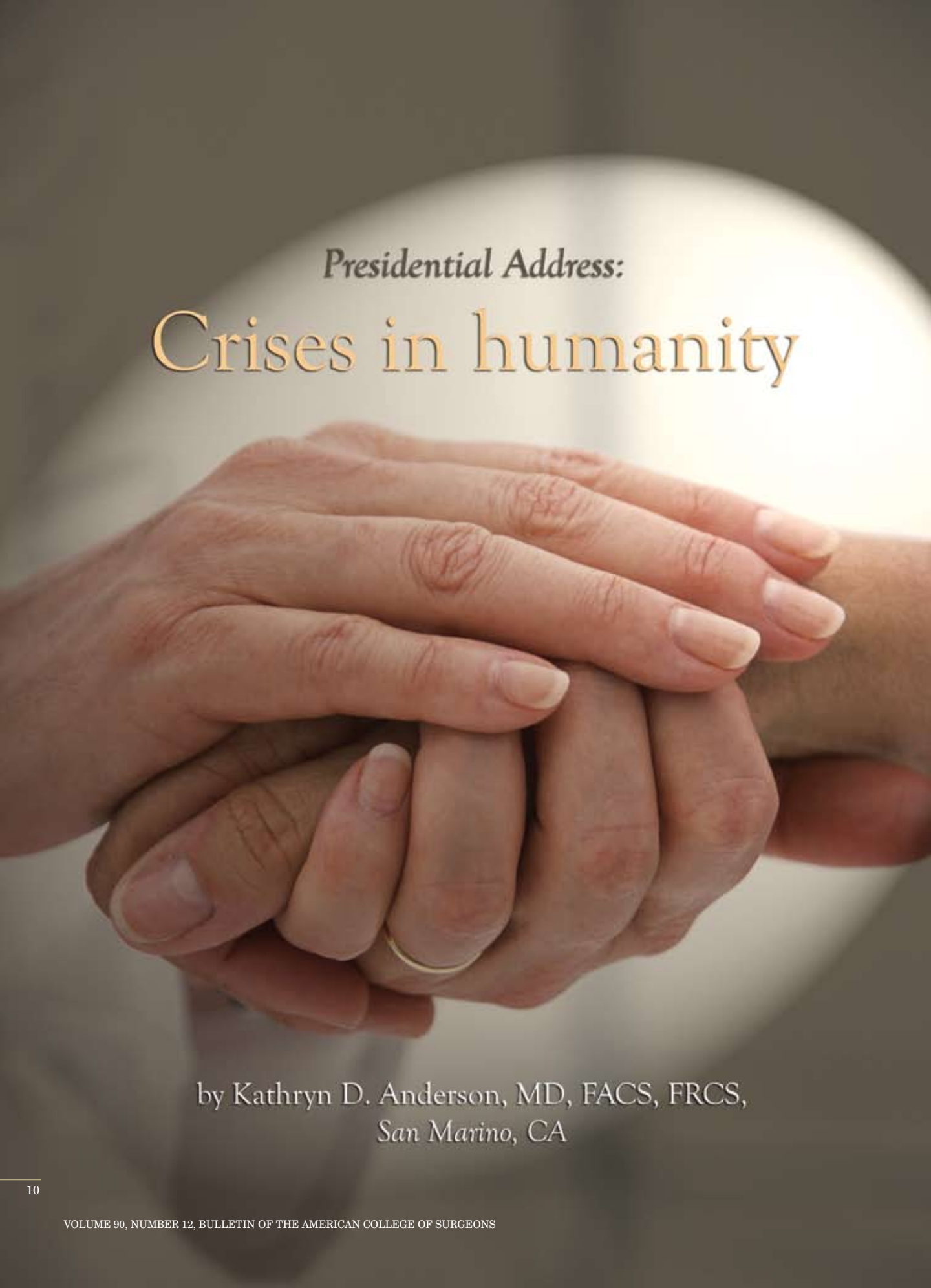

Presidential Address: Crises in humanity

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Editor's note: *Dr. Anderson delivered this Presidential Address on October 16 at the Convocation in San Francisco, CA.*

Some years ago, the leadership of the American College of Surgeons made a conscious decision to become what was termed "gender neutral." This involved some changes over past practices and the appointment of many women to leadership positions, committee chairs, and the development of a governor position from the Association of Women Surgeons. I believe that the epitome and success of that resolution has resulted in my standing before you tonight as the first woman President of the American College of Surgeons. This is a landmark for the College and the greatest personal honor for me. I look forward to the time when having a woman President will no longer be remarkable.

Each year, the President of the College has chosen a theme for the year. This past year, the theme was "unity among surgeons," chosen by Edward Laws, MD, FACS. I have chosen "humanity" for this year and for a very specific reason. I believe that medicine today, and especially surgery, is experiencing a crisis in humanity. We do not seem to be any longer in charge of our work, our patients, or even of ourselves. Government intrusion, unfunded mandates, loss of public confidence, and many other factors have combined to separate us from our patients and have made some of us question our own worth and humanity.

You have just been inducted into Fellowship of the largest and most prestigious association of surgeons in the world, and you must be part of the solution to the present crisis in humanity. This is one of the most important days of your lives. Years from now, you will not remember who was President on this day, but you will never forget the day itself. So, before you leave and justly celebrate your great achievement and your "arrival" into the surgical elite, let me guide you briefly through several crises in humanity that surgeons have experienced over the last two centuries and the solutions that were developed. I will finish with what I consider are the present-day crises and suggest some solutions.

Operative pain

Imagine, if you can, what it would be like to have to do an operation, no matter how simple, with four strong men to hold down your patient. Never mind how difficult it would be to work around four assistants, nor how impossible it really would be to keep a patient still enough for you to be able to work well—it would be extremely difficult to ignore the inevitable screams and know that you were provoking those screams. Although surgeons were held to be a callous lot for just these reasons, the types of operations that could be done in these awful circumstances were severely limited, and surgeons must have been emotionally tried each time they had to inflict pain. As a result, the best surgeons were those who could operate quickly, such as amputating a leg in less than 30 seconds. Patients would go to a surgeon only as a very last resort, which meant that diseases would be in a very advanced state. So you can understand that when Dr. John Collins Warren at the Massachusetts General Hospital (MGH) was told about a miracle sleep that rendered the operation pain free, he was willing to try the new technique. This came to be called anesthesia.

In 1772, the English chemist J.B. Priestley discovered nitrous oxide. His assistant noted its ability to mitigate physical pain and commented that, "It may probably be used with advantage during surgical operations." He never pursued this idea. Seventy years later, both nitrous oxide and ether were being used at parties for the purpose of "getting high" and several observers noted that participants could injure themselves during the frolics without apparently feeling pain. Dr. Crawford Long, in a small village in Georgia, was the first to use this effect for surgical procedures and he had done eight operations before Dr. William Morton, a dentist in Boston, approached the MGH surgeons about using ether on their patients. He knew nothing of Crawford Long's work, since Dr. Long did not publish his work until later. Dr. Warren agreed to have Dr. Morton demonstrate on one of his patients. He explained to his audience on the morning of October 16, 1846, that he had long wished for something to alleviate his patients' pain. To the utter astonishment of everyone in the amphitheater, a tuberculous node was removed from the patient's neck, without a

sound from the patient. Dr. Collins is said to have had tears in his eyes when he said: "Gentlemen, this is no humbug."

The practice caught on very quickly. In England, that remarkable lady, Queen Victoria, delivered her fourth son while under chloroform anesthesia; thus was anesthesia established in England.

It was unfortunate that the early pioneers of the use of anesthesia were involved in tragic arguments as to whom the credit should go for its invention. But the humanitarian crisis was alleviated nonetheless, not only in terms of allowing operations to be done without pain to the patient and resulting distress to the surgeon and observers, but also from the fact that more and longer operations could be tackled, and patients were more likely to seek help in earlier stages of their disease.

Sepsis

Since death from sepsis is a relative rarity in these modern times of antibiotics and aseptic practices, it is hard to imagine the horror of the mortality from infection that followed open fractures, childbirth, and even clean surgical procedures. But a young Hungarian surgeon named Ignatz Semmelweiss, in his first job as assistant in a delivery ward in Vienna, was distressed by the huge mortality rate of recently postpartum women. In contrast, the adjacent ward, run by nurse midwives, had a very low mortality rate. The difference? There were no medical students to examine the nurses' patients. Coming directly from the autopsy room, these students, and Dr. Semmelweiss himself, handled infected tissues from women who died of puerperal fever and then examined women in labor without any cleansing of their hands or clothes in between. The more Dr. Semmelweiss sought the answer to this difference by more diligent autopsies, the worse the problem became. He became severely depressed having to watch helplessly as the women died, leaving behind a newly born infant to be cared for by a grieving husband. The senior surgeon felt that his anxiety was affecting his work, and Dr. Semmelweiss was sent on leave to recover his equanimity.

When he returned, he found that his physician friend had cut himself during an autopsy on a dead mother and had died, with findings at autopsy identical to those of puerperal fever. Dr. Semmelweiss guessed that puerperal fever was being transmitted from the septic tissues of the dead to the live women in labor, so he began to do something revolutionary: he washed his hands!

He instituted hand washing in his ward, using chlorine water, and the mortality of puerperal fever dropped precipitously. It rose again briefly when the medical students, contemptuous of their irascible teacher, did not wash in between patients. This sounds horrible—but how many times have you all observed surgical residents on rounds in the morning, examining one patient after another without washing their hands in between, or even been "too busy" yourselves?

The crisis appeared to be solved, but Dr. Semmelweiss was not only ignored by his colleagues but vilified. He went insane and died of puerperal fever—or streptococcal sepsis, as we now recognize it—after cutting his finger, perhaps deliberately.

More than a decade after Dr. Semmelweiss' death, Koch and Pasteur, a pathologist and a chemist, showed that minute organisms were responsible for infection and demonstrated these organisms in the tissues of women who had died of puerperal fever.

An individual who was aware of both Semmelweiss' work and that of Koch and Pasteur was Joseph Lister in Edinburgh. He became very distressed by the 45 percent mortality in cases of open fracture. One day in 1865, he discussed this with a friend during a walk that led them past open fields where human waste was used as manure. An absence of the feculent smell jogged his memory that carbolic acid was sometimes used to decrease the obnoxious odor of sewage. He postulated that perhaps carbolic acid would eliminate the purulence that accompanied most cases of open fractures. He embarked on clinical experimentation to test his theory that carbolic acid would kill the bacteria that Koch had described, using dressings soaked in carbolic acid. The mortality of his patients, even with severe open wounds, fell to zero. He then developed an apparatus that could be filled with the antiseptic. The spray was then used in the operating theater, filling the air with a mist of carbolic acid. He was mistaken in thinking that the bacteria came only from the air, but the effect was revolutionary. The method was quite widely adopted in the surgical world and led to a huge surge in the numbers of

An operation performed by Lister and his associates in Aberdeen in 1880. The assistant at right operates Lister's carbolic spray apparatus. (From *Lord Lister,* by Douglas Guthrie.)

operations that could now be done with a successful outcome.

This solution of the crisis of infection eventually led to the practice of asepsis, when it was recognized that bacteria came not just from the air but from the hands, clothes, hair, and breath of surgeons and observers in the operating theaters. And so caps, gowns, and masks began to be used. The story of Dr. William S. Halsted's invention of rubber gloves to protect his fiancee's hands from the irritating acid is well known. The advent of steam sterilization extended asepsis to instruments, but even today, antisepsis, according to the tenets of Dr. Lister, is still widely practiced in wound care and in the sterilization of instruments that cannot be heated.

Dr. Lister, unlike Dr. Semmelweiss, who he acknowledged as his forerunner, was recognized for his achievements and became a baron, the first medical man in England to become a peer. It probably did not hurt that he used carbolic acid in the treatment of an abscess he lanced in the axilla of that very progressive English lady whom I have already mentioned, her majesty, Queen Victoria! As Lord Lister said toward the end of his life: "As I esteem the honours which have been conferred on me, I regard that all worldly distinctions are as nothing in comparison with the hope that I may have been the means of reducing in some degree the sum of human misery."

Trauma: From Antietam to Vietnam

It is almost axiomatic that war represents one of the worst crises of humanity. The horrors were often ignored in the glory of military supremacy, from the ancient Romans to the British triumph at Waterloo over the French. But the Civil War

will rank in American history as one of the worst crises, in which families were divided, brother fought brother, and many more men died of disease than were killed in battle. In addition, the "surgeons," especially in the southern states, were largely untrained rural practitioners who acquired their surgical skills on the battlefield. At the time of the Civil War, anesthesia for surgical procedures was in pretty general use. The war had ended, however, before Dr. Lister described his antiseptic principles, and so deaths from gangrene and sepsis were distressingly common. The wounded lay around the battlefield for days and because bullets flattened on impact, they carried large amounts of clothing and debris into wounds. This led to gross contamination and almost certain infection. Amputation of limbs was common. In the early war years, operations were carried out in makeshift tents and there were no hospitals to take care of patients.

During and immediately after the war, there were several responses to these appalling conditions, with the establishment of a U.S. Sanitary Commission. Surgical qualifications were defined, hygiene and chains of supplies were improved, and an ambulance service was developed. The building of field hospitals was begun by Jonathan Letterman in 1862. Medical records were kept of the wounded, and after the war was ended, Samuel Gross developed military surgical manuals.

By the First World War, the germ theory was widely known and asepsis was established as perhaps more important than antisepsis. The "golden hour" of dealing with injuries had been elucidated and so field stations for immediate treatment of casualties were developed inside the trenches. Hospitals were often makeshift but were established away from the front. Many amputations were still carried out but it was recognized that infection was more likely in wounds that had damaged tissue left in place. Debridement of devitalized tissue was stressed, especially since the bullets and shrapnel had much more destructive power. The trenches of World War I were dug in the highly manured, long-cultivated fields of Flanders, so that asepsis was almost impossible. Antisepsis was carried out with much less toxic irrigating solutions such as Dakin's solution. The responses to the crisis included trench first aid stations, hospitals to the rear of the action, motorized ambulances, and debridement and irrigation of tissues.

World War II produced a whole new series of crises. The character of war had changed. Missiles were of much higher velocity; airplanes were in constant use and were shot down with high-powered ammunition, resulting in frequent fires fueled by gasoline. This meant that survivors of a crash would not only have extensive shrapnel damage but were often also badly burned. Skin grafting and reconstructive procedures for disfiguring burns and facial and hand wounds were developed.

Soldiers did not go on forced marches over long distances as in previous wars, but were carried to battle sites in cars, tanks, and airplanes. This meant that they were in better physical shape if they were wounded. The "front" was also mobile, so hospitals had to be mobile also. Efficient ambulance services were developed and rear hospitals were much more highly organized with qualified surgeons and hierarchies. For example, Dr. Edward Churchill from the MGH was the chief consultant in the European theater, and there were senior consultants in various specialties such as neurosurgery. Fixed wing air transport was used to evacuate the wounded after initial treatment and surgery.

Penicillin was beginning to be manufactured, so aseptic and antiseptic practices were supplemented with the administration of this drug. In short supply at the beginning, it was adequately supplied by the end of the war.

It may surprise some of you to learn that abdominal surgery had never been performed in previous wars. It became routine during World War II and the principle of using diverting colostomy after suture of colonic wounds also became established. Amputation became a last resort although rates of 49 percent were recorded if blood vessels were damaged.

One of the most significant advances in surgery was the recognition of the phenomenon of shock and its treatment by fluid and blood administration. There is no doubt that the war accelerated the use of blood and the establishment of blood banks by such luminaries as Charles Drew, MD, FACS.

Advances during the Korean War were numerous. With helicopter evacuation a new phenomenon

emerged, and in sophisticated mobile army surgical hospitals (so-called MASH units), soldiers received definitive treatment within four to six hours of being wounded. Frank Spencer, MD, FACS, a Past-President of this College, responded to the military order left over from World War II—that injured vessels must be ligated—by simply ignoring the order. He explained to me, "I risked a court martial if repairing injured arteries didn't work and accolades if it did." He got the accolades and his techniques "spread like wildfire" across Korea. The amputation rate fell to 13 percent. The amount of fluid and blood for resuscitation was recognized to be far greater than the actual amount lost and blood was available in unlimited amounts. Renal failure was treated by dialysis. The treatment of burns, by the efforts of Curtis P. Artz, MD, FACS; John A. Moncrief, MD, FACS; and Basil A. Pruitt, Jr., MD, FACS, advanced to very sophisticated levels.

Dr. Spencer

Dr. Walt

In the 1960s, the war in Vietnam began. This was a very unpopular war and had no glory to it. This led to another kind of crisis for surgeons who were posted to Vietnam to take care of the wounded. Perhaps the futility and horror of war were exemplified much more clearly than at any time before. The responses of surgeons to these crises, however, led to spectacular advances in the treatment of trauma—among them were things we take for granted today: the establishment of trauma centers in military and then also in civilian life; the description and treatment of "shock lung," aka adult respiratory distress syndrome; and the use of Ringer's lactate in high volumes for resuscitation and the concomitant use of large bore catheters. The wounded reached definitive care within 90 minutes of injury 85 percent of the time, and they could expect repair not only of injured arteries but also veins with only 5 percent mortality and further reduction of the amputation rate.

In order to establish the efficacy of repairing arterial and venous injuries, a vascular registry was developed by Norman Rich, MD, FACS, of the Uniformed Services University of Health Sciences. One thousand repaired vascular injuries have been followed long term, a monumental study of outcomes.

The industrialization of medicine

So what does all this have to do with the present-day practice of surgery? What are the crises that beset us now, and what can we do to avoid succumbing to disappointment in our chosen profession? What do I mean by the industrialization of medicine?

Our senses may be dulled by the trivialization of murder and mayhem as exemplified by television and movies. Are we coming full circle with the first surgeons who had to ignore their patients' cries in order to be able to treat them with painful procedures?

Today there is less and less "hands-on" care. We can make sophisticated diagnoses and difficult decisions without touching our patients, let alone caring for them as individuals. We have become so superspecialized of necessity that we view patients as multiple compartments and keep strictly to our own small area of expertise. There is a concomitant

perception by society that an adverse outcome is a "mistake"; this makes us justifiably concerned about litigation and we practice preventive medicine as a result, adding to the separation from our patients and to the cost of medicine. The public also demands the ultimate in diagnostic technology and the very latest in treatment modalities without being willing to pay for these. We ourselves are unwilling to consider rationing medical care. So we have decreasing reimbursement, more unfunded mandates, and falling incomes, yet we are working harder than ever. In spite of this, there is still the public belief that doctors are all rich and that it is somehow immoral to be adequately compensated for our work. In the words of the late Alexander J. Walt, MD, FACS, a Past-President of the College: "…we have a public greatly impressed by our technical achievements but disgruntled by what they regard as our careless, callous, thoughtless, or even absent psychosocial sensitivities."

But let's stop for a minute and define the real problem. I believe it is this: there is less and less of an outlet for the charitable desire to truly serve our patients. We need to work harder and more efficiently in order to make ends meet and therefore spend less time with each patient. We must deal with more and more bureaucratic mandates, which we don't necessarily believe enhance patient care. And this is frustrating.

So what are my suggested solutions for this present-day crisis in humanity?

Never forget why you went into medicine in the first place. You can't always be clever, but you can always be kind. Remember the Fellows Pledge you just recited with John Gage, MD, FACS, ACS Secretary: "…I will place the welfare and rights of my patients above all else. I promise to deal with each patient as I would wish to be dealt with if I was in his position." There are no unimportant acts of kindness and we, as well as our patients, will be the beneficiaries.

Be a joiner. You are now fully fledged Fellows of the College. Follow some of the initiatives in which the ACS is involved, and actively contribute to these activities. Believe me, you can make a significant contribution.

- Participate in ethics seminars, both at the Clinical Congress and in your local communities.
- Be active at state and federal levels with patient advocacy and safety; the College is active in these areas both through the Washington Office and in Chicago. Join your local chapter and be active in its programs.
- Work for medical liability reform; again, the ACS plays a leadership role in this, but we need Fellows to be locally involved in their chapters and in their state and local governments.
- Take the new "Surgeons As Effective Communicators" course, which was launched in May this year. Participants receive extensive training in communication techniques. They are expected to be leaders in their communities to help improve communications with patients, their colleagues, and the public.
- Learn about Operation Giving Back. This is a College initiative spearheaded by Andrew Warshaw, MD, FACS, outgoing Vice-President, which is now run full-time by Kathleen Casey, MD, FACS. Operation Giving Back coordinates many different ways in which surgeons can donate their time to those in need, both nationally and internationally, as exemplified by the Fellows' response to the recent hurricanes in Louisiana, Alabama, Mississippi, and Texas. You can reach the Operation Giving Back Web site from the ACS Web site at *www.facs.org*.

Just as the response of past surgeons to humanitarian crises of their day led to advances in the care of patients, by giving of your time and your heart, you will not only help to advance the humane practice of surgery, but you will also reap the rewards of belonging to the greatest humanitarian profession in the world. Ω

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