

pedaling therapy device. **METHODS/STUDY POPULATION:** This work uses a robotic split-crank pedaling device to facilitate rehabilitation of interlimb coordination, measured by continuous relative phase (CRP) and paretic neuromuscular output. The effects of three control schemes were tested: assist, resist, and assist+resist. Each limb was strapped to a pedal which was connected to a motor. The participants were asked to pedal forward while keeping the pedals antiphase. The robot aided or resisted according to the activated control scheme. Control schemes were tested on two stroke participants. The control schemes respond proportionally to phasing deviation from 180 degrees. The assist scheme assisted the lagging limb while the resist scheme resisted the leading limb. The assist+resist did both control actions. **RESULTS/ANTICIPATED RESULTS:** For the assist scheme, CRP improved for participant 1 (P1) and declined for participant 2 (P2). P1 increased paretic velocity while P2 decreased. Rectus Femoris (RF) and Biceps Femoris (BF) activity of both limbs lowered for P1. RF and BF activity of both limbs remained about the same but shifted for P2. For the resist scheme, CRP improved for P1 and declined for P2. P1 increased paretic velocity while P2 decreased. P1 increased BF activity of both limbs while RF activity remained constant. P2 increased paretic BF activity and non-paretic RF activity. For the assist+resist scheme, CRP improved for both participants. Both participants increased paretic velocity. P1 increased paretic BF activity and decreased RF activity. P2 better modulated paretic BF and RF. **DISCUSSION/SIGNIFICANCE OF FINDINGS:** All control schemes augmented performance, however the assist+resist scheme showed the most promise in terms of CRP and muscle activity. More participants are needed to determine true effects of each control scheme. The control scheme selected will be the foundation for further improvements such as adaptive control and extrinsic feedback.

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Cognitive and Behavioral Outcomes in Adolescents with Sickle Cell Disease Before and After a Telehealth Cognitive Remediation Program to Prepare for Transition of Care

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ABSTRACT IMPACT: This study is providing a telehealth intervention for the first time in patients with sickle cell disease with the goal of improving cognitive functioning and preparing adolescents for successful transition of care to adult healthcare providers. **OBJECTIVES/GOALS:** There is a high prevalence of cognitive impairment in adolescents with sickle cell disease (SCD). The purpose of this study is to test the efficacy of an individualized cognitive remediation program designed to promote not just cognitive function, but also adaptive and self-management skills necessary for successful transition to independence. **METHODS/STUDY POPULATION:** 12 participants with SCD (5 males, ages 10-16) participated in an individualized program, Cognitive-Remediation of Executive and Adaptive Deficits in Youth [C-READY], consisting of three main components: individual goal-based therapy, parent training sessions, and home skill practice. C-READY sessions occur one-on-one with a trained therapist for 8 sessions conducted over 4 weeks. Weekly parent training sessions are also conducted as part of the C-READY program. All of these sessions occurred via telehealth

video-calling between the therapist and the adolescent/parent. Participants were evaluated before and after the C-READY program using neuropsychological assessment measures and transition readiness questionnaires. Parents also completed ratings on telehealth delivery, content, and timing. **RESULTS/ANTICIPATED RESULTS:** Repeated measures ANOVA indicated significant improvement in transition readiness behaviors as rated by parents, including improved independence in medication management ($p = 0.029$) and in talking with their healthcare providers ($p = 0.019$). Significant improvement was also demonstrated on a neuropsychological measure related to executive function skills, specifically inhibition and switching ($p = 0.012$). Results from telehealth surveys (rated on a 5-point Likert scale) indicated overall satisfaction with services (4.2/5), including visual (4/5) and voice quality (4.3/5) of telehealth equipment. Ratings also indicated feeling that their privacy was respected (4/5) and that their interactions with their therapist were appropriate and sensitive (4.5/5). **DISCUSSION/SIGNIFICANCE OF FINDINGS:** These results provide support for interventions that focus on cognitive skills to improve behaviors necessary for successful transition of care in youth with SCD. Results are also promising for delivery via telehealth in order to address barriers related to access to care. Future results will continue to be reported, as this study is currently ongoing.

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Prospective cohort study of predominantly immigrant people with chronic hepatitis B in the Baltimore-metropolitan Washington D.C. area

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ABSTRACT IMPACT: Building a patient cohort to support clinical-translational research in chronic hepatitis B **OBJECTIVES/GOALS:** The overall objective of my KL2 project is to delineate the effect of HIV coinfection, and CHB disease stage and hepatitis B (HBV) viremia on the ability of toll-like receptor 8 agonism to restore HBV-specific immune cell function. This abstract describes the characteristics of the cohort from which research blood samples for my KL2 are collected. **METHODS/STUDY POPULATION:** HOPE is a prospective cohort study enrolling people with CHB including HIV/CHB coinfection, and resolved CHB. Participants are enrolled at primary care clinics in Maryland, Washington D.C., and Virginia. Standard-of-care antiviral treatment with tenofovir alafenamide (TAF) is prescribed through the study if indicated. Patients receiving TAF from the study are either starting treatment, or switching to TAF from another antiviral medication. If receiving TAF, participants are seen every 3-6 months for medication refills, clinical and research blood draws, and adverse event evaluations. Liver fibrosis is measured by FibroScan and a minority undergo liver biopsy. **RESULTS/ANTICIPATED RESULTS:** So far, 204 people have been enrolled, 177 with CHB (23 HIV/CHB coinfection), and 22 with resolved HBV infection. To date, 45 patients who were viremic at baseline and initiated on TAF have been enrolled. CHB predominantly affects Asian and African immigrants in the U.S, and the majority (77%) of HOPE participants are immigrants from these countries. The majority are male (70%), mean age 51 years (SD ± 14). So far, 86 people with CHB mono-infection have been prescribed TAF on-study.