

UTMB Galveston: A Vision for Excellence in GI Research, Education and Clinical Care

The University of Texas Medical Branch (UTMB) at Galveston is internationally renowned in the fields of Gastroenterology and Endoscopy. Several years ago, UTMB established the mission of becoming the leading regional Center of Excellence in the fields of Clinical Care, Education, and Research. To facilitate this objective, they assembled a team of medical professionals who are known around the world for their expertise in clinical care and research leadership, and instituted a long-range plan to update their entire clinical infrastructure with state-of-the-art endoscopy and imaging equipment. Today, UTMB is a teaching hospital as well as a regional referral center whose purpose is to develop innovative solutions to complex clinical problems, and to



train gastroenterologists for a career in academics so as to continue to enrich the field and ensure its healthy growth. More than half of UTMB's 13 prestigious clinical faculty were listed as "Best Doctors in America" in 2003, with two placed on the "America's Top Docs" List in 2003, 2004 and 2005. UTMB's entire faculty now totals 36 members.

UTMB is delivering on its mission in three areas: research, education, and clinical care. The UTMB Division of Gastroenterology consists of worldwide leaders in the field who are devoted to research and the clinical care of patients with gastrointestinal, liver and nutritional disorders. Using the most advanced technologies, physicians are saving lives and preventing disease through minimally invasive procedures. UTMB has the tools and expertise to provide patients with the most comprehensive resources available in terms of preventive care, diagnostic and therapeutic treatment, and patient education outreach.

The division is also responsible for the Gastroenterology Training Program, teaching medical students, interns, residents, Fellows and attending physicians aspects of enteric diseases and how to treat them. The University's education program trains gastroenterologists from around the world on the latest tools, techniques, and procedures in gastroenterology and endoscopy.

Instrumental in turning the University's vision into reality was P. Jay Pasricha, M.D., Chief, Division of Gastroenterology and Hepatology; Bassel, Frances Blanton Distinguished Professor of Internal Medicine; and Professor of Anatomy & Neurosciences and Biomedical Engineering. "When I came to UTMB, my goal was twofold: to recruit a team of doctors who are recognized leaders, and to upgrade our equipment so that my team would have ready access to the latest technology available," said Dr. Pasricha. "Our infrastructure is now in place in terms of our people, our equipment, and industry support. We continue to strive to bring our center to the next level and focus on improving clinical care by providing even better service and interaction with referring physicians and the community, being at the forefront of educational expertise for our region, and producing innovations in research for our field."



The doctors at UTMB Galveston credit this vision for leadership, along with UTMB's investment in cutting edge endoscopy equipment and video imaging technology from PENTAX Medical Company, with their ability to excel in these areas. And, in addition to outfitting UTMB's GI Suite with over 75 GI and ultrasound endoscopes, video processors, and integrated computer imaging software implemented on a high-speed network, PENTAX also provided additional endoscopes and computer equipment on long-term loan to UTMB's Research facility. This donation has enabled the University to remain focused on clinical research, without putting a strain on its educational or clinical care resources.

Driving Innovation in Research and Endoscopic Technique

UTMB's GI Research division has been on the national forefront in discovering innovative techniques and procedures, as well as uncovering new ways to approach clinical problems.

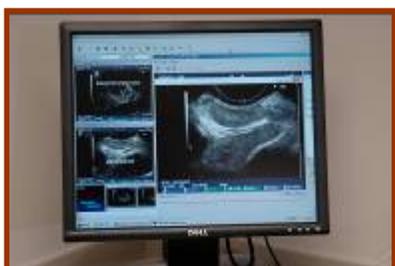
"UTMB is well-known for the pre-clinical work we conduct in our research lab, which is fully equipped with state-of-the-art scopes and instrumentation," said Dr. Pasricha. "Being able to develop and test new procedures in the lab enables us to provide our patients with care that is safer, less invasive, and more effective."

One example of UTMB research is a new procedure that can help manage perforations – a risk factor of colonoscopy. In a research paper currently under development by G.S. Raju, MBBS, MD, DM, FRCP (Lon), FACP, FACG, Associate Professor of Medicine, and Co-Director of UTMB's Center for Endoscopic Research, Training, and Innovation, or "CERTAIN," Dr. Raju explains how UTMB is researching techniques for closing perforations during a colonoscopy.



"We have been able to experiment with sealing 3 cm and 5-7 cm perforations. In our experiments, we have been able to close the perforation and successfully create a leak-proof seal—even on the larger-sized perforations—during the colonoscopy procedure," said Dr. Raju. "We are currently developing new techniques for closing perforations which will lead to a reduced risk of complications, and therefore less anxiety and risk, for patients. I am truly grateful to PENTAX for giving us the equipment that has allowed us to do this groundbreaking work."

Dr. Raju also discusses how PENTAX's video imaging software, Motion Picture Studio (MPS), is instrumental in UTMB's ability to clarify procedures with the use of captured video clips. "When I submit research papers, I'm able to use MPS to present real-time video clips of the procedure(s) along with the report. Providing a small, fifteen-second video clip instead of a static image is a far more effective way of fully showing the procedure or technique."



Finally, with better image quality and processing, UTMB can perform better image analysis. "We're using this new technology to look for 'hidden information' in our ultrasound images," said Manoop S. Bhutani, MD, FACG, FACP, Professor of Medicine, Director: Center for Endoscopic Ultrasound, Co-Director: CERTAIN. "You need very good image quality in order to perform image analysis. We're able to use our high-quality images to do further research in computer-aided analysis and diagnosis as an adjunct to what you see with the naked eye. In other words, over time, computer image analysis will enable us to 'look for' problems in the images that the naked eye alone would not be able to see, allowing us to catch problems sooner, improve diagnoses, and in turn, improve outcomes," Dr. Bhutani continued.

Educating Tomorrow's GI Leaders

UTMB has developed a training program that has positioned the University internationally as a leader in clinical training, as well as the training of gastroenterologists for careers in academics. Since 2000, fully 50% of UTMB graduates have gone on to pursue a career in academics. Also, UTMB regularly hosts international Fellows from around the world who, on programs funded by their own countries, visit UTMB for up to six months in a "shadowing" and research program. Finally, the University hosts international conferences and workshops, such as the annual International Workshop on Therapeutic Endoscopy.

The MPS video imaging technology provided by PENTAX has given UTMB the ability to drive their educational program to the next level. "We have tools that make it very convenient and 'user friendly' to record videos of endoscopic procedures," said Dr. Pasricha. "Literally with the touch of a button, we have access to all of our archives of difficult and interesting procedures. We have brought 21st Century technology to our educational mission." While medical students and Fellows can only perform procedures in the research lab, the video clips enhance UTMB's

teaching capabilities by adding a “live” dimension to their explanation and classroom discussion of difficult or new techniques and procedures.

Taking it one step further, in the live observation of a procedure, a student can only see the same procedure one time. “With video imaging, students are able to record the live procedure, and replay the exam or procedure again and again, look at the reports, and then do further studies,” said Dr. Bhutani. “Having this ability is invaluable in enriching our teaching environment – especially for more complex or difficult procedures – because an educator can really be sure that every student truly understands every aspect of the procedure.”



Moreover, the UTMB team is able to share its research, lectures, and video clips of clinical procedures with colleagues via on-line resources such as The DAVE Project (www.thedaveproject.org). The DAVE Project, an acronym for the Digital Atlas of Video Education, is a free online teaching tool covering gastrointestinal endoscopy and ultrasound, with medical lectures featuring medical experts around the world. PENTAX is a site sponsor of the DAVE project website, and Dr. Raju and his colleagues are regular contributors.

Comprehensive, Compassionate Clinical Care

UTMB has been internationally recognized as a GI leader and referral center due to its top-notch clinical care. UTMB’s doctors point to two major reasons: having the proper tools for better clinical and preventive care, and being able to prepare their patients for what to expect when having a procedure.

Better clinical care hinges on having the best equipment available. “We can offer our patients endoscopic diagnostic capabilities that are the best in the world,” said Dr. Pasricha. “The PENTAX equipment we have in place gives our patients access to the latest equipment—especially our cholangiopancreatroscope (‘baby’ scope) which literally gives us the ability to go where no man has gone before—into the pancreatic and bile ducts—and truly give our patients the most thorough examinations possible today.”

The MPS video imaging technology is also instrumental in UTMB’s ability to work with other disciplines. “The MPS and live video recording, which we did not have previously, has really enhanced our clinical work,” said Dr. Bhutani. “When we find cancer, we are now able to play the video at the patient’s care conference, and the whole team can see it from a very different viewpoint than before - and everyone is on the same page.”



“When a patient comes to see us, they’re scared – scared that we’ll find cancer, but also scared of a complication,” explains Dr. Raju. In order to reassure patients, UTMB doctors use the MPS video clips to show patients exactly what to expect during their procedure.

“We’re able to show our patients not only what different kinds of problems look like—the different types of polyps, cancer, etc.—but also how we take care of them, so that before they even step into our facility for their procedure, they know what to expect and they are confident that we are able to handle a problem if we find one. Patients are also very concerned about complications such as perforation. If you can tell a patient that if there is a perforation, we are able to fix it, and show them how it’s done, that’s a huge reassurance,” continued Dr. Raju.

Another important aspect of patient care is educational outreach. UTMB’s staff regularly holds information sessions in the area of colon cancer awareness and colonoscopy for senior citizens in the Galveston area. “These sessions are all the more informative because we bring video recordings to show people what to expect in each type of procedure,” said Dr. Raju. “We also show people attending the information sessions what a well-prepped colon looks like, compared with a poorly prepared colon. This visual assistance helps us to not just tell people, but show them so they understand that if they are going to have a colonoscopy, they should take the time to prepare properly so their doctor will be able to see what he or she needs to see.” By using their imaging equipment in this way, UTMB is providing a valuable educational service to its community.

About the UTMB GI Suite and PENTAX

“When we initially sought to upgrade our endoscopy equipment, we were looking for a partner who could help us achieve excellence in all three of our missions: research, education, and clinical care,” said Dr. Pasricha. “PENTAX was able to help us meet all of our technology requirements—and in fact exceed many of our expectations—in an extremely cost-effective manner. Their dedication to and support of our research facility is truly remarkable. I believe we could not do the work we are doing today, without the equipment that we purchased from PENTAX, and the equipment they have loaned to our research lab.”

UTMB’s GI Suite is equipped with the following PENTAX equipment:



- **EUS EG-3630UR radial array scopes**

The EG-3630UR is a radial-type endoscope with a built-in electronic scanning system. This new technology gives a flicker-free, high-resolution image under echo. It is also equipped with an optical system for direct visual observation. The EG-3630UR has achieved the highest level of performance as an endoscope as well as exceptional ultrasound imaging capability. The maneuverability is as comfortable as conventional endoscopes because of the light control body. It comes standard with a large 2.4mm instrument channel to accommodate a bioptome [please verify] or variety of other clinical instruments. It is color doppler compatible and color flow angio capable, and a wide range of EUS examinations is now possible with the EG-3630UR.

It is often difficult to fill the esophagus and duodenum with de-aerated water. PENTAX’s radial-type ultrasonic endoscope uses de-aerated water filling methods as well as balloons for effective de-aeration of these hard-to-reach areas. With just the press of the suction button or air feed / water feed button, water is fed into the balloon or the suction function is activated.



- **EG-3630U linear array scopes**

The PENTAX EG-3630U incorporates a 2.4mm channel within a 12.1mm insertion tube. It features an all-electronic convex linear array ultrasound image for improved reliability, an electronic beam focus for improved lateral resolution, and a 7.5 and 5.0mhz transducer for deeper ultrasound imaging. The color and pulsed doppler allows for anatomical orientation and vascular evaluation during real-time EUS guided biopsy. This model includes an elevator mechanism for more precise control of endoscopic accessory instruments.

- **EG-3830UT therapeutic linear array scopes**

PENTAX’s EG-3830UT boasts a 120-degree wide angle of view with an excellent 50-degree oblique viewing angle. A small probe is integrated into the front end of the scope for easier, smoother insertion. This scope achieves high performance with no compromise in the easy maneuverability expected of conventional models.

- **Hitachi 5500 HIVISION (compatible with all scopes)**

The HIVISION 5500 fully digital ultrasound system delivers the latest generation of signal processing technology, sophisticated transducer design, and a host of features and options for advanced imaging performance and clinical flexibility. Equally impressive are its intuitive operation, outstanding ergonomics and productivity-enhancing feature sets.

- **Motion Picture Studio™ (MPS) Software program**

Used in conjunction with PENTAX’s endoPRO® software, Motion Picture Studio (MPS) goes beyond static images and offers real-time full-motion video documentation of endoscopy procedures on the computer. MPS can record the entire procedure and automatically create a 1-5 minute video highlight Executive Summary with just the touch of a button. MPS is especially beneficial in dynamic environments, such as ERCP and EUS, where contrast flow and motion are an integral part of the findings.

- **70K Series GI Endoscopes—Gastrosopes, Colonoscopes, Sigmoidoscopes, and Duodenoscopes**

The PENTAX 70K Series incorporates a high-resolution color CCD Chip for clear, full-screen images. The newly designed ergonomic grip offers enhanced fingertip control during video endoscope operation. It comes in a compact package and can meet a wide range of clinical needs with its small and lightweight processor, the EPK-1000. Equipped with new DSP (Digital Signal Processing) Technology, these scopes are the perfect choice for enhanced observation, diagnostic examinations and/or therapeutic procedures.



- **EPK-1000 Digital Color Video Processor**

The EPK-1000 Digital Color Video Processor uses Digital Signal Processing (DSP) technology to produce endoscopic images with enhanced brightness, clarity, and resolution. It also automatically switches into shutter mode for close-up still images, minimizing camera movement when capturing stills. Its compact, lightweight design has a smaller footprint, while supporting a variety of peripheral equipment.

For more information contact PENTAX Medical Company: 1-800-431-5880 or visit our website at www.pentaxmedical.com