DIGESTIVE HEALTH FOUNDATION

2016 DIGESTIVE HEALTH FOUNDATION RESEARCH AWARDEES AT NM DIGESTIVE HEALTH CENTER

A. Aziz Aadam, MD *Video Case Series with 3D Animation for Endoscopic Submucosal Endoscopy (ESD) Strategies* New for 2016, the Northwestern Medicine Digestive Health Center (DHC) is now offering endoscopic submucosal dissection (ESD) as an advanced endoscopic resection technique to remove superficial tumors in the digestive tract. The DHC has quickly become the highest volume ESD program in the Chicagoland area. Aziz Aadam, MD is leading the initiative in developing the program and has received advanced training in ESD at the National Cancer Center in Tokyo, Japan as a recipient of the ASGE Don Wilson award. ESD is unique in that it offers en bloc removal of lesions previously thought to be unresectable, such as large mucosal tumors, depressed tumors, non-lifting lesions, recurrent tumors after EMR, or tumors with ulcers, scars, and submucosal fibrosis.

In collaboration with the National Cancer Center in Tokyo, our group is creating a video series of ESD procedures utilizing 3D animation to explain the optimal resection strategy for commonly encountered tumors in the gastro-intestinal (GI) tract. Our video series would be unique as the first endoscopic educational video series to utilize 3D animation, which allows a clear understanding of the procedure in a step-by-step fashion. The 3D animation will help illustrate strategy, such as directionality of the resection, proper orientation of endoscopic knives to ensure proper resection, creation of endoscopic tunnels (pocket technique) for resection of lesions in difficult locations, as well as closure techniques. The video series will serve as an educational tool for endoscopists that are interested in offering ESD in their practice.

Pranab Barman, MD *Pharmacogenomic Polymorphisms and Clinical Outcomes in Liver Transplant Recipients* In liver transplant recipients, the primary drug used for immunosuppression is tacrolimus; however, this medication has side effects, primarily kidney injury and infections. We know that tacrolimus is absorbed in the intestines and primarily metabolized by the liver, which, in each transplant recipient, has a unique, individual genetic background. In our project, we are studying the effects of these genetic differences, as defined by polymorphisms, on the effect of tacrolimus levels in liver transplant recipients. We will attempt to correlate these differences in tacrolimus levels to clinical findings, including episodes of rejection (possibly low levels of tacrolimus), episodes of infection (possibly related to high levels of tacrolimus), and overall incidence of the development of kidney injury.

Dustin A. Carlson, 3rd Year Fellow *Evaluation of the Esophagogastric Junction in Gastroesophageal Reflux Disease using the Functional Lumen Imaging Probe.* The functional lumen imaging probe (FLIP) is a novel device that provides measurement of esophageal distensibility and, with the application of innovative analytic software, possible evaluation of distension-induced peristalsis (secondary peristalsis). As factors involving the anti-reflux barrier (i.e., esophagogastric junction, EGJ) and esophageal reflux clearance (i.e., secondary peristalsis) contribute to gastroesophageal reflux disease (GERD), this study aims to evaluate the relationships between esophagogastric junction distensibility and distension-induced peristalsis with esophageal acid exposure and reflux symptoms using the FLIP and wireless pH monitoring.

Daniel R. Ganger, MD *HepQuant Liver Function Testing in the Prediction of Outcomes* The Fontan procedure greatly reduces cardiovascular morbidity and mortality in patients born with congenital single ventricle disease. An unfortunate side effect of the Fontan procedure is chronically elevated systemic venous pressure with chronic passive hepatic congestion, resulting in congestive hepatopathy and, ultimately, cirrhosis. Currently, in post-Fontan patients, there is strong evidence that standard hepatic laboratory testing, imaging modalities, or liver biopsy cannot accurately predict the development of significant hepatic clinical outcomes (i.e., ascites, hepatic encephalopathy, need for liver transplantation, death). The HepQuant-SHUNT liver function test is a safe, non-invasive, easy to perform, readily repeatable hepatic elimination test, which, in the Hepatitis C population, is shown to be superior in predicting important hepatic clinical outcomes when compared to the current gold standard of liver biopsy. We wish to determine, through a multi-center prospective case series, whether baseline HepQuant-SHUNT liver function testing can accurately predict the development of significant hepatic clinical outcomes over time in the post Fontan population where standard testing has failed.

Anne Grosen, MD *Semen Quality in Males with Inflammatory Bowel Disease: Influence of Methotrexate Treatment* Little is known about the impact of inflammatory Bowel Disease (IBD) treatments on male fertility and semen quality. Methotrexate (MTX) can be teratogenic in pregnant women, but studies that address the effects of MTX on male fertility and sperm quality are scarce. We are investigating the influence of MTX treatment on markers of male fertility, including sperm quality and sperm DNA fragmentation, in males with IBD, both before and after treatment with MTX and in comparison to a healthy control group.

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Amanda Guentner, MD *The Impact of a Video Educational Tool on Perceived Cancer Risk in Patients with Barrett's Esophagus*
We are evaluating the feasibility and acceptability of a video education tool for patients undergoing endoscopic eradication therapy (EET) for Barrett's esophagus (BE). Patients who are referred for EET who meet inclusion and exclusion criteria will be randomized to the standard of care (i.e., face-to-face education ((control arm)) or face-to-face education with the addition of the video educational tool (i.e., experimental arm) prior to their initial clinic visit. All patients will complete a packet of questionnaires to assess their anxiety and quality of life, as well as their understanding of BE.

Rajesh N. Keswani, MD *Utilization of Video-Based Education through the Patient Portal to Improve Adherence to Colorectal Cancer Screening* Colorectal Cancer (CRC) remains the second leading cause of cancer death in the United States. Novel methods to provide education regarding the importance of CRC screening are needed to improve screening rates. Delivering patient-centered education on CRC screening importance via video is a feasible and potentially effective intervention to improve CRC screening. However, integrating such education within the clinical workflow is challenging and, thus, has not been widely implemented. The aim of this pilot study is to test the hypothesis that delivery of video-based patient education through the electronic health record patient portal will improve CRC screening adherence rates among patients scheduled for a screening or surveillance colonoscopy.

Itishree Trivedi, MD *Improving Care Integration of Youth with IBD Using Stakeholder Input* To improve the quality of care delivered to youth, the American Academy of Pediatrics and the American College of Physicians released the 2011 Clinical Report on Transition from Adolescence to Adulthood. This report emphasizes the importance of integrating youth into adult centered care by fostering self-care skills and active participation in medical decision-making. Subsequently, a federally funded resource center for transition care (GotTransition) was created. GotTransition developed an evidence-based "quality improvement toolbox" titled Six Core Elements of Transition 2.0 with the aim of improving integration of youth into adult centered care. This "toolbox" provides such items as integration policy, emergency care plans, educational materials for patients and families, and assessment of patients' ability to manage their disease(s). These tools can be assimilated into electronic medical records and become part of the clinical flow in different healthcare settings. This toolbox can be adapted for specific diseases – such as IBD.

Rena Yadlapati, MD *Enhancing Physician Competency for High-Resolution Esophageal Manometry: Developing a High-Quality Standardized Training System & Measuring Physician Learning Curves* Formal training and methods to assess physician competency for the interpretation of esophageal HRM do not exist. The aims of this research study are to use formal techniques to: 1) develop web-based training programs for the interpretation of HRM; 2) design an HRM interpretation exam; and 3) establish minimum competence benchmarks for HRM interpretation skills. We have created a one-hour educational video reviewing step-by-step instructions involved in the interpretation of HRM. We are currently working with a computer programming company to develop an adaptive learning training platform for the interpretation of HRM. The goal is to incorporate this training system and educational video into gastroenterology training programs nationwide. The HRM interpretation exam consists of 22 HRM cases with 8 HRM interpretation skills per case: identification of pressure inversion point; hiatal hernia > 3cm; integrated relaxation pressure; distal contractile integral; distal latency; peristaltic integrity; pressurization pattern; and diagnosis. Based on the modified Angoff method, minimum cutoff scores for HRM interpretation skills at the trainee, physician interpreter, and master level ranged from 65-80%, 85-90% (with the exception of peristaltic integrity), and 90-95%, respectively. Using the modified Angoff standard setting technique, we established minimum cutoff scores for 8 HRM interpretation skills across interpreter levels.

Digestive Health Foundation Mission

The Digestive Health Foundation, the philanthropic arm of the Northwestern Medicine Digestive Health Center, funds medical research and educational programming of the Center. The Center promotes and pursues digestive health through integrated prevention, diagnosis, and treatment of disorders of the digestive system.

In its founding year, the Foundation has raised over $1.2 million (and counting) for GI research and education at the Center. For more information about how we are changing the future of digestive health, please visit DigestiveHealthFoundation.org