



Surgeons lead educational program



to improve kidney care in Vietnam



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This course was designed to provide local physicians and allied health care providers with the knowledge and skills necessary to improve the delivery of care to ESRD patients using a multidisciplinary approach.

HIGHLIGHTS

- Describes how the authors used a scholarship from the Vietnam VEF to develop and provide an educational course designed to improve the care and outcomes of patients with kidney disease
- Explains why this training was necessary in Vietnam and the program's purposes
- Presents details on how a combination of live lectures and interactive webinars, along with simulation, were used to train health care professionals in effective kidney care
- Considers the future of this type of training program and its role in global health care

Photos, opposite, left to right:

Top row: Sunrise in Da Nang, Vietnam; teaching during an operation at Hue Central Hospital.

Middle row: Surgical intensive care unit, Hue University of Medicine and Pharmacy; Dr. Slakey demonstrates ultrasound guided central venous catheter placement during simulation course.

Bottom row: Dr. Davidson demonstrates ultrasound mapping for dialysis access surgery planning; Hue University of Medicine and Pharmacy.

The need for surgeons to help improve the availability and quality of care provided to underserved populations, especially in developing countries, is ever-growing. When most surgeons think of volunteering, a surgical mission trip focused on performing a series of operations over some period of time is usually what comes to mind. These surgical missions can be very important to the patients served and especially rewarding to the surgeons and surgical team. The *Bulletin* has published many reports of such experiences over the years.¹⁻⁵

Another venue for Fellows of the American College of Surgeons (ACS) to contribute to improving global health care is through education. In 2012, one of the authors, Dr. Slakey, received a scholarship from the Vietnam Education Foundation (VEF) to develop and provide an educational course designed to improve the care and outcomes of patients with kidney disease. The title of the educational project was Multidisciplinary Approach to Optimize the Care of Renal Patients and was designed to provide evidence-based knowledge. The course objectives were reinforced using simulation training and strategies for systems development to improve patient safety, outcomes, and cost-effectiveness of care. Human factors, communication, and team training were emphasized in all aspects of the course. The entire project lasted six months, from September 2012 to March 2013. The positive reception of the course material and enthusiasm of participants exceeded expectations. This article provides details on the course design and its evolution, the practical applications of this approach to surgical volunteerism, its impact, and future plans.

Program development

Funding for the entire project was through the VEF, an independent federal agency created by the U.S. Congress in 2000.⁶ The mission of the VEF is to strengthen the U.S.-Vietnam relationship through educational exchanges. A board of directors composed of cabinet members, senators and representatives, and presidential appointees governs the VEF.

The individuals involved in the development of the program viewed it as an opportunity to create and deliver an educational program that would be durable and reproducible. The proposal was based on the belief that surgical leadership provides a vital role in many aspects of the care of the end-stage renal disease (ESRD) patient including the obvious surgical considerations such as dialysis access (fistula, graft, peritoneal catheter) and transplantation.

Left to right: Professor Khanh; Prof. Tran Van Huy, MD, PhD, head of the office of science, technology, and international relations; Prof. Tran Huu Dang, MD, PhD, vice-rector of Hue University of Medicine and Pharmacy; Dr. Davidson; and Dr. Slakey.



TABLE 1. ON-SITE LECTURES

- ESRD treatment time line
- Why a multidisciplinary team?
- Simulation for medical education
- Dialysis (renal replacement) for the newly diagnosed ESRD patient: Patient considerations, timing, measuring outcomes, cost, and effectiveness
- Using human factors to improve outcomes
- Checklists and patient data registries—ensuring optimal patient care
- 36 | • Managing the complex ESRD patient—special techniques for surgery and medicine
- Simulation education—a way to improve team function and patient safety
- Ultrasound evaluation for central venous catheters and dialysis access
- Best practice for placement of central catheters—catheter last or fistula first?
- The OR cockpit: Standardization, checklists, and communication skills
- Improving communication when caring for patients
- Surgery techniques: Best practices for using expanded polytetrafluoroethylene (ePTFE) grafts for dialysis
- Complex decisions in vascular access: Interesting cases
- Safety and outcomes—the OR cockpit and communication
- Checklists and data—the next steps in measuring outcomes
- Simulation sessions—what to expect

The underlying objective of the Multidisciplinary Approach to Optimize the Care of Renal Patients course was to provide an educational foundation to help physicians improve the care of patients with kidney disease. In Vietnam the actual incidence of ESRD is unknown but is reportedly as high as 680 per million, nearly twice the rate of the U.S. Because the provision of health care to ESRD patients often is complex and costly, many patients in Vietnam are unable to receive the treatment necessary to keep them alive.

This course was designed to provide local physicians and allied health care providers with the knowledge and skills necessary to improve the delivery of care to ESRD patients using a multidisciplinary approach. The course provided evidence-based information to enhance the understanding of methods used to treat ESRD patients and emphasized a coordinated approach to optimizing the timing of the various therapies and managing the surgical, pharmacological, and other complications that may occur. Importantly, this course included information and training in the role of human factors in the delivery of care—a concept that emphasizes the importance of the entire health care team in optimizing patient care. The course included both lectures and simulation training so that students could practice the methods and techniques discussed. Using the knowledge and skills taught during the course, the students should be better able to provide safer, more effective health care and thereby reduce medical errors and costs. As a consequence, more patients will have access to the care they need.

Course design

Fortunately, the administration and faculty at the Hue University of Medicine and Pharmacy, Hue, Vietnam, were quite supportive of the program. Prof. Lee Dinh Khanh, MD, and Nguyen Vu Quoc Huy, MD, were particularly helpful in organizing the course and providing local support.

In addition to voice and video feed via the webcam, it was possible to have interactive educational sessions with uploaded course content that included PowerPoint slides and documents. Video could be delivered as part of the real-time lectures by sharing the host computer screen, and students could ask questions by voice or by typing their queries, allowing the presenter to respond to questions as they arose.

As previously stated, the course was divided into two basic formats—lectures and simulation sessions. Lectures were conducted both on-site at Hue (17 lectures) and in real-time via the Internet (12 lectures). Tables 1 and 2 (page 36 and this page) feature the titles for all lectures offered in the course. For the on-site lectures, the lead author, Dr. Slakey, made two trips to Vietnam—the first was September 17–27, 2012, and the second trip was March 8–16, 2013. Co-author Dr. Davidson accompanied Dr. Slakey on the second trip.

Initially, 35 students—a mix of surgeons and nephrologists—were enrolled in the course. Over time, the number of physicians, medical students, and health care workers who took advantage of the course increased substantially. By the time the March final full-day course was convened more than 100 physicians and health care workers were in attendance.

The real-time Internet lectures were presented between October 2012 and March 2013 using Adobe Connect Software. Multiple users from different sites could log on simultaneously, and connection speeds were set so that wireless connections would work well. In addition to voice and video feed via the webcam, it was possible to have interactive educational sessions with uploaded course content that included PowerPoint slides and documents. Video could be delivered as part of the real-time lectures by sharing the host computer screen, and students could ask questions by voice or by typing their queries, allowing the presenter to respond to questions as they arose.

It also was possible to record lectures and then post the file online where students could access the recorded sessions. This Web-based access afforded students the opportunity to review presentations at their own pace. Also, because many of the students were physicians who sometimes had clinical duties that interfered with their ability to view the lecture live, the recording feature allowed students to access lectures at any point after they were presented.

As part of the scholarship funding, educators at the Hue University of Medicine and Pharmacy were able

TABLE 2. REAL-TIME INTERNET LECTURES

- Central access and ultrasound
- Peritoneal dialysis
 - How it works
 - Patient evaluation
 - Surgical considerations
- Hemodialysis (HD)
 - How does HD work?
 - HD outcomes
 - Catheter, fistula, or graft?
- Surgery for dialysis access
 - Surgical planning, patient evaluation
 - OR check lists
 - OR cockpit concepts
 - Consent
- AV fistula surgery
 - Anatomy
 - Techniques
 - Optimizing outcomes
- Managing complications of dialysis access
- Kidney transplantation
 - History
 - Outcomes
 - Creating a transplant team
 - Deceased donor evaluation
- Kidney transplantation
 - Evaluating the patient
 - Evaluating a living donor
- Donor operation
 - Deceased
 - Living
- Kidney transplant operation
- Immunosuppression
- Team training—simulation education
 - Communication
 - Leadership
 - Including the team

This project was a valuable educational experience for Tulane's surgical residents and aided in peer-to-peer interaction with the medical students, residents, and physicians taking the course in Vietnam.

TABLE 3. SIMULATION SESSION TOPICS

- Ultrasound evaluation for central venous catheters and dialysis access
- Best practice for placement of central catheters
- The OR cockpit: Standardization, checklists, and communication skills
- Improving communication when caring for patients
- Surgery techniques: Best practices for using ePTFE grafts

to upgrade the facility's lecture room with an advanced Internet conferencing system that included a computer, video projection capability, and wireless microphones. This system allowed more than 50 Hue University of Medicine and Pharmacy students to simultaneously view the live Internet lectures projected onto a screen in the lecture room, and to ask questions using wireless microphones.

In accordance with the mission of the VEF, surgical residents at Tulane University School of Medicine, New Orleans, LA, were involved in the preparation and presentation of the live Internet lectures. The Tulane surgical residents acted as teaching assistants. They prepared a 20–30 minute grand rounds-style presentation for each Internet lecture topic, and they also presented with Dr. Slakey during the live Internet lecture. This project was a valuable educational experience for Tulane's surgical residents and aided in peer-to-peer interaction with the medical students, residents, and physicians taking the course in Vietnam. The Tulane residents were very positive about their experience and enthusiastic about participating in future international education exchange programs. Certainly, it can be anticipated that this degree of participation will encourage cooperation and educational exchanges in the years to come.

Each student received one textbook titled *Peritoneal Dialysis: Surgical Technique and Medical Management*.⁸ This textbook, along with the companion DVD that illustrated surgical technique, was a valuable resource for the students.

Using simulation for training

The conclusion of the course consisted of one week in Hue, March 8–16, 2013. At this point in time, the authors participated in patient clinics, in-patient rounds, and operations. This clinical activity provided an excellent opportunity to experience and discuss the realities of caring for patients with ESRD in Vietnam, and to reinforce the application of the evidence-based



From left: Professor Huy; Hong Van Le, MD; Dr. Slakey; Professor Dang; Professor Khanh; and Mrs. Pham Thi Hop Khanh, international program coordinator.

material presented during the course. Throughout the course, special attention was paid to the societal, economic, and cultural factors that affect the delivery of care to the ESRD patient in Vietnam. Incorporating on-site clinical and educational activities into the course was critical to its success.

March 14 was the last full day of the conference and included simulation training. Table 3, page 38, lists the simulation session topics. Two device-manufacturing corporations with an interest in the ESRD patient population helped support the conference. SonoSite (FujiFilm) professional education personnel participated and supplied a portable ultrasound machine for use during the simulation sessions. Covidien's Vietnam business development manager brought peritoneal dialysis devices and central venous catheters as well as instructional information and videos. Having access to these devices ensured that the simulation sessions allowed for hands-on interactive training.

Grant funds allowed for the purchase of a central vascular catheter-training simulator that Dr. Slakey brought from the U.S. and donated to the Hue University of Medicine and Pharmacy. Included with the simulator were many spare parts and central venous catheters to allow for continued use of the simulator after the completion of the course. Simulation training for ultrasound-guided central line placement included a checklist of steps that should be completed prior to use. This training was very popular with the physicians, and the facility should be able to use this simulator for years to come. In addition to ultrasound central line placement, the simulation sessions included practice with ultrasound mapping of veins for dialysis access, something most of the surgeons had only read about and discussed during lectures.

During the simulation sessions, the students had an opportunity to practice communication and health care team training—subjects that had been presented and discussed in the lectures. Course participants were enthusiastic about the communication skills and team training. Despite potential language barriers, we found

that students were quick to apply the knowledge and skills they gained. Students were able to appreciate the positive influence of clear, concise, and accurate communication on health care. The simulation sessions included practicing communication between physicians and other health care workers as well as between physicians and patients.

One of the more interesting communication practice sessions involved learning how to talk to patients about bad news or adverse outcomes. During the simulations the entire audience of students interacted with each other and offered their opinions on the appropriateness of their colleagues' communication, body language, and overall approach to the scenario. Post-simulation debriefing sessions helped to reinforce the knowledge and skills that the students had learned.

The students who completed the entire course were given course evaluation forms. Feedback regarding the usefulness of the material presented in the course was uniformly positive. All participants stated that they would directly incorporate the knowledge and skills learned into daily patient care. Notably, each student committed to a continuing education program in which they will serve as a resource to other health care professionals.

Looking ahead

Many exciting opportunities for continuing the educational objectives of the course are available. First, the students were taught information and skills that can be used to teach other health care professionals throughout Vietnam. At the end of the course, all of the students expressed optimism that they would be able to train other clinicians in the techniques that can be applied to improve the care of patients with ESRD. This is a classic example of training new trainers, which was a goal of the course.

At the end of the course we discussed the potential for establishing a system for clinical data collection

All participants stated that they would directly incorporate the knowledge and skills learned into daily patient care.

and analysis to monitor outcomes of ESRD patient treatment. This is a significant need within Vietnam, which presently lacks a centralized or consistent method for monitoring the clinical outcomes for ESRD patients. In addition, we discussed implementing health care checklists, which would be developed using evidence-based knowledge and function as a protocol to guide the physicians and other health care practitioners in providing optimal patient care. These initiatives could be formulated into a second (follow-up) VEF course. The second course would be designed to provide the students with the knowledge and skills necessary to implement the ESRD checklist, to establish a clinical study to determine if the checklist is effective, and to publish the results in a peer-reviewed international journal.

In summary, the objectives of the Multidisciplinary Approach to Optimize the Care of Renal Patients course were met and actually exceeded the authors' expectations. The students were enthusiastic about both the Internet and on-site lectures. The simulation session at the end of the course was very well-attended and provided an unparalleled opportunity for the students to actively practice the most important skills they learned during the course. This opportunity has improved our understanding of health care in Vietnam and also of the global interest in improving health care outcomes and clinical efficiency. The course has provided the students with an improved understanding of how to optimize the treatment of patients with ESRD and how to build and train health care teams. This course will certainly have a lasting effect on the lives of many patients. Finally, the experience of developing and delivering this course has reinforced the belief that surgeons as educators have a significant impact on improving patient safety and health care outcomes. ♦

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