

The glaucoma service at Johns Hopkins University

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Glaucoma service of Johns Hopkins University is currently involved in a range of research projects. This overview will cover the major clinical activities currently underway.

The single largest research project is a collaboration with Zhongshan Ophthalmic Center (Professor He Mingguang) and Moorfields Eye Hospital (Paul Foster) where we are conducting a randomized clinical trial of laser iridotomy in persons who are primary angle closure suspects. These individuals have at least 180 degrees of pigmented trabecular meshwork that cannot be visualized on gonioscopy, but have normal eye pressures, normal nerves and no peripheral anterior synechiae. One eye of each person is randomized to laser iridotomy and the other is left untreated. This study has screened over 10,000 persons and enrolled nearly 1,000 eligible participants most of whom have already been followed for 18 months. Results of this trial (the Zhongshan Angle Closure Prevention Trial or ZAP Study) will guide efforts to screen for and prevent angle closure glaucoma.

A second screening study is about to start at Johns Hopkins. We are working with a company that has developed a device that accurately measures pupil responses to various stimuli. We are assessing the performance of this device in identifying persons with glaucomatous optic neuropathy. This study is novel in that stimuli are uniquely designed to identify persons with glaucoma.

With regards to angle closure glaucoma we are still assessing basic mechanisms by using newer imaging devices to assess the role of the choroid in



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angle closure. We also are refining our studies of iris factors related to angle closure in order to use volumetric measurements as has been described by other groups.

A second major area of interest in our group is adherence to glaucoma therapy. We have demonstrated in the past that patients do not take medications as prescribed. We also have shown that a moderate intervention to remind patients to take their drops along with an educational effort can improve adherence to therapy. We now are finalizing a study of automated reminders using text messaging to see if this can improve patient outcomes. Early results are promising.

A third focus of our group's research (led by Dr. Pradeep Ramulu) is the assessment of the impact of visual field loss on function in persons with glaucoma. We are monitoring patient activities using both accelerometer data and information obtained with global position systems to assess how mobile patients are and to determine at what level of visual field loss patients become disabled. We also have designed novel tests of reading function and are studying how glaucoma affects reading.

A final important area of clinical research is the

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development of large databases and collaborative efforts in order to streamline research in glaucoma. We have made initial efforts to develop a glaucoma research network and are sharing data with several centers and initiating a clinical trial in order to demonstrate the potential of this approach. This kind of network has been highly successful at completing research efficiently both in pediatric eye disease and diabetic retinopathy.

Finally, I have a long-standing interest in eyecare

in developing countries and remain interested in operational research on how to deliver eyecare more effectively in these settings. I recently completed two clinical trials demonstrating that ready made spectacles work nearly as well as custom spectacles in children and adults and would like to expand this work. I also am actively working on several projects related to providing diabetic retinopathy screening and treatment services in developing countries.