In honor of Ronald C. Jones, MD, I offer some thoughts on leadership and review Baylor University Medical Center (BUMC) surgeons’ contributions in thoracic surgery and cardiac stem cell therapy for heart failure. First, I must comment: Ron Jones pretended to be from the backwoods of the Ozarks, but he was really a “city slicker” from Harrison, Arkansas (population 12,000) (Figure 1a) (1). I was the real hillbilly from Rush Creek, Arkansas, on the Buffalo River 52 miles from an indoor toilet (Figure 1b).

LEadership

A leader is a person who can get other people to do what they don’t want to do and like it. Ron Jones has always had this quality “in spades” and has built an outstanding surgical residency training program.

The ideal surgical residency was established after World War II by my chief at the Massachusetts General Hospital, Dr. Edward Churchill, along with Dr. Michael E. DeBakey. Dr. Churchill had been chief of surgery in the European and North African theaters during the war, and Dr. DeBakey was his liaison to the surgeon general. They felt that Dr. Halsted’s Geheimrat surgical residency system was too narrow, and although it taught the resident to take out a stomach or gallbladder, it didn’t teach how to handle a gunshot wound through the aorta into the lung. Therefore, the two changed the American surgical residency training model to give much more responsibility to the resident in a graduated system.

Their new ideal surgical residency included three factors: a broad base, creative flexibility, and preparation for “inevitable change.” These are important leadership characteristics.

In addition, learning to “ask the right questions” is crucial for success in surgical training. At the beginning of the 20th century, mathematicians cited eight crucial questions which, if answered, would markedly change the future. These motivated Einstein to develop the theory of relativity and led to the atomic and hydrogen bombs. Bill Gates has attempted to do the same for medicine in the 21st century.

He has funded a “blue ribbon” committee headed by Dr. Harold Varmus, Nobel laureate and past head of the National Institutes of Health, to draft a similar set of questions for medicine to attempt to answer in the 21st century.

Two other quotes also apply to leadership in a medical and surgical environment:

It ain’t what you don’t know that gets you into trouble, it’s what you know for sure that ain’t so.
—Mark Twain

Life is not a matter of holding good cards, But of playing a poor hand well.
—Robert Louis Stevenson

THORACIC AND CARDIOVASCULAR SURGERY AT BUMC

Surgeons of the past 20 years have built on BUMC’s fine reputation in thoracic and cardiovascular surgery, which began with Dr. Robert R. Shaw, first chief of thoracic surgery from 1949 to 1961, and Dr. Donald L. Paulson, chief of thoracic surgery from 1962 to 1976 (Figure 2). These two began a thoracic and cardiovascular surgical training program at Baylor, which was later moved to the University of Texas Southwestern Medical Center.

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Elsewhere I have written about the history of thoracic and cardiovascular surgery at BUMC (2). Early surgeons performed many “firsts” and “largest series” of operative procedures (Table). My prior history also refers to BUMC’s many collaborators and regular visitors over the years, including Dr. F. Griffith Pearson and Dr. Wilfred Bigelow from the University of Toronto; Dr. Stanley Crawford, foremost aortic surgeon; Dr. David Skinner, president of the New York–Presbyterian Healthcare System; and Mr. Ronald Belsey of the Frenchay Hospital in Bristol, England.

More recent advances are also impressive.

CyberKnife

The CyberKnife is cutting-edge radiosurgery technology, which targets a localized area for ablation and causes minimal damage to adjacent normal tissue. The Synchrony Respiratory Tracking System is used in conjunction with the technology to treat lesions that move with respiration, such as cancers of the lung, liver, and pancreas.

Most people associate CyberKnife therapy with brain tumors, but in fact more than half of CyberKnife procedures are for extra-cranial tumors, and most of those are for lung tumors. The Baylor Radiosurgery Center ranks seventh in the world for its volume of noncranial cases. It is currently involved in a multicenter 5-year trial measuring progression-free and overall survival following CyberKnife radiosurgery for patients with stage 1 non–small cell lung carcinomas and pulmonary metastases.

Surgeons in the department recently published a book on this topic: Robotic Radiosurgery (Figure 3).

Lung cancer vaccines

Surgeons in the department are working with the Mary Crowley Medical Research Center. Under the direction of Dr. John Nemunaitis and with the support of the National Institutes of Health, the institute has developed lung cancer vaccines, which have shown some success. The vaccine, GVAX, targets non–small cell lung cancer. A study published in 2004 showed that when given to 43 patients with early and advanced stages of the disease, the vaccine wiped out the cancer in some patients and slowed its spread in others (3).

Other new therapies—such as gene therapy and angiogenesis blockade—are being developed at the Mary Crowley Medical Research Center; such therapies do not reduce host resistance the way radiation, chemotherapy, and surgery can.

Cardiac stem cell research

Another important innovation in the department is the study of adult stem cells in cardiac disease. These cells are autologous, i.e., from the patient’s own blood or bone marrow. As such, patients do not have to fear rejection. The idea behind the therapy is that adult stem cells introduced into a failing heart damaged by myocardial infarction should differentiate into heart muscle cells and cells that promote growth of new blood vessels, thus restoring blood supply to the heart and improving the heart’s ability to contract. The initial focus has been heart failure, a disease that affects 5 million patients, including 500,000 new patients each year, and which is a leading cause of hospital admissions and mortality in the elderly.

To date, 220 patients with heart failure have received stem cell therapy. None of the patients have died, and all have seen significant clinical improvement. This work is a collaboration with other centers, including the University of Pittsburgh School of Medicine, the Benetti Foundation in Rosario, Argentina, and the Bangkok Heart Center in Thailand.

Based on clinical data collected overseas, the Food and Drug Administration (FDA) has reviewed three protocols and approved the first two:

1. Coronary bypass plus stem cells. Initial results for the first 20 patients were published in The Journal of Thoracic and
Cardiovascular Surgery in December 2005 (4); they showed that patients treated with stem cell therapy and off-pump coronary artery bypass grafting had significantly better cardiac function than those treated with coronary artery bypass grafting alone. To date, $100,000 in philanthropic funds has been raised to support this effort at Baylor.

2. Ventricular assist devices plus stem cells. This study was approved by the FDA but must still be approved by Baylor’s institutional review board. Grants for funding have been submitted.

3. Thoracoscope plus stem cells. The FDA has placed approval on hold, pending the outcome of the first two studies. The proposal for Baylor’s institutional review board is in progress as well. To date, $100,000 has been raised to support this study.

In addition to these efforts, in conjunction with the University of Texas Health Sciences Center in Dallas and the Johns Hopkins Hospital, a grant proposal has been submitted to the National Institutes of Health for a cooperative center study involving the reprogramming of adult germ cells.

CONCLUSION

Considering the innovations on the horizon and the opportunity to continue to improve patient care, I encourage all of us surgeons to recapture the joy of surgery:

The magic stuff
The grail that once moved every doctor in this room
To become a surgeon
And that even now beckons
Through the jading mist
Of tedium and time.
Strip away the corrupting dullness
And look afresh at our profession.
I still contend that it is the most Splendiferous of all professions. —Clement A. Hiebert, MD

Presidental Address to the New England Surgical Society