fingertip. Be prepared and be careful! +

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# LCMS NEWS

## NEW MEMBERS

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# What Are You Doing to Get Your Clients Back in Your Practice, Safely?

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  - Antibody Testing Kits & Protocols
  - PCR (saliva) Tests & Protocols
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- Access to Telehealth Support
- Access to On-site Health Support
- Access to approved PPEs, and workplace and employee wellness tests and products



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