As summer begins to fade, our institute has now had to consider the long term implications of COVID-19 and its future impact to our practices. Assuredly, our old practices will no longer exist, and we are going to have to embrace creative ways to deliver care. At SDHI, our work behind the scenes continues to focus on ensuring patient and care team safety with mandatory COVID testing before any procedures. The articles in this edition may have a different flavor than previously as we have partnered with Ms. Jamie Wecker from the Swedish Foundation. Jamie is the development writer assisting our physicians to tell their stories. We hope you enjoy the new style.

In this edition, we focus on one of the key risk factors that affects patients who have contracted COVID-19 — obesity. With the continued rise in obesity rates, Dr. Sara Martin del Campo looks at the reasons to focus on weight management during the pandemic. Dr. Pankaj Rajvanshi takes a not so futuristic look at the health care visit. Six months ago, telehealth was a niche aspect of care that wasn’t even on the minds of most physicians, but today sees many of them conducting care virtually via a computer or device of some kind. Dr. Lulu Iles-Shih tells us the story of inflammatory bowel disease and the role of the microbiome and how in the future, fecal transplant may play a role in curing these patients. Lastly, Dr. Brandabur reviews a recent article on COVID-19 and PPIs to provide some practical perspective on this piece which is circulating not only to physicians but to some patients.

As always, we hope you find something in this edition that is applicable to improving the health of your patients.

Brian Louie, Jack Brandabur and Klesta Gjini
What you need to know about obesity and COVID-19

As our patients look to us for guidance through the ever-changing barrage of information on COVID-19, we’d like to bring your attention to a major risk factor for critical illness and death: obesity.

For patients under 65 who arrive in the emergency department with COVID-19–related symptoms like shortness of breath and fever, the difference between recuperating at home and ending up in the ICU may well be determined by BMI. In the early stages of the pandemic, much attention was placed on age-related risk. Given the tragic infection rates in nursing homes and skilled nursing facilities, that focus was well-warranted. But now, as the average age of infected patients has dropped, it’s important to consider what risk factors can impact the course of the disease for younger patients.

One of the first studies of COVID-19 to come out of the U.S. focused on COVID-positive critically-ill patients admitted across nine Seattle-area hospitals, including Swedish. While only 24 patients were included in the case series, the average BMI of 33 kg/m² hinted at a link between obesity and life-threatening complications. No statistical analysis was performed with the small sample size, but of the 13 patients with obesity, 85% required mechanical ventilation and 62% died, whereas of the 11 patients without obesity, 64% required mechanical ventilation and 36% died.

Studies coming out of New York’s hardest hit hospitals have found that obesity is a significant risk factor. A preprint analyzed outcomes for 4,103 patients at NYU Langone and found that after age, a BMI > 40 kg/m² was the strongest indicator for hospitalization. A correspondence from the same institution focused on patients under age 60 and found that patients with a BMI > 30 kg/m² were twice as likely to be hospitalized. And for patients with a BMI > 35 kg/m² who were hospitalized, the chance of being admitted to the ICU more than tripled.

A recent study published in July out of Shenzhen, China reported on 383 patients admitted in January and February 2020. Compared to normal weight patients, those with an overweight BMI (defined in this study as 24.0–27.9 kg/m²) had 1.84-fold increased risk in developing severe COVID-19, and those with an obese BMI (defined as ≥ 28.0 kg/m²) had a 3.40-fold increased risk in developing severe COVID-19, independent of age, sex, epidemiologic factors, days from disease onset to hospitalization, treatment drug, and presence of hypertension, diabetes, cardiovascular disease, COPD, liver disease and cancer.

Similarly, a study of 124 critically-ill patients in Lille, France found that the need for mechanical ventilation was significantly associated with male sex (P = 0.046) and BMI categories of 25-30, 30-35, and ≥ 35 kg/m² compared to BMI < 25 kg/m² (P = 0.049), independent of age, diabetes and hypertension.

42% of US adults were obese in 2018 according to the CDC

It’s not just the comorbidities

While the familiar comorbidities of obesity—diabetes, sleep apnea, hypertension and cardiovascular disease—put patients at higher risk for complications of COVID-19, three characteristics of obesity itself may interfere with patients’ ability to fight off the infection and increase the likelihood of serious complications and death.

Many patients with COVID-19 have complained of feeling out-of-breath, but patients with obesity (BMI over 30 kg/m²) are already at a disadvantage due to the mechanical aspects of breathing. “The added weight on a patient’s chest—on their diaphragm—could increase the actual effort that it takes for them to breathe,” says Sara Martin Del Campo, M.D., medical director of Swedish Weight Loss Services. “So they (patients with obesity) don’t have as much reserve if they should get COVID-19, compared to someone who doesn’t have that excess weight.”

But it’s not just a decrease in lung expansion that leads to more severe illness. One potentially fatal complication of COVID-19 is a sudden blitz of inflammation, or the so-called cytokine storm, that can lead to Acute Respiratory Distress Syndrome (ARDS) and multi-organ failure. Patients with obesity already live with high levels of inflammation due to the increased production of cytokines from adipose cells, so they are that much closer to a dangerous overreaction of the immune system at the outset of

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What you need to know about obesity and COVID-19 (continued)

their infection. While treatments like the oncological drug tocilizumab have shown promise in addressing the cytokine storms, this complication still poses a serious risk to obese patients.

The third concern is the connection between COVID-19 and blood clots. Obesity already puts patients at a higher risk for thrombosis. A study of seven autopsies of COVID-19 positive patients revealed blood clots in all patients, including in the lungs, kidneys and heart. A study from the University of Utah suggests a change in the gene expression of platelets might be involved. While the cause is still being investigated, patients with obesity could face an even higher risk of disseminated intravascular coagulation and venous thromboembolism with COVID-19 than other patients at a similar stage of the disease.

Earlier interventions might help those at risk

For patients with obesity who test positive for COVID-19 or are monitoring suspected symptoms, Dr. Martin del Campo recommends lowering the threshold to escalate their care early on in the disease as a way to prevent or mitigate critical illness and/or death. Additionally, patients with obesity should be made aware of this risk and exercise more caution in their daily interactions, through diligent use of washing hands, wearing face masks and practicing physical distancing.

How Swedish Weight Loss can help

It’s not clear how much longer the current COVID-19 pandemic will last, but the obesity pandemic has been progressively worsening for decades. While weight loss may not be an immediate solution for those already exposed to COVID-19, Swedish Weight Loss is here to support patients with obesity as we prepare for future waves of the COVID-19 pandemic and even the possibility of future pandemics.

Swedish Weight Loss Services offers both surgical and non-surgical methods for managing excess weight. An initial appointment will help to define the patient’s weight loss goals and allow the multidisciplinary team to develop an individualized treatment plan, taking into account the patient’s medical history, surgical history, medications and overall objectives. Personal aims can range from reaching a lower BMI, to decreasing medication needs, to gaining a better range of movement for physical activities, like playing on the floor with grandchildren.

Non-surgical options

A modest weight loss of 5-10% can provide significant benefits to overall health, improving on blood sugar control, cholesterol levels, cardiovascular disease risk and overall quality of life. Through guidance of a team of medical providers, dietitians and psychologists, the non-surgical program develops individualized care plans, including nutritional education, activity instruction, behavior modification, medication management and lab work.

Surgical options

Patients may qualify for weight loss surgery with a BMI of 40 kg/m² and above or 30–35 kg/m² and above with obesity-related medical conditions such as type 2 diabetes, heart disease, sleep apnea, hypertension, degenerative joint disease or gastroesophageal reflux disease. Surgery has been identified as the most effective and long-lasting tool for weight loss in patients who have a significant amount of weight to lose (generally more than 50 lbs). There are several surgical procedures performed, and Swedish’s bariatric and metabolic surgeons collaborate with patients to (continued on next page)
What you need to know about obesity and COVID-19 (continued)

Illnesses Related to Obesity

- **Metabolic Syndrome**: 80% Resolved
- **Type 2 Diabetes**: 83% Remission
- **Quality of Life**: Improved 95% in Patients
- **Obstructive Sleep Apnea**: 74-98% Resolved
- **Depression**: 55% Resolved
- **Asthma**: 82% Improved or Resolved
- **Cardiovascular Disease**: 82% Risk Reduction
- **Gerd**: 72-98% Resolved
- **Stress Urinary Incontinence**: 44-88% Resolved
- **Migraines**: 57% Resolved
- **Obesity**: 74-98% Resolved
- **Non-Alcoholic Fatty Liver Disease**: 90% Improved Steatosis, 37% Inflammation Resolution, 20% Resolution of Fibrosis
- **Venous Stasis Disease**: 95% Resolved
- **Hypertension**: 52-92% Resolved
- **In Women Polycystic Ovarian Syndrome**: 79% Resolution of Hirsutism, 100% Resolution Menstrual Dysfunction
- **Degenerative Joint Disease**: 41-76% Resolved
- **Gout**: 77% Resolved

For more information, call the nurse navigator at 855-411-MyGi (6944).

www.swedish.org/weightloss

Swedish Weight Loss Services May 2012
determine the best option to address their health and goals in a safe and effective manner.

While weight loss—even surgical methods—takes time, the caregivers at Swedish Weight Loss Services support patients in making a life-long commitment to their health. While some may look at options like surgery as a last resort, the earlier patients address challenges with weight, the better they can avoid or improve on serious health problems. Obesity is a chronic disease, and it often times requires lifelong management. Swedish Weight Loss Services can help patients achieve success in leading obesity into durable remission. By encouraging patients to seek help—including a referral to Swedish Weight Loss—you can also help patients in reducing the risk of serious complications and death from illnesses like COVID-19.

To learn more about the services of Swedish Weight Loss, please go to swedish.org/wls.

calls, Skype or FaceTime. Although it’s unclear whether noncompliant options will continue to be allowed after the pandemic, services that can integrate with Epic, like Zoom for Healthcare, look like a more permanent choice for telehealth visits.

Swedish had been steadily rolling out telehealth options system-wide, but that all changed when the pandemic arrived in Washington.

“We advanced healthcare 10 years in two months,” say Elizabeth Wako, M.D., Chief Operations Officer for Swedish First Hill. “I think patients were initially resistant and didn’t think they could feel connected with their provider by video. Just think of how many people who used to have family dinners on Sunday are now doing a Zoom meeting instead. It’s just a part of our lives now.”

A patient’s view of telehealth with a specialist

A patient logging in to a visit with Dr. Rajvanshi sees him in a headset, alone in his exam room. As the visit continues, he shares test results and scans on-screen. And as the patient asks questions, Dr. Rajvanshi can draw diagrams on-screen, exactly as he would on paper if the patient was there in the room with him. He typically consults with patients referred for procedures, who have already had the exams and tests that tell him if they are a good candidate.

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Beyond the pandemic: where does telehealth go from here? (continued)

“There’s nothing that I would touch the patient for which will change my opinion about doing a procedure,” he says. “All these patients have a previously documented exam because they have seen their primary care physician.”

As for what could be lost from not seeing a patient in person, Dr. Rajvanshi thinks it’s more a matter of building trust with patients so they feel confident in the level of care they receive. So far, he says, feedback from his patients has been overwhelmingly positive.

A global study\(^2\) by Accenture found that 90% of patients who saw specialists virtually rated their care as equal to or better than care received in person. And 60% of respondents would like technology to play a larger part in managing their conditions in the future.

**Devices galore**

For many patients, taking vital signs used to be the sole purview of a physician. But with the proliferation of step counters that also monitor heart rate and sleep patterns, more patients are taking control of their own health data.

At Swedish, we’ve already begun enlisting the patients’ help in providing health data. And over the last couple months, Dr. Wako has seen many patients surprise themselves by rising to the challenges of monitoring symptoms at home. “We sent patients home with self-monitoring tools, and they were capable of following elaborate directions and keeping track of their symptoms,” she says. “Our patients and their family members are really quite resourceful.”

With devices coming out like the Medwand\(^3\), which fits a stethoscope, EKG and more into the palm of your hand, the opportunities for patients to take a more active role in their health are expanding.

And for families who don’t want to invest in their own suite of diagnostic tools, Dr. Rajvanshi predicts that pharmacies and conveniently located kiosks will offer equipment and video conferencing tools for patients to see their primary care physician for a virtual exam or an on-call physician for immediate issues. A company called Higi is already moving down this route, with over 10,000 self-service booths for taking health data across the country and a smartphone app to track numbers over time.

**New technology, same care**

Over the past few months, the medical community has made great strides in expanding access to care despite challenging circumstances. With this momentum comes the opportunity for new devices and new delivery systems for care.

Dr. Rajvanshi and his colleagues at the Swedish Digestive Health Institute are committed to building trust with patients around telehealth, and bringing the same high-quality care they rely on in a more convenient package.

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Patients with an inflammatory bowel disease diagnosis face a lifetime of managing their condition with medications, dealing with flare ups and living with the side effects of treatment. While treatment options like immunomodulators can reduce inflammation and antibiotics can help alter the balance of gut bacteria, having ulcerative colitis and especially Crohn’s disease is generally a condition to be managed and not necessarily cured.

One of the main characteristics of IBD is an imbalance of bacteria in the gut, or dysbiosis. While medications can treat the symptoms, they don’t affect the levels or type of bacteria in a patient’s gut. One treatment that can change the balance is the transplant of bacteria from a healthy person’s stool. While the idea might be unpleasant to some, the allure of resetting the gut is hard to ignore for many patients.

When Lulu Iles-Shih, M.D., medical director of Swedish Gastroenterology Operations, sees patients newly diagnosed with IBD, it’s often one of the first things they ask about, hoping it might cure their condition.

**Fecal transplants through the ages**

While fecal transplants are a relatively modern treatment in Western medicine, the first reference comes from a handbook of emergency medicine written by Ge Hong in the fourth century CE. The treatment was recommended for severe diarrhea and food poisoning. The practice has also been used in veterinary medicine, dating back to the eighteenth century. In fact, some animals cut out the middle man and consume feces directly, as many dog owners know. As unpleasant as humans may find the behavior, it might help animals increase the diversity of the gut microbiome.

The first modern attempt at a fecal transplant was in 1957, when large doses of antibiotics were given in advance of surgery that often resulted in diarrhea and indigestion. Microbiologist Stanly Falkow began taking stool samples of patients before they started their antibiotic regime, which he then transferred into gelatin capsules. Patients were only told that the pills would help, not their contents. The protocol was promptly shut down by hospital administrators, but not before a few patients had positive results with the pills.

Anecdotal evidence had hinted at the potential benefits of fecal transplants, it did not become a standard treatment until the early 2000s.

Physicians use a variety of delivery methods for fecal transplants, including colonoscopies, enemas, and nasogastric tubes. In these procedures, the donor fecal matter is mixed with saline and filtered to form a slurry.

In 2013, Dr. Thomas Louie pioneered a fecal transplant pill that is just as effective as the colonoscopy, but less expensive and non-invasive. His method includes processing the stool sample until only the bacteria remain and using three layers of gel capsules to keep the sample contained until it reaches the gut.

Currently there is only one condition, C. difficile colitis, for which fecal transplant is an approved treatment with benefits backed by research. But studies have investigated whether it might be helpful for patients with other IBD conditions like Crohn’s disease and ulcerative colitis, and even a range of other conditions like multiple sclerosis, depression, obesity, diabetes and food allergies.

**What’s different about C. diff?**

While many conditions under the IBD umbrella, like Crohn’s disease and ulcerative colitis, can be triggered by eating certain foods, C. diff colitis is often caused by taking antibiotics that kill off beneficial bacterial and allow any of the infamous Clostridioides difficile already present in the gut to flourish.

Certain strains of C. diff produce toxins that can damage the lining of the colon. For the unlucky patients who lose gut bacteria diversity after a round of antibiotics and just happen to have the toxin-producing strains of C. diff lurking in their bowels, C. diff colitis can be the painful result.

Ironically, the first line of treatment is another antibiotic. Some patients will have reoccurrences, though, and that’s where fecal transplants come in. It’s thought that reintroducing other kinds of bacteria cuts down the opportunity for C. diff to flourish.

But while fecal transplants are a successful treatment for C. diff colitis, there’s more to the story with IBD.
What's in an IBD microbiome?

The idea of microbiota, or symbiotic communities of microorganisms, has been around for at least 50 years. But only in the past decade or so has the term been specifically applied to the gut, referring to the bacteria, archea, microorganisms, viruses and fungi that reside there.

Healthy people tend to have a good diversity of bacteria residing in their gut to assist them in breaking down food, regulating parts of the immune system and other homeostatic functions. But in the case of ulcerative colitis and Crohn’s disease, the happy balance of the microbiome is off. And often when the gut microbiome is unbalanced, the diversity of the bacteria present diminish, and all the ways our friendly gut germs help us go away, with wide-ranging consequences still not fully understood.

But is a change to the gut microbiome the cause of IBD, or a consequence? For the moment, it’s unclear exactly how the inflammation gets started or how that connects to an alteration in gut bacteria, unlike C. diff colitis which can usually be traced back to the use of antibiotics. One of the main issues is that the interaction between our bodies and our gut microbiome is still not well understood. Large research efforts like the Human Microbiome Project, modeled after the Human Genome Project, have helped to identify many of the different kinds of bacteria found in the human gut.

Since C. diff colitis and IBD both involve an imbalance of bacteria, it would make sense for fecal transplants to also be an effective treatment for IBD. But unfortunately, that’s not been the case so far.

So why don’t we use fecal transplants for IBD patients?

With the exception of C. diff colitis, fecal transplants are not an approved treatment for IBD patients. That’s because no studies have shown a consistent benefit to patients that can be replicated. Earlier this year, a study of Crohn’s disease patients receiving fecal transplants did find that some patients stayed in remission longer than those who received a sham procedure. But with only 17 patients in the study, six of whom dropped out mid-study, the results were inconclusive.

In the past, fecal transplant study results have varied depending on the donor. The key to successful transplants for the wider range of IBD conditions might be understanding who makes a good donor. Potential donors are already screened for any diseases or pathogens that might harm the patient, but some donors might have a better balance of bacteria to help get patients’ guts back on track.

And if researchers can narrow in on the particular mixture of bacteria that can help restore balance, then Dr. Iles-Shih foresees additional probiotic products flooding the market to target not only IBD, but a whole range of conditions related to gut health.

Until then, she’ll continue to treat her patients who have IBD with the medications that have been proven to provide relief for many.

To learn more or obtain a referral, please call 206-215-4250 or go to www.swedish.org/services/inflammatory-bowel-disease.

I never knew that hepatology was a sub-specialty until my final year of medical school. My initial reaction was, “Why would anyone want to spend their life studying the liver and seeing patients with chronic liver disease?” My professor of medicine while studying at the University of West Indies had trained with Sheila Sherlock in London and went into great details about his experiences there. Fast forward to my residency at State University of New York Downstate, where the Chief of Gastroenterology embarked on a discourse about Dame Professor, Sheila Sherlock, and her contribution to medicine. I picked up a copy of Professor Sherlock’s classic textbook, “Diseases of the Liver and Biliary System” and read it cover to cover twice in the space of a month. I was officially hooked on liver disease.

After residency I was fortunate to work as a research fellow at the National Institutes of Health in the Liver Disease section. I was able to complete a master’s degree in clinical research at Duke University while at the NIH. My major publications related to the mechanism of action of ribavirin, the kinetics of HCV treatment with interferon and pioglitazone therapy for nonalcoholic steatohepatitis.

I moved to the University of California, San Francisco (UCSF) for my clinical fellowship in Gastroenterology and then received a Fellowship Training Award from the American Association for the Study of Liver Disease to complete my Transplant Hepatology Fellowship, also at UCSF. These roles all prepared me for my current role as Transplant Hepatologist and the Medical Director of the Swedish Liver Center.

One of my primary goals as Medical Director is to develop an outreach program. This will give patients improved access to specialty care for complex hepatology issues as well as for liver transplant evaluation where appropriate. I hope to use the Providence Hospital Network to grow our hepatology program, and eventually become the primary referral resource for medical providers in our network. At Stanford I was also able to partner with private practice groups and providers to develop a robust outreach program and my goal is to replicate that model in Washington State.

My primary clinical interests are viral hepatitis and liver cancer. I have started reaching out to some of the other large hepatology practices in the Seattle area and I hope to develop a collaborative research group using our collective data.
Is there a link between COVID-19 and proton pump inhibitors?

A preprint from the American Journal of Gastroenterology suggests a connection between taking a proton pump inhibitor (PPI) and the risk of contracting COVID-19. They found a 2.2 fold increased risk of infection for patients on a standard dose of PPIs, and a 3.7 fold increase for patients on a twice-daily dose. No increased risk was found for patients taking H2 blockers.

The authors of the study suggest the reduction of gastric acid as a mechanism for infection, a connection that has been documented for enteric infections. Research on the original SARS virus (SARS-COV-1) has found that a pH less than or equal to 3 renders the virus less infectious, but a higher pH consistent with taking a PPI does not inactivate the virus. The authors propose SARS-COV-2 might react similarly in less acidic conditions.

While the study raises an important question, it relies on self-reported data from a survey of 53,130 patients with a history of GI symptoms, of whom 3,386 (6.4%) reported a positive COVID-19 test. According to Jack Brandabur, M.D., further study in the form of a randomized controlled trial is needed to understand if PPIs play a causal role in increasing the risk of a COVID-19 infection.

Rather than an indictment of PPIs, Dr. Brandabur thinks this study serves as a good reminder to ensure patients with GERD, dyspepsia and complications of ulcer disease are taking the lowest dosage for the shortest duration necessary. Some patients may not even need to continue PPIs after considering other treatments, such as H2 blockers, or lifestyle changes.

2 Bavishi C, Dupont HL. Systematic review: the use of proton pump inhibitors and increased susceptibility to enteric infection. Aliment Pharmacol Ther 2011;34:1269–81.