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CLINICAL CORRESPONDENCE

Covid-19's Impact on Podiatry in Chicago's Largest Public Hospital

Early Experiences from John H. Stroger, Jr. Hospital of Cook County, Illinois

Sara Putnam, DPM*
Adam E. Fleischer, DPM†

*Department of Podiatry, John H. Stroger, Jr Hospital Cook County, Chicago, IL.

†Weil Foot and Ankle Institute, Dr William M Scholl College of Podiatric Medicine, North Chicago, IL.

Corresponding author: Sara Putnam, DPM, Department of Podiatry, John H. Stroger, Jr Hospital Cook County, 1969 Ogden Ave, Chicago, IL 60612. (E-mail: sputnam33@gmail.com)

The Covid-19 outbreak has undoubtedly created a widespread impact on healthcare. Declared a global health emergency by the World Health Organization and Centers for Disease Control and Prevention, Covid-19 has forced healthcare professionals to rethink and redraft public health guidelines, including guidelines for how hospitals operate. As of May 19, 2020, the Illinois Department of Public Health has released that 94,191 residents in Illinois have tested positive for Covid-19 with 4,177 reported dead(1). At the time of this writing, over 1.5 million cases have been confirmed in the United States with over 4.8 million confirmed globally. The rapid increase in patient volume has created unprecedented strain on health systems. The current hospitalization rate is 60.5 per 100,000, with the highest rates in people aged 65 years and older. This is clearly in excess of what is typically seen during flu season(2). The increased

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strain of Covid-19 has, not surprisingly, also changed how foot and ankle services can function in both inpatient and outpatient settings. At John H. Stroger, Jr. Hospital, for example, we have witnessed a decrease in the number of inpatients, consults, patient length of stay, clinic volume, and even a decrease in the number of emergent cases. Herein, we help to memorialize this time in our nation's history by detailing our initial experience at Chicago's largest public hospital, in the country's third largest city. We share the trends we've observed within the podiatry service, our current state of affairs (e.g., operating room protocols, potential decision-making tools) and offer speculation about what's to come as we continue through this pandemic.

The Setting

John H. Stroger, Jr. Hospital serves a unique population of patients. The hospital provides services to Cook County residents which includes the city of Chicago and the surrounding area. Cook County is home to 5,180,493 people, with an estimated 13.7 percent living below the poverty line as of the 2010-2019 Census(4). The hospital is a 450-bed level-I trauma center, which as part of the Cook County Health System, provides care to over 500,000 individuals annually(5). John H. Stroger, Jr. Hospital serves as a critical safety net, providing essential care to the large uninsured and under-insured population in Cook County. In fact, nearly half of all the free care in the county was provided by the hospital in 2016, totaling nearly \$250 million(6). This trend has continued with 54.4 percent of revenue spent on charity care in 2018(7). Illinois contains the third largest number of Covid-19 cases in the U.S., with only New

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York and New Jersey having more. The majority of these cases are within the Chicago area and Cook County specifically. Perhaps nowhere in the U.S has the link between health disparities and adverse health outcomes with Covid-10 been more evident than in Chicago and it's many neighborhoods during this outbreak. For example, 50 percent of Covid-19 cases and nearly 70 percent of Covid-19 deaths involve African American individuals in Chicago, although they only make up 30 percent of the city's population. Most of these deaths have been concentrated in Chicago's South Side neighborhood, home to Cook County Health's Provident Hospital (14). This increased rate of mortality and morbidity during this outbreak is also demonstrated in other racial and ethnic minority groups such as Latinos and Hispanics(14). Risk factors such as limited access to healthy food, increased rate of comorbidities, housing density, and decreased ability to work from home are what is primarily responsible for the disproportionate burden and infection risk in Chicago's hardest hit racial and ethnic groups.

Given the demographics of the population we serve, a large percentage of the foot and ankle care we provide at Stroger Hospital focuses on the diabetic foot. Chicago itself has a large diabetic population, with 9 percent of the adult population in Cook County diagnosed with diabetes(8). Because many of the patients seen at Stroger are uninsured or under-insured, they frequently lack primary care services or have severely fragmented healthcare, and remain undiagnosed with diabetes or uncontrolled for prolonged periods of time. Many of our patients only receive their diabetes diagnosis when they present to the emergency room with foot ulcers, necrotizing fasciitis, or sepsis necessitating surgery. These patients, without regular

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podiatric and primary care, are at significantly increased risk of becoming infected and at increased risk for amputation and death(15).

Covid-19 Impact on Podiatry Services

The high density of people with diabetes within Cook County makes the podiatry service and outpatient clinics highly active. In the months of January and February 2020, leading up to the stay-at-home measures, we were seeing an average of 206 patients per week in our outpatient clinics. In response to guidance from the Illinois Department of Public Health, all clinics at John H. Stroger, Jr. Hospital have decreased in size or been converted to tele-health operations only. Unfortunately, since many of the services we provide to patients are technical and procedure based ('hands on'), tele-health has not been developed much in our clinics. To reduce the exposure of staff and patients, our clinic has decreased from four days a week to three days a week. Additionally, to allow for social distancing in the waiting rooms as well as in the clinic space, we have drastically cut the number of patients scheduled each day. We weigh the risk of exposing patients and staff to Covid-19 infection against the risk of patients going without care. As Rogers et al. state, the goal of podiatrists during the pandemic is "to reduce the burden on the healthcare system by keeping diabetic foot and wound patients safe, functional, and at home," and thus avoid diabetes-related hospital admissions(13). We've limited our daily schedule to include only those patients who are at high risk for infection/hospitalization, with active foot ulcerations, previous amputations, recently healed ulcerations and those who are being follow for immediate post-operative care (e.g., trauma,

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infection). In the weeks since the beginning of the stay-at-home order in Illinois, our weekly average of patients has decreased from 206 to just 58 patients per week. Furthermore, among the outpatients who are scheduled and within the high-risk diabetic foot population in particular, we have witnessed an alarmingly high cancellation rate, with half to two thirds failing to show, cancelling or rescheduling. Even with our staff and physicians actively ramping up patient outreach efforts to reschedule and accommodate walk-ins, there is growing concern that many patients will be unable or fail to make additional follow-up appointments. The fear is, of course, that these patients will instead present for care later on with already advanced pathology and complications necessitating radical surgery and/or high level amputation. This higher rate of 'no-shows' is not just occurring among podiatry patients requiring essential care, this trend has been witnessed also in the emergency room, as well, with reports that presentation of STEMI and stroke patients have dramatically decreased during the Covid pandemic(12). It is unlikely that these patients are exhibiting symptoms in any less frequency, during this time, and more likely that the fear of infection with Covid-19 has caused many patients to stay away from the hospital. Even as we emerge from the current first wave of infection, it is likely that a second wave of Covid-19 could only exacerbate the problem seen in delays in essential care services.

In addition to the decreased number of clinic visits, we are seeing fewer inpatient consults in the hospital. Prior to the beginning of Covid-19 measures in January and February, we were seeing an average of 17.25 unique inpatients per week, with an average of 6.25 non-elective

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operative cases on these inpatients per week. Since these measures have been enacted, we are only seeing an average of 6.7 inpatient consults per week with only 1.3 operative cases per week. A reason for our decreased inpatient daily census is clearly related to the hospital's concerted effort to save bed space for the existing and anticipated Covid-19 patient population. When this article was written, Illinois had not yet seen its peak in Covid-19 infection rates and was still preparing for a possible surge(16). From the emergency room, our service has witnessed a sharp decline in the admission rate in podiatry patients who do not require emergent surgery. Due to the preparation for a possible surge, more patients have been encouraged to follow up as outpatients to save beds in the hospital. Many clinicians who normally would recommend admission or obtain a formal podiatry consult have been encouraged to move non-emergent patients through the ER faster, decreasing the amount of time and risk for exposure to these patients. Clinicians document that any change from their normal clinical protocols is due to measures enacted for Covid-19. Following this trend, post-operative patients are being discharged sooner than before to decrease their risk for exposure and free up beds and space within the hospital.

Covid-19 Impact on Surgical Protocol

At John H. Stroger Hospital, diabetic foot infection surgeries are considered non-elective and therefore able to proceed following surgical protocols intended to decrease risk to personnel and patients. Surgical protocol promoting best practices at John H. Stroger, Jr. Hospital has continued to evolve through the pandemic. At the time of writing, the hospital has not yet

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resumed with elective surgery and is operating under the idea that all patients that go to the operating room are at risk for spreading the virus(9), with the risk of spread being highest during cases requiring intubation. Before undergoing the procedure, a multidisciplinary team convenes to discuss the need to perform surgery to justify the risk of exposure to patients as well as staff. An emphasis on clear communication of the patient's infection status is at the forefront of the current protocol. Ideally, all patients are tested for Covid-19. At the time of writing, the PCR swab test we are using is taking about 16 hours for results, meaning that patients that present needing emergent surgery are treated as persons under investigation (PUI) or those with unknown status.

Once the testing protocol for the patient has been decided, patients are classified into one of three categories based on their known infection status: those who have tested positive, those that are asymptomatic with no test results available, and those that have tested negative. All Covid-19 testing must be current with updated results less than 72 hours from swab to the date of surgery in an effort to decrease the likelihood of infection after the swab was taken. All staff are required to wear a N95 mask under the usual surgical mask during all procedures.

All patients that are Covid-19+ or PUI with high suspicion for Covid-19 are transported directly to the operating room by the surgery and anesthesia team. Importantly, this policy means that these patients are not allowed to be in the preoperative area or postoperative recovery area along with other patients and staff. They are only to use certain designated operating rooms.

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There are currently six operating rooms designated for this patient category. In each of these rooms, only the minimum amount of equipment and supplies are present to decrease risk of contamination. There is limited entrance and exit to these rooms, with a runner present to gather any supplies that are not currently in the room. During procedures in Covid-19+ or PUI patients, N95 respirators are used underneath the usual surgical mask and face shield. These N95 respirators are single use and to be disposed of after each procedure. In these Covid-19 +or PUI rooms, a HEPA-filter machine is present within the room and is running one hour before the case, throughout the case, and for one hour after the case. Exceptions to this policy include emergent cases for which the HEPA-filter is used as long as possible before the case begins.

For those patients who are asymptomatic or have no test results available, they can be in the patient holding area with a mask on and maintaining six-foot distance from other patients. These patients also use a designated operating room due to their unknown status. Limited entrance and exit from the room during the procedure is utilized for these patients to limit the risk of contamination. The major differences between these unknown asymptomatic patients and those that are PUI or Covid-19 +, is that no HEPA filtration is utilized and that patients can be in the preoperative and postoperative holding areas.

Finally, the third category, patients who have been documented negative in the last 72 hours, is the most relaxed of the categories, yet still requires significant precautions. Again, all staff

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must wear an N95 mask beneath a surgical mask; however, any operating room can be utilized. No HEPA filtration is utilized. Patients are allowed in both preoperative and postoperative settings with distancing and mask compliance. In these cases, all normal supplies and equipment are permitted to be present within the operating room. In these cases, the underlying N95 can be saved and reused as long as it was removed with proper protocol, including adherence to clean gloves that were not exposed to outward PPE when removing the underlying N95 (9).

These testing and intraoperative protocols that have been created for inpatient and emergent surgeries can serve as a model for how procedures should be classified and undertaken in the outpatient setting; however, unlike with inpatient surgeries, outpatient procedures are generally less emergent and therefore necessitate a decision-making protocol on which surgeries should be permitted and prioritized. Outpatient surgery centers and all elective surgeries in Illinois have been closed since March 21 in compliance with the statewide stay-at-home order. The Illinois Department of Public health has stated that due to the Covid-19 pandemic, only those surgeries and procedures for 'life-threatening conditions or those with a potential to cause permanent disability' were allowed from March 21 through May 11(3). Beginning on May 18, Stroger Hospital, and most surrounding hospitals, started to allow outpatient and elective procedures. The protocols and decisions for which procedures will be considered is based on the recommendations by the American College of Surgeons(10). In their recommendations, the authors reclassify elective surgeries and define those that would

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be considered medically necessary and time sensitive. They discuss that, although outpatient procedures are being allowed, it is best to consider the need for surgery weighed against the risk of infection to the patient as well as to staff, and in addition the current shortage of personal protective equipment (PPE). The authors contend that non-urgent surgeries waste PPE that would otherwise be used to deal with the surge of Covid-19 patients- which most experts project Chicago has yet to experience. The authors identified 21 factors with a scale of 1 to 5 to determine whether the surgery is medically necessary and time sensitive. This system creates a score ranging from 21 to 105. Lower scores closer to 25 are deemed acceptable to proceed with, whereas those with higher scores closer to 105 are deemed unjustified with potentially dangerous outcomes and increased risk to personnel. The scoring system does not create hard cut-offs on whether the procedure is justified but is meant to be a tool to aid in the decision-making process utilized along with a multidisciplinary perioperative team. The factors in this scaling system include OR time and estimated length of surgery. As one might expect, most podiatry cases will have lower-risk factors and lower scores for these sections; however, many podiatry cases also have acceptable nonoperative alternatives and will be less impacted by a two-week delay in surgery, giving them higher scores on this scale. For foot and ankle procedures, this will likely mean that the truly “elective” procedures, such as hammertoe and bunion correction, will be unlikely to proceed at this time at our hospital as the risk to the patient and utilization of resources might be viewed as outweighing the immediate need for the procedure.

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Additionally, physicians at St. Louis University have created an Elective Surgery Acuity Scale (ESAS) which categorizes patients into tiers from 1a (low acuity) to 3b (high acuity) based on underlying health of the patient and the potential for morbidity and mortality if the procedure is delayed(11). Using the ESAS, podiatric procedures fall under the low-acuity tier as they most do not pose a high potential for morbidity if there is delay. Podiatric surgery that we can expect to continue, in addition to already allowed emergent cases, may include excision of soft tissue masses with the potential for malignancy, ORIF of displaced fractures, and amputations with underlying osteomyelitis.

Epilogue

As we prepare to resume less-emergent cases, we must also begin to plan for the next phase of easing restrictions in Chicago. As we are faced with reduced healthcare staff, we will also have to face surgical bottlenecks as elective cases reopen. Similarly, our patients may present with more severe complications because of the delay in care over the stay-at-home period. Podiatry must adapt a new system of care in order to provide services in unique ways, with the possibility of using a combination of triage systems for high risk patients, telehealth and even in-home visits as suggested by Rogers et al (13). Podiatry has unique challenges to face, but our field is not alone in its difficulties. Covid-19 will have a lasting effect on podiatry, the hospital, and all medical fields. We must work together, both within healthcare and the larger community, to overcome these obstacles and support one another.

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