

Fourth-year medical student Rebecca Pratt



REQUIRED READING

Through a new curriculum, reading the medical literature has become an essential component of an Upstate medical education. BY RENÉE GEARHART LEVY

The studies made headlines last spring: Correction of anemia with erythropoietin in kidney disease and cancer patients might be harmful to their health.

In the Medical Alumni Auditorium in Weiskotten Hall, 75 fourth-year medical students discuss the findings of one study, focused on patients with chronic kidney disease, published last year in the *New England Journal of Medicine* (NEJM).

While erythropoietin is the accepted treatment for correction of anemia associated with this condition, the optimal level of hemoglobin correction is not defined. And unlike many other drugs, erythropoietin does not come in fixed doses.

“Were the mechanics of the study sound?” the instructor asks. “Should we be concerned that three of the investigators are on the payroll of the drug company? Should we be concerned that physicians are paid to use these drugs?”

Correcting hemoglobin to “normal” (13.5 or 14) might be the common-sense approach, but this study and others have shown the practice to worsen patients’ conditions or cause death. Last spring, the Food and Drug Administration both strengthened the drug’s warning labels and released a report suggesting its use might be curtailed in cancer patients.

The students know all about that. In addition to the kidney disease study, they’ve read an editorial on the

controversy from the same issue of the *NEJM*, as well as a specific case study from the *Journal of Nephrology* and a more recent article about the FDA actions from the *New York Times*. They are well versed.

The students are part of a fourth-year elective, *Current Biomedical Research*, which meets weekly to dissect current medical research. Next week’s readings are on schizophrenia.

But the topic is less important than the process, which is all about getting medical students immersed in the language of medicine and comfortable with the literature of the profession, becoming conversant in medicine so that they may participate more meaningfully in their further education and training.

“Without an understanding of the medical literature, a student’s education is incomplete,” says College of Medicine Dean Steven J. Scheinman, MD. “Without an appreciation of medical publications, and the ability to understand and analyze the scientific reports that underlie all good medical decision-making, students would enter practice ill-prepared.”

The elective is part of a larger effort at the College of Medicine referred to as the Medical Literature curriculum. During each of their first two years, all medical students take a course that requires them to read and discuss cases from the *NEJM* and other medical journals that coincide with the areas of the body they are studying in their basic science courses.

“Medical knowledge advances rapidly, probably more rapidly than in any other field, and the knowledge that students get in medical school will be outdated before they are much older,” says Dr. Scheinman.

“A career in medicine must be one of continuing self-education. Thus, more important than the facts we impart during medical school is an ability to read and understand the literature, as a basis for lifelong learning.”

The creation of Upstate’s Medical Literature curriculum is largely the doing of pathologist Paul Shanley, MD.

During the late 1990s, Dr. Shanley introduced the idea of reading cases out of the *NEJM* as a supplement to the second-year pathology course. “We did about five cases the first year. We gave them quizzes and it accounted for 10 percent of their pathology grade,” he says.

At the same time, Upstate was examining its curriculum with an eye toward reform. Some medical schools nationally were moving toward problem-based learning, an approach that features students working in small groups with a teacher/facilitator using clinical problem solving on hypothetical “cases.”

“I thought that was logistically outside our ability,” recalls Shanley. “We had a pathology course where we were trying to meet in groups of 20 students and had to do it twice a week just to have enough faculty to run those.”

Fueled by the belief that an adequate medical education involved reading the medical literature, and that students would benefit from an independent component to their learning, Shanley proposed a course based on reading and discussing published cases.

Based on his track record with the process in the pathology class, the course was adopted as part of the new curriculum in 2002. The first year, *Pathophysiologic Basis of Clinical Reasoning*, was offered as a four-credit course that met twice a week in the second year with students reading about 10 cases during that year.

On the basis of student response and the curriculum process, the course has expanded dramatically. Today, all first-year students take the three-credit *Case Studies for Integration of Basic and Clinical Science*, which meets once a week and covers 10 cases in the course of the year. Second-year students take the eight-credit *Pathophysiologic Mechanisms of Disease*, meeting three times a week and covering approximately 25 cases in a year.

While the course names are different, the format is the same. The entire class meets as a whole in the Medical Alumni Auditorium. The class session begins with a quiz over the assigned case, followed by discussion. Afterward, students are required to write a hypothesis, or summary, of the case to account for the clinical findings based on the patient’s underlying diseases.

While it sounds simple, it can be a daunting process for students. “It’s very different from the routine of going to a lecture, being given notes and a syllabus, and memorizing the material for a test that is exactly what you expected,” says Shanley.

Instead, students are told to read the case and look up anything they need to look up to understand it

such that they could explain it to their grandparents. Know the definition of every word. Know why each drug was used and what the drug action is. Know the diseases discussed and why one was thought more likely than another.

“When they first start, that means they have to use a dictionary and look up every third or fourth word. It’s pretty painful,” says Shanley. “The independence and vagueness of the task throws them, but by spring, they are much more literate.”

It’s a challenge, yes. But one student ultimately learn to embrace and value.

“In so many courses, we are bombarded with disjointed facts, long lists to memorize, and details that slip so quickly from our minds,” says Shoey Au ’09. “However, through the medical literature class, we learned to apply these lessons, to pursue and share knowledge, and to develop a love for self-directed learning. By developing our skills and understanding—and not simply our ability to regurgitate facts—I feel that the medical literature course has been the most valuable course that we have been privileged to take at Upstate.”

In the beginning, it was just Shanley, with the assistance of Sri Narsipur, MD, from the Department of Medicine, and later Dana Savici, MD. But as the course(s) expanded, he recruited a group of clinical faculty so that at least one of the facilitators for each case would be a relevant clinical person who would bring their perspective and experience to guide the discussion and help answer students’ questions. Currently, just about every clinical and basic science department participate.

“We start out with a clinical faculty person discussing the case but there are always some issues that bring you back to the basic science so I ask basic science faculty to come in and talk about those aspects,” Shanley says.

No longer facilitating every session, Shanley is the administrator of the Medical Literature curriculum, assisted by Karen Kelly, who coordinates the logistics of the many facilitators and a website that provides access to the schedule and reading material.

“A lot of what we’re trying to accomplish is getting students immersed in the language. This is how you

talk about medicine,” says Shanley. “We’re also trying to model—through our expert faculty and experts that write the peer-reviewed papers—how medicine is done.”

If you take time in the curriculum, somebody else has to give. The addition of medical literature courses required the “tightening” of other required courses to make room in the schedule. Despite the perceived intrusion of his courses into the established curriculum and initial resistance to change, Shanley says many faculty members have been extremely helpful in his efforts, regularly volunteering to participate.

By and large, however, the effort has been endorsed by administrators and students alike.

According to Lynn Cleary, MD, senior associate dean for education, student course evaluations endorse the success of the approach. “Students are learning habits of independent and active analysis of medical literature, engaging in a forum that helps them integrate basic and clinical science, and provides a synergy that augments their learning,” she says. “When you read the evaluations, the students clearly appreciate it.”

“Dr. Shanley is challenging medical students to function as adult learners,” adds Sara Jo Grethlein, MD, associate dean for Graduate Medical Education and associate professor of Medicine. “In a decision that is unusual for medical school, the classes are taught, for the most part, without slides, and without handouts. Students fashion the discourse to meet their needs in understanding the cases under discussion. They come to class prepared, engaged and a little bit agitated, using the in-class time to resolve the ‘need to know’ generated by this provocative educational technique.”

Grethlein is co-director with Shanley of the new fourth-year course, *Current Biomedical Research*, offered this year as an option for the fourth-year required basic science elective. Seventy-five students—half the fourth-year class—enrolled.

“The best thing about the class is that it’s predicated on self evaluation, reflection and pushing yourself to the educational limit,” says medical student Ross Sullivan ’08. “You’re essentially given articles to read with some guidelines. From there, the student is to determine how much to study, what to study,

and how to study it. Over time, you become much more polished and aware of what is important and what is not. These skills will be, and already are, very important in today’s constant flood of information and research.”

The course operates much the same as earlier versions, except that instead of studying cases, the students are given a set of readings for each week that revolve around a central clinical study, such as the study involving correction of anemia with epoetin in chronic kidney disease.

“In their first and second year, medical students are taking basic sciences courses. They need exposure to cases to help integrate that,” says Shanley. “By the fourth year, they’ve had clerkships and electives and have been exposed to real cases of their own. Now that their minds are more into clinical thinking, we read clinical and translational research papers to bring them back to the scientific basis of medicine and remind them how difficult and ambiguous things really are.”

That’s why he refers to the collection of courses as the Medical Literature curriculum—“It’s reading the literature from first through fourth year, but with different goals to balance and integrate whatever else students are doing,” he says.

His own convictions aside, the curriculum would never have evolved as it has without the positive student response. Sullivan says he chose the new fourth-year elective because he felt he learned more in the second-year course than any other during medical school.

Joseph Khabbaza ’08 chose it because he feels the experience will give him an edge in his residency. “The challenging part at the start of second year was trying to learn the medical jargon, but after that it shifted from challenging to fun,” he says. “I gained the confidence to ‘talk shop’ with residents and attendings before ever even hitting the floors. I never want to stop learning or thinking in this way.”

Shanley, who published an article on his educational approach in the May 2007 *Academic Medicine*, has proposed the elective become a required part of the curriculum.

“I think education is about bringing a student to a point where they are asking a good question,” says



The Medical Literature Team: Sara Jo Grethlein, MD, Karen Kelly, and Paul Shanley, MD.

Shanley. “You have to look at the current practice and ask ‘What’s wrong with this?’ ‘Why am I unable to get this person better?’

“It’s almost subversive to training, which is becoming competent in the state of the art. In professional school, we tend to think the training is more important. And it is important—I don’t want to diminish that. But if we develop a generation of physicians that don’t ask good questions then we’re stuck. We never move forward. That’s the goal I’ve taken on in my courses—to get us in a position to ask good questions.” ■