To describe NEI’s research and educational efforts, the Briefing featured Emily Chew, M.D., NEI Deputy Clinical Director, a medical retina specialist with clinical and research interest in AMD and diabetic eye disease who has extensive experience in designing and implementing clinical trials at the NIH Clinical Center, and Wai Wong, M.D., Ph.D., Chief of NEI’s Laboratory on Neuron-Glia Interactions in Retinal Disease, a clinician-scientist who researches the neuro-inflammatory mechanisms underlying diseases such as AMD and diabetic retinopathy.

Dr. Chew described numerous risk factors associated with AMD, including: aging, genetics, obesity, smoking, and nutritional factors. NEI-funded research has identified more than 30 genes already associated with AMD, and genetics may account for 60 percent of the cause of the disease. Smoking is a consistent risk factor, with greater risk in those with increasing number of cigarettes smoked. The NEI-funded Age Related Eye Disease Study (AREDS) demonstrated that daily high doses of vitamins C and E, beta-carotene, and minerals zinc and copper reduced the risk of progression to advanced AMD by 25 percent in five years. Data from a follow-up study, AREDS2, suggest that replacing beta-carotene with lutein and zeaxanthin may produce a safer, more effective formula. Dr. Chew was engaged in both of these trials, serving as the Principal Investigator for AREDS2.

Dr. Wong addressed NEI’s efforts to investigate and find treatments for both “wet” or neovascular AMD, where new blood vessels disrupt the retina, as well as for “dry” or atrophic AMD, where the photoreceptors—the light-sensitive cells in the retina—gradually die away. He acknowledged the dramatic improvements in wet AMD treatment from “anti-VEGF” therapy. These therapies, which are ophthalmic agents developed, in part, through NIH-funded research, inhibit abnormal blood vessel growth due to Vascular Endothelial Growth Factor (VEGF), stabilizing vision loss and, in some cases, improving lost vision. He did caution, however, that there are limitations to these therapies, including that they currently are administered through an injection to the eye. Regarding dry AMD, currently no treatments exist, and investigators are keen to understand and find ways to halt its progress.

Dr. Wong concluded by summarizing where more AMD research is needed: understanding what gives rise to early AMD, how it progresses, and identifying/testing molecules that stop progression; developing new and better clinical trials to confirm effective treatments in patients; comparing and potentially personalizing patient treatment options; and potentially restoring vision to blind patients.