

Operational Transition from the First-generation Heidelberg Spectralis Optical Coherence Tomography [OCT("OCT1")] to the Second-generation Heidelberg Spectralis OCT("OCT2")

S. Mason¹, T. Brunstetter², M. Young³, M. Van Baalen³, W. Tarver³, R. Derrick⁴, J. Wells⁴, B. Dey⁴, K. Todd⁴, B. Smith⁴, N. Patel⁵

¹ MEIT, ² United States Navy, ³ NASA Johnson Space Center, ⁴ KBRwyle, ⁵ University of Houston-Optometry

The Heidelberg Spectralis "OCT2", which recently became commercially available, is going to be implemented at the Johnson Space Center Flight Medicine Clinic and on board the International Space Station. Due to the increased scan rate of the "OCT2", this upgrade will allow for significant reduction in valuable crew testing time and also allow for additional capabilities, like OCT Angiography and MultiColor Fundus Imaging. Due to the custom scans used to monitor Space Flight-Associated Neuro-ocular Syndrome (SANS) in our crewmembers, an evaluation to assess the impacts of transitioning from "OCT1" to "OCT2" was performed. An engineering assessment (N=1) was performed to identify any potential impacts of maintaining an "OCT1" on board ISS while implementing an "OCT2" in the JSC Clinic. "OCT2" implementation will lag JSC FMC clinical implementation due to the flight certification/manifestation process. The clinical assessment was performed (n=12) to identify any impacts due to the replacement of the "OCT1" with the "OCT2" to the longitudinal OCT data across a crewmember's mission/lifetime. The qualitative results from the engineering and clinical evaluation will be reported, as well as the quantitative assessment of the following clinical variables:

Scan	Variable	Segmentation
Circle	Retinal nerve fiber layer (rNFL) thickness	Automated and Manual
Radial	Total retinal thickness (TRT) from 0-250 μ	Manual
Radial	Minimum rim width (MRW)	Manual
Macula	TRT	Automated