Hand Surgery Endowment Goal for 2005

By Miguel J. Saldana, MD
President, The Hand Surgery Endowment

$1 M by 2005?

In the summer 2000 issue of the Hand Surgery Quarterly, Dr. Robert Schenck, then president of the Hand Surgery Endowment, set a lofty goal of reaching $1,000,000 in Endowment investments by 2005. Is that goal still achievable? I think so.

The Hand Surgery Endowment was officially incorporated as a 501(c)(3) organization in 1996. By the year 2000, the Endowment funds grew to almost a quarter of a million dollars, mainly because of your generosity, but also because, since the Endowment’s inception, your money was invested in the most favorable era of stock market growth. “Wise investment” must continue as a fundamental Endowment policy; however, to achieve the goal of one million dollars by 2005, the Endowment will need all of you to consider a donation of a portion of your estate in the form of a charitable gift.

How can we all work together to reach $1M?

As of the January 2001 annual meeting of AAHS, the members of the Board of Governors for the Hand Surgery Endowment are:

Miguel J. Saldana, MD, President
J. Joseph Danyo, MD, Vice President
Robert R. Schenck, MD, Secretary/Treasurer
Robert Walton, MD, FACS, Member
James G. Hoehn, MD, Member

The entire Board of Governors is committed to the wise fiscal management of the resources of the Hand Surgery Endowment.

A Journey to the Epicenter of India’s Worst Earthquake

On January 26, at 9:26 am the worst earthquake in India’s history struck Kutch, Gujarat. At its epicenter, the earthquake measured 7.9, leveling villages and killing at least 17,000 with another 60,000 injured. An estimated 125,000 individuals are unaccounted for. Dr. Mukund Patel, member of the American Association of Hand Surgery and American Society for Surgery of the Hand, lead a volunteer team of physicians that traveled throughout the impacted area to provide medical relief.

February 17. We leave for India from Kennedy airport. Our team consists of two orthopedic hand surgeons, a general surgeon, two internists, two medical students, and two engineers. We travel with 40 boxes of medical and surgical supplies worth about $125,000, which Air India ships at no cost. Supplies include plaster casts, dressing materials, surgical instruments, gowns, gloves and masks, as well as specialized orthopedic equipment. The Indian team that joins us in Gujarat includes our host family of five and an orthopedic surgeon, Dr. Ajay Shah from Baroda Medical College, my alma mater in Gujarat.

February 19. We fly into Ahmedabad, capital of Gujarat. Although personal baggage arrives, the 40 boxes of supplies do not. They are sitting hours away in Bombay, stuck in customs. It takes 10 hours...
Confronting Technology

This issue of Hand Surgery Quarterly has as its theme Hand Transplantation. Hand transplantation is currently the focus of considerable discussion in the hand surgery community, as other sections of this issue reflect. Hand transplantation represents the extension of existing technology to a new area. Questions naturally arise both with regard to the appropriateness of the indications and to specific details of both surgical and medical management.

I believe this is just the first of many technology-related issues that will confront hand surgeons in the 21st century. We will be exposed to many new therapies, devices and certainly much new knowledge. We will need to determine how these will fit into our current professional framework. Old ideas may need to be replaced or set aside. How should we approach the future?

We must remember that, first and foremost, we are members of a healing profession. Some things in our work will not and should not change. We will need to communicate with our patients, probably more rather than less, to help them sort through all of the confusing options that will be presented to them. The fact that something can be done does not mean that something should be done, and the fact that an anatomical difference exists does not mean that a procedure is necessarily indicated. We are all aware of the large number of patients who have osteoarthritis, for example, in various joints in the hand or wrist who have essentially no symptoms. It would seem inappropriate to operate on such patients, regardless of what new or special technology might be available in the future.

What are the new areas where these challenges will arise? Probably foremost among them is the advent of gene therapy, which is already being tested for some single gene defect congenital metabolic abnormalities. Technical issues continue to exist regarding how best to deliver the genes, as well as ethical issues concerning the mixture of genetic material from not only different individuals but perhaps even different species. Will we inadvertently introduce new diseases? Clearly, it will be important to move very slowly in this area. Ultimately, gene therapy may have some applications to tendon healing, arthritis, treatment of infections, bone healing, prevention or reversal of the aging process, management of tumors and even to stimulate nerve regeneration. It would seem, however, that these applications are a number of years into the future. Perhaps a bit closer are new technologies that can be delivered by the field of tissue engineering. It is already possible to isolate various growth factors that can stimulate bone or soft tissue healing. These can now be combined with artificial scaffolds that can provide some structural support while the growth factors are doing their work. It is also possible now to grow some of the patient’s own cells and culture and seem them on such scaffolds, as this is currently being done for autologous cartilage transplantation. Such living prostheses are likely to become more and more important, particularly in our management of arthritis and probably also in reconstruction after tumors, burns, and the like.

Some technologies will be more mechanical. For example, it is already possible to provide some surgical reconstruction for patients with spinal cord injury by implanting electrodes to connect muscles which have innervation from the spinal cord but which are disconnected to the brain, to a mechanical switch that can then allow some voluntary muscle contraction again. In the future it may be possible to eliminate the mechanical connection, and recreate, through electric circuitry, a true connection to the patient’s brain. Certainly, preliminary results with these implantable neural prostheses have been encouraging, and will be the subject of a future Hand Surgery Quarterly issue.

Finally, we will need to consider how information technology will change our day to day interactions. Telemedicine will allow us to consult with patients who are not physically present in our offices. We will need to deal with privacy and licensure issues, of course, but this technology brings the hope that physician will be able to bring at least their intellectual efforts to bear on a patient problem without having to be physically present at the bedside to do so. Virtual house calls and virtual consultations with emergency rooms, to determine which cases would best be served by having the patient come to the doctor’s office, as opposed to the doctor coming to the patient’s bedside, should improve the efficiency of our practice. Further into the
future, the technology of virtual surgery may ultimately allow us to improve our surgical techniques. For example, an electronic interface may dampen the fine vibrations in a surgeon’s hand, so that technically we may be able to repair smaller blood vessels than we can today. The military is even experimenting with the possibility of doing virtual surgery with the surgeon in one physical location and the patient in another, such as a remote battlefield. That is a bit more into the future perhaps, but gives a glimpse of what sorts of technologies are being considered.

The 21st century will be an exciting time. We are privileged to be present at its beginning, and I hope that many of us will have the additional privilege of seeing some, if not all, of these technologies find their place in our specialty of hand surgery.

Passivity Impossible

I have heard from other physicians more times than I can remember that they do not believe they should be involved in politics; they should simply take good care of their patients and leave politics to the politicians. Years ago this was reasonable. We could take good care of our patients, and knew our patients would then take care of us by not allowing the politicians to pass laws that negatively impacted us in our practices. Those days disappeared when medicine became big business.

The President of the North Carolina Medical Society recently said quite eloquently that passivity, in reality, is an active acceptance of whatever anyone wishes to do to us.

The reason we can no longer be passive is twofold. First, no other group is as passive as we physicians. Other groups decide what they want and strongly lobby until someone proposes their intended bill, and, then, this bill gets passed. An excellent example of this was when the optometrists in Oklahoma got a bill passed, allowing them to supposedly “perform laser procedures on the eye.” Buried in this bill, however, were stipulations that they could also do other surgeries, including cosmetic surgery of the ocular adnexa. The physicians of Oklahoma did not take a stand on this, in spite of the ophthalmologists requesting vehemently that they do so. “It just didn’t concern them.” However, since that time, optometrists all across the country have gotten similar bills passed, and now other groups are doing the same. There are even some rumblings that in some states (read that as eventually the entire nation) some of the things that we do will be allowed by other less capable practitioners. If we do not support other specialties, how can we expect them to support us when someone tries to impinge on our area of expertise?

Secondly, not all political actions that affect us are promulgated by the legislatures. Many rules and regulations are instituted by bureaucratic boards. If we do not pay close attention to the activities of these boards and vehemently object to any actions that are not in our or our patient’s interests, they will continue to affect us negatively. The most blatant example of this is the writing of regulations for Medicare after Congress wrote the initial Medicare laws. The majority of what we deal with on a day-to-day basis are not laws but the regulations set up by non-physician bureaucrats. The only way we can deal with these groups of rule-makers is to be united and speak with one voice.

The other thing that I hear again and again is that “organized medicine does not represent me.” The main reason for this appears to be that organized medicine does not believe exactly as the particular individual believes. One must remember, however, that organized medicine is just that—organized. This means that its ideas and goals represent the majority of the ideas and goals of the membership. If any group fails to join or participate, then the ideas and goals of that entire group are not represented at all. This again is an active consequence of a non-action.

Even the American College of Surgeons recently recognized the power of organizing and working with a larger group. For many years it believed that the American Medical Association did not represent surgeons. This was mainly continued on page 4
because surgeons were a smaller percentage of the membership of the American Medical Association and, therefore, medical specialty groups could outvote the surgical groups. However, the American College of Surgeons recently realized that, without their input, no surgical idea would ever be brought forth by the AMA. Therefore, a number of years ago, they retook their seats and have been exceptionally active in having their ideas heard and assuring the representation of surgeons in the general medical body.

The American Association for Hand Surgery has likewise recognized the importance of the AMA and now has representation there also. Our voice is small, but it is a voice and we do get heard and we can have impact.

We cannot sit back and be isolated. If we do, others control our destinies. Our country learned that lesson many years ago when it rejected isolationism. It applies as well now, to us as individuals as it did then to our country as a whole. We must stay informed of what is happening within the legislative and political arena, and we must become active in the process. The American Association for Hand Surgery is doing its part. We now have representation on the AMA, and this will expand in the future. In addition, I have set up a committee to keep us informed of what is going on legislatively and politically and to help us respond accordingly. However, each of us as an individual must also continually strive to stay abreast of these legislative and political activities, join organized medicine, let these organizations know our thoughts, and respond individually when necessary.
A Thank You

Doctors Without Borders is a private, nonprofit organization that delivers emergency medical relief to populations threatened by war, civil strife, epidemics or natural disasters. Its volunteers provide primary health care, perform surgery, rehabilitate hospitals and dispensaries, run nutrition and sanitation programs, and train local medical personnel.

March 19, 2001
American Assoc. for Hand, Surgery
20 North Michigan Ave #700
Chicago, IL 60602

Dear Friends,

I am writing to thank you for your recent, very generous contribution of $2,000.00 to Doctors Without Borders, and I want to express the gratitude of our field volunteers whom you are enabling to save lives and alleviate suffering.

As you know, Doctors Without Borders volunteers assist victims of armed conflict, epidemics, natural and man-made disasters, and health-care discrimination, and bear witness to their plight, regardless of race, politics, gender, or religion, and with full independence. To achieve these aims, we rely primarily on the generous financial support of private individual donors like you.

That reliance makes your contribution all the more important to us, and as a token of our appreciation, I would like to share the enclosed brochure with you. The excerpts from volunteer Margo Aswad’s journal are particularly interesting because they really capture the essence of our work.

We are proud to confirm that 86.8% of our expenses in 1999 were allocated to program activities in keeping with recent years’ records. Doctors Without Borders USA is also meeting all standards of watchdog agencies, and has been awarded an “A” rating from the American Institute of Philanthropy.

Your support will continue to help our volunteers provide life-saving medical care for fellow human beings who have nowhere else to turn, and speak out for the voiceless.

Very Gratefully Yours,

Josée Tanguy
Executive Director
Doctors Without Borders USA Inc.
of paperwork and threats of sending our supplies back to New York to get them released. First hurdle passed, only to meet a second: at our first stop, the Government Civil Hospital in Rajkot, we are told by administrators and government doctors that the crisis is over and we have arrived too late to help.

It takes persistence, but finally we are led to the orthopedic ward where we find many patients whose dressings and casts need changing. Many casts on the hand are holding the thumb in retroposition and metacarpophalangeal joints in extension. We place the hands in position of function and start mobilizing fingers. Dr. Yogendra Patel, the team’s general surgeon, diagnoses a patient with a femoral artery aneurysm secondary to trauma, which he repairs with help from the medical students. When we leave Rajkot, we leave behind surgical instruments and orthopedic implants such as plates and screws. The Dean of the Rajkot Medical College requests us to help them set up a department of physical and occupational therapy that they lack.

**February 21.** Our next stop is Sadbhavana Charitable Trust Hospital in Morbi. Here we are in the right place at the right time. The orthopedic team expected from Bombay has not yet arrived. The first patient we see has severe leg pain; the external fixator used to stabilize her leg fracture is loose and grossly infected. She begs us not to touch her leg, but, clearly, she needs surgery to remove the fixator and drain the pus. Afterwards, she is relieved to be able to walk with her new cast. We change casts on many other patients that were bedridden and teach them crutch walking. We cannot find even a pair of scissors to change the casts so we use the one pair that we had brought with us. Stitches are removed with a Swiss Army knife. Several patients are discharged and are relieved to go home. As news of our presence spreads, patients begin lining up in the corridor to be examined. We treat some more patients and proceed to our next destination.

**February 22.** This evening, we attend a prosthetic workshop at the PNR Society (a charity organization). The society is using an abandoned train as a medical facility, and each car serves a different function. Some cars are operating rooms while others are wards. Dr. Vijay Naik shows us the prosthesis that he developed for the PNR Society, which allows amputees to sit with legs crossed on the ground, the customary sitting position in India. The mechanism consists of a string that is pulled to internally rotate the knee and flex the leg. The PNR society provides free prostheses to the patients.

Their cost of making a “below the knee” prosthesis is $50 and “above the knee” prosthesis is $100. These are paid for by donations. We gave the PNR society five boxes of supplies for their mobile train hospital, since they plan to camp in Gandhidham for another nine months.

**February 23.** We spend the day traveling through Bhachau and Anjar. Hardly a habitable house is seen. Tents are ubiquitous. A large open-air hospital in Bhachau has been set up. The doctors in this clinic sleep in tents. They go to the
bathroom in the open. They shower once every few days. We find these doctors to be somewhat burnt out and frustrated. Some volunteers within the clinic are fighting amongst themselves. They seem to need another team of doctors to relieve them.

**February 24.** Our destination is a hospital in Bidada village. The administrators are very courteous and organized. Along with two orthopedic surgeons, I make rounds in an open air tent housing 125 patients. We sort out patients who need surgical treatment and send them to the operating room—though surgery cannot begin until the anesthesiologist arrives. He is called at his home in Bhuj, two hours away. We finish rounds at 6:00 p.m. that evening and operate until midnight. The anesthesiologist travels two hours back to his home in Bhuj as he does not feel comfortable sleeping in a building. He prefers to sleep in a tent outside his demolished home in Bhuj.

In Bidada, we see many people who are the only survivors in their family. Some are elderly and some small children. They are generally grateful to be alive. One young girl sings a traditional Indian song beautifully while patients and nurses gathered around. One of her legs is amputated. Her neighbor is a 3 month old child who has lost her father, mother and both feet. She is cared for by her aunt. There are estimated 10,000 amputees resulting from this calamity. We see another young boy who has fractured his lateral epicondyle. Just prior to surgery, the anesthesiologist examines the child, using the only equipment available, a stethoscope and blood pressure cuff. After he listens to the boy’s heart, the anesthesiologist silently passes the stethoscope to me. I listen and hear a very loud murmur. The anesthesiologist and I agree that surgery should be deferred until a further cardiac work up is performed. He feels uncomfortable administering general anesthesia to a child without any monitors of basic physiological functions. We spend a total of three days at Bidada Trust Hospital. We leave them with remaining boxes of surgical supplies.

**February 28.** Our next visit is to the director of Hari Om Ashram of Nadiad, Mr. Nandubhai. A philosopher, social worker, and spiritual leader, he is 97 years old. Mr. Nandubhai led us to the Anupam Mission in Vallabha Vidhyagar, where they designed, packed, transported, and assembled more than 4000 tents to Kutch. The tents, used both for surgery and living, are furnished with needs for everyday use, such as utensils, flashlights and blankets. Anupam Mission intends to adopt 100 females orphaned by the earthquake and educate them until marriage. 10,000 children are orphaned by this earthquake.

**March 1 and 2.** We spend the last two days of our trip battling Air India to confirm our tickets home. We have heard that every outgoing flight to the West is bumping passengers because of overbooking. If we don’t get on a flight now, the next available seats will be on March 26, in three weeks. We visit the Air India offices in both Baroda and Ahmedabad and finally get our tickets “stamped and stickered.”

I think that the sense of community in the Indian culture will carry the earthquake victims through this hard time. I have become very grateful for the simple things that I enjoy in my daily life. Earthquake relief work in India was most gratifying but boarding the plane back to JFK was equally gratifying. I am very glad that I went to India and I am very glad to be home.

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Buildings like this, and worse, are the frightening reminders of 100 seconds on January 26, 2001 that wreaked havoc over more than 100 square kilometers.
Endowment. At the present time, the Endowment holds 60% of its assets in equities, 30% of its assets in long-term securities (bonds, treasuries etc.), and 10% in cash. The Endowment’s Board of Governors, especially in this time of financial uncertainty, will make sure that the 60% in equities, held mainly in mutual funds, are in a diversified portfolio. The donations to the Endowment are invested and the interest accrued on those investments feeds back to AAHS in support of their educational programs.

The Board of Governors will continue its stewardship, the other part of reaching the goal of $1 million depends on you.

How can I personally make a difference?

If you own a highly appreciated asset, you might consider donating it to the Endowment. This turns out to be a win-win-situation for both parties. As an example, consider a donation of $10,000. By gifting the asset straight to the Endowment, you bypass the capital gain on the asset. If your cost basis is $2,000 on the $10,000 asset gifted to the Endowment, you would avoid the $1,600 capital gain, and the Endowment would receive a $10,000 gift. In addition, the $10,000 gift becomes tax deductible.

In the case of highly appreciated assets such as stocks, real estate, or a closely held business, a Charitable Remainder Trust (CRT) may play a crucial role in your estate plan and also help the Endowment attain its current and future goals. A CRT can:

- Diversify a highly appreciated asset or part of an asset without incurring immediate capital gains tax on the sale.
- Create a potentially life long income stream.
- Receive an income tax deduction (living trust only).
- Reduce your estate tax liability.
- Provide for the Endowment to reach $1 M by 2005.

Estate planning helps you preserve your assets and also helps the Endowment. It is recommended that you consult your financial professional, tax advisor or attorney, but a CRT is not that difficult to do. I hope you will seriously think about taking such a generous step. The charitable gift does not need to be much, but a small donation of $10,000 or $20,000 will make a large impact to the Endowment. It will make the $1 M by 2005 a reality!

The Endowment today

Your annual gifts of $150 to $20,000 have helped to achieve the current status of the Endowment at a quarter of a million dollars. These donations are the heart of the funding source. Those who have experienced the benefits through the funding of the educational programs join in thanking you for your generosity. The Hand Surgery Endowment supports:

- Vargas International Hand Therapy Teaching Award
- Presidential Invited Speaker
- Resident Essay Award - best clinical paper
- Resident Essay Award - best scientific paper
- Therapist Award - best paper
- Poster Award - best clinical
- Poster Award - best scientific
- Spanish translation at the Annual Meeting
- Registration scholarships supporting the Therapy Specialty Day

As the assets of the Hand Surgery Endowment continue to grow, the scope of support for more of the AAHS education programs will also grow. You can be a part of this legacy through well-advised financial planning that includes the Hand Surgery Endowment. Your consideration will be deeply appreciated for years to come.
hands and they too had that same hard working, life spent in the field appearance.

As I continued to tour Italy, I visited many museums, gazing at all the wonderful works of art. The works of Michelangelo astounded me, and left me breathless. How he was able to depict the function of the hand with such grace and power. From the Statue of David to the ceiling of the Sistine Chapel, these masterpieces not only show the power that can come from a single touch of the hand, as in God giving life to Adam, but also how he portrayed the beauty and poise of the hand of David after slaying Goliath.

I’m certainly not qualified to interpret the works of Michelangelo, but judging from what I saw, I could see how influential the function of the hand was to him in these two works of art. The hand is truly a beautiful structure; there is nothing that can come close to reproducing it. The configuration of bone, muscle, tendon and nerve all working in harmony to provide us with enough power and strength to crush or lift heavy objects, and then, in a split second, provide us with the elegance to play a musical instrument. It is this grace and beauty that Michelangelo captured more 500 years ago that keeps me fascinated with the hand today.

A medical team from Shriner’s Hospital in Chicago go to Vilnius every year on a medical mission. Last year they had that same hard working, life spent in the field appearance.

My adventure to this charming Baltic country started soon after I knew I was selected to go. Each year a therapist travels to a part of the world that has different resources, knowledge and supplies; so each trip is unique unto itself. I soon began the process of deciding what to bring in the way of supplies and educational material. My creative abilities were really challenged to discover materials which were easy to acquire and inexpensive—an HMO’s dream. Once I had everything organized: donated supplies shipped, lecture materials prepared and teaching spirit in hand, I was ready to go—destination Vilnius, Lithuania.

Lithuania, largest of the three Baltic countries, is slightly smaller than Ireland with a population of about 3.5 million. It has had a very turbulent history since the 1200’s following many centuries of occupation by various countries. In 1991 Lithuania regained independence following nearly 40 years of Soviet occupation. The capital, Vilnius, a beautiful city with about 600,000 inhabitants, has all the charm and beauty of old Europe. Many buildings in Vilnius are under construction because of prolonged neglect and changes made during the Soviet occupation. There are areas in town that have been revitalized with shops and street merchants while just down the road there are buildings in significant disrepair and people begging on the street. The economic contrasts in this country are vast and it is obvious the road to independence and democracy is a challenging one.

A medical team from Shriner’s Hospital in Chicago go to Vilnius every year on a medical mission.

New Therapy, Old Destination

Vargas Hand Therapy
International Teaching Award
2000: Vilnius, Lithuania
Karen Henehan, OTR, CHT

My adventure to this charming Baltic country started soon after I knew I was selected to go. Each year a therapist travels to a part of the world that has different resources, knowledge and supplies; so each trip is unique unto itself. I soon began the process of deciding what to bring in the way of supplies and educational material. My creative abilities were really challenged to discover materials which were easy to acquire and inexpensive—an HMO’s dream. Once I had everything organized: donated supplies shipped, lecture materials prepared and teaching spirit in hand, I was ready to go—destination Vilnius, Lithuania.

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A medical team from Shriner’s Hospital in Chicago go to Vilnius every year on a medical mission. 

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Hand Therapy Corner

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Initially, children were brought over to the US for surgeries, follow-up medical care and rehabilitation. This later developed into a group traveling to Lithuania to teach surgical and medical techniques as well as to bring much needed supplies. Norene Jamieson RN, organizes this trip, as well as one to Colombia, every year. Dr. John Lubicky, leader of this great team, asked if the second prize for the Vargas Award was 2 weeks in Vilnius in February. Humor aside, this group has been making this truly amazing and inspiring trip for the last 10 years.

I had the privilege of joining this group and an amazing hand surgeon, Dr. Terry Light, who started traveling to Vilnius in 1995. Dr. Light has mentored, both in the US and Lithuania, Dr. Darius Radzevicius who is a dynamic young hand surgeon from Vilnius. During his more recent visits to Lithuania, Dr. Light could see hand surgery techniques improving while hand rehabilitation was basically non-existent. He thought this venue would be excellent for the Vargas Award. The medical team for 2000 consisted of 2 surgeons, a hand surgery resident, 5 nurses, 2 translators and for the first time, a hand therapist.

On Saturday, Feb. 5th, I was greeted at the airport by Dr.’s Light and Radzevicius and was briefed on the weeks upcoming schedule. Shortly after we headed to the Children’s hospital and were greeted by their medical staff with a lovely luncheon and serenaded by a four string quartet from the Vilnius symphony orchestra. It was obvious from this initial meeting that these two groups had developed some good personal friendships along with great working relationships.

Sunday was a full day of clinics where Drs. Light, Radzevicius and Mike Forseth, the hand surgery resident, consulted with parents and evaluated the children. The weeks surgical candidates were selected here and some of the children who had been seen in previous years returned for check-ups. It was quite amazing to see the hallway so packed with families waiting for the clinic to start early on a Sunday morning.

On Monday, I began my tour of visits to different hospitals and clinics. My first stop was to the Emergency Hospital, a huge facility that is only partially completed, and has been for the last 20 years. The economic contrasts were apparent in the hospitals too, where the surgical suites were clean and had some sophisticated equipment and supplies, while the wards were sparsely furnished with paint peeling, and the electricity turned off in sections to save energy. I met with the physicians and nurses who are the current providers of rehabilitation at this facility, to discuss treatment techniques and review cases. Until recently the nurses had extra training in rehabilitation and performed the service of therapist. They have just started to develop educational programs for therapists and I believe the year 2000 was the first graduating class for OT, while the PT’s graduated their first class in 1998.

Tuesday was a full day of lectures on rehabilitation techniques for different hand injuries and diseases at the children’s hospital. There were about 100 attendees, mostly physicians and nurses, who came from all over the country. Dr. Light lectured on anatomy and biomechanics; and I on treatment techniques for various injuries and diseases. Together we reviewed four complex cases, several of whom had had successful surgeries but were suffering from severe contractures due to lack of therapy. Dr. Light, having traveled there for the last 5 years, knew that sometimes the projector worked and sometimes not; there may be patients for a case study—wait and see. He is quite an amazing person, with incredible knowledge and skills, and very able to go with the flow. What seemed a bit unorganized at first became a wonderful, open exchange of information, learning and sharing.

I visited the University Hospital Rehabilitation facility on Wednesday and was quite impressed with the size and scope of this facility. Newly renovated, there were 2 swimming pools, a large PT gym, OT rehabilitation rooms, recreational therapy, counseling rooms, and a large section devoted to passive electrical modalities. One could see the previous focus of passive therapy modalities, an influence of the former Soviet Union. The physician in charge of

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on several topics to the staff and students.

Thursday I went a bit out of town to a day treatment facility for children with cerebral palsy. This facility was well staffed and fairly well equipped, though they reported difficulty getting supplies due to lack of funds. I was able to give them a wonderful book called ‘Disabled Village Children’ which is a great resource for treatment techniques and making equipment out of “what’s available”.

We were able to do some sight seeing and provide some economic stimulation to the local economy on Friday. In the afternoon we were invited to a thank you meeting with the Minister of Health and the Director of the hospital. The weeks accomplishments were toasted to with a glass of champagne and we were each given a handmade ceramic piece and a formal thank you letter from the Minister of Health. In the evening we were invited to the Presidential Palace for a reception and a meeting with the current president (and previous Chicago resident), Mr. Valdas Adamakus. The palace was quite beautiful and the President very charming. We had an interesting discussion about therapy in the US and he was interested to know about the state of rehabilitation in Lithuania. I was taken by a comment he made in his thank you speech to us when he said he “looked forward to the day when Lithuania would be able to do the same for other countries in need.”

The world can be a better place when we step up to the responsibilities of being privileged and share with those in need. At the end of the week I felt I had gained more than I’d given, which I guess is how this wonderful exchange works. I look forward to a continued correspondence with the hand surgeon and rehabilitation specialists in Vilnius to assist them in their desire to further the profession of hand therapy.

Kim Buchstaber-Haberman, OTR/L, CHT

**Personal:** My husband and I have a son, a lovely daughter-in-law and a soon to be year old grandson! We moved to south central Missouri about four and a half years ago. Along the way, four dogs and two cats became members of our family. We live rural on a small farm and the land is primarily wooded. For relaxation, I enjoy indoor and outdoor gardening, and now I am learning to cook various cuisines.

**Education:** Graduated in December 1981. Received a Bachelor of Science in Occupational Therapy from the University of Kansas located in Lawrence, KS.

**Employer:** Currently, a new position closer to home has been secured. However, employment for the past 10 years has been in a private outpatient orthopedic clinic. Working for a Hand Fellowship trained, Board Certified Orthopedic Hand Surgeon has certainly been interesting. The practice encompassed trauma, elective surgeries and general orthopedics. The educational advantages of exposure to clinic x-rays, and viewing surgeries has been phenomenal.

**AAHS Involvement:** I have been a member since October 1985. This year I’ve been recruited to serve a three-year term on the Hand Therapy Committee for AAHS. This opportunity is exciting and I am looking forward to my new duties.

**Best Part of My Job:** The enjoyment of watching a difficult injury improve has become very meaningful. Sometimes in the acute phase of care, the client can become depressed over their injury. It is such a “joy” to watch the patient regain control over their life.

**Major Accomplishments:** Becoming a certified hand therapist! The recognition it brings to our professions has long been overdue. In addition, I started the first Missouri state newsletter for the Missouri ASHT chapter. Presently, I am the state Secretary and the Newsletter Editor. This is my second year serving these positions. I can only serve three terms. So, I will be venturing on to other endeavors.

**Clinical Specialties:** The injuries I most enjoy treating are finger fractures, tendon trauma, and various wrist disorders. I really love to create a splint that fits the patient’s need, and at the same time promotes function. Splinting has always brought out my creativity.

**Greatest Challenge:** Struggling to keep current with the ongoing changes affecting reimbursement and coding is certainly a challenge for anyone. Recently, I had the opportunity to code some of my own work. This gave me a greater appreciation for this area!

**Three Words That Describe Me:** Compassionate, dedicated, and perfectionist.
Dr. Lee: I would like to welcome everyone to a discussion on the timely topic of hand transplantation. I want to steer away from another debate on whether to perform hand transplants today. Rather, I would like to pose the following theme for tonight. Given that nine hand transplants have been performed in the world in the last 2.5 years, the genie is out of the bottle. Where are we now and what have been the lessons from hand transplantation?

Dr. Breidenbach: Let’s start with this. It is really important to understand that hand transplantation is a clinical experiment in progress. If the clinical experiments fail, then all of us need to be responsible enough to put the genie back in the bottle. We have two patients.

The first patient (MS) is now two years and three months out from the time of his transplant. He is back to work as a paramedic and is performing activities of daily living. His grip and pinch strength have continued to improve. He is now on 5 ng per ml of FK, which is about as low as you can get in kidney transplants or liver transplants. He is taking 2 gr of MMS. He is on 10 mg of prednisone. He has had no rejection episodes since six months after the transplant. He has protective sensation in his hand.

The other patient (JF) was transplanted in February of this year. He has had two to three rejection episodes since the time of the transplant, but unlike MS the first episodes was steroid responsive, but the last episode was not. His hand function is good.

Rejection is a serious problem for a hand transplant. We need to be very cautious and use a limited armamentarium in treating these patients. We have told all of our patients we are going to limit the amount of antibodies. In JF, if we cannot get control of the steroid-resistant rejection, then we would have to remove his hand. We have gotten control by giving a second dose of the polyclonal antibody, but we would not do that again unless it was a year or more down the line.

Dr. Lee: Dr. Breidenbach, could you give us an update on the function of those two hand transplants that you have performed?

Dr. Breidenbach: In each case the presentation was an erythematous petechial rash. However, in the second case we had several false negative biopsies. That presents a problem because you don’t want to give high dose steroids if you don’t really have rejection.

Dr. Lee: Can you tell us if those patients have had complications from their medications?

Dr. Breidenbach: Yes. This gets into some of the debate that is going on about what you mean by “complications.” If you take the standard line that we use, none of them have had major complications. There have been no organ failures, no lymphoma, and no cancers. MS developed a CMV infection at about six months, with colitis that needed to be treated with acyclovir for two to three months. He also had a tinea infection, which cleared up, and of course the rejection episodes.

There was a tinea infection in one of the first Chinese patients. There was transient hyperglycemia in the first French patient. This is a common complication with high dose steroids and it can be treated with insulin.

We also saw transient hyperglycemia in JF that we have had to treat with insulin. This is normally reversible. Also in the French
patient there was elevated creatinine levels for a number of months. When they reduced the FK levels the creatinine returned to normal. This is the kind of balancing act you need to do with these patients. You need to make a judgement as to whether you are pushing them in to organ failure or a diabetic state.

Dr. Lee: Did you have any difficulty tapering the immunosuppressants?

Dr. Breidenbach: Yes. When I say “trouble” there is a clinical skill involved in which good transplant surgeons begin to lower the immunosuppression and then the body responds by trying to reject the organ. You raise it back up again and then you slowly creep down. This is what happened with MS where the last two rejection episodes were related to attempts to try to reduce the immunosuppression. But this is standard procedure in transplant surgery. It is a six-month to year-long process of creeping these medications down as low as you can go without stimulating rejection.

Dr. Lee: Ms. Hodges, you were the first U.S. therapist to have worked with a hand transplant recipient. What was your experience?

Ms. Hodges: Exhilarating and exhausting. We did follow our replant splinting protocols, but since MS’s surgical procedure was so different from a routine replant, his daily therapy was very individualized. There were special challenges, such as tendon transfers and strong versus weak repairs to be considered. One of the most different aspects of caring for him was my responsibility of watching for signs of rejection and staying in very close contact with Dr. Breidenbach and our transplant surgeon.

Dr. Lee: You mentioned the replant protocol that you use. How did those two patients do in comparison to the average replant patient at the same amputation level?

Ms. Hodges: I think it is very hard to even try to compare them. Since MS had several tendon transfers, that made his rehab very different and affected his functional result. There were similar differences with JF possibly because of the tissue quality found at surgery secondary to the blast-type injury or length of time from injury to transplant.

Dr. Lee: It has been more than two years since MS’s transplant. Tell us about the sensibility in his hand now.

Ms. Hodges: On Semmes-Weinstein monofilament test, his sensation falls in the category of diminished protective. As far as functional sensation is concerned, he will tell you that he knows when something is in his hand. He would not be able to tell you whether it was plastic, wood, or glass, however. He can detect corners or edges, and can discriminate between rough and smooth textures.

Dr. Lee: What kind of tasks can he perform with the transplanted hand alone?

Ms. Hodges: His right hand is now his dominant for most activities. The left is used very automatically for bi-manual activities or for activities on his left side, such as turning the switches to the left of the steering wheel and giving or taking money with the left hand when at a drive-thru or toll booth. He carries objects in the left hand, opens doors, holds his washcloth in the shower and is now able to perform several tasks at work that he was unable to do with his prosthesis. He uses his very good lateral pinch for many prehension activities.

Dr. Lee: How much of his intrinsic muscles have become re-innervated?

Ms. Hodges: We see a little function in what is probably the flexor digiti minimi and/or ulnar lumbricals. Just today I was able to palpate a bit of abductor pollicis, the newest development. He has twelve and a half pounds of grip strength and 5 pounds of lateral pinch strength, which is improving.

Dr. Benhaim: Both for Ms. Hodges and Dr. Breidenbach, do you think at some point you will consider tenolysis to improve hand function or do you think that tenolysis is not particularly indicated at this point or at any point in the future?

Dr. Breidenbach: On MS it won’t be necessary.

Ms. Hodges: Not to mention that he is very happy with his situation and doesn’t want to pursue that right now.

Dr. Breidenbach: On a Carrall test he scores 52 (out of 0 to 99.) A prosthesis would score 25 or less. The best replantations get up to the 70 range. He has a hand which is pretty functional as an assist hand.

There is one more thing I would like to stress. It is extremely important to get these either replanted or transplanted hands into the proper splint; otherwise the outcome is going to be in an intrinsic minus position very, very rapidly.

Ms. Hodges: That is something that we have learned with our replant patients. We really focus not only on good wrist position for balance...
of the flexor and extensor muscles, but the MP’s are in a flexed position in a Crane extension outrigger. That does two things. One, it supports the extensor mechanism, the weaker group. It stays on the patient until those extensors have healed well enough to support themselves. Two, it puts the intrinsics in a position to avoid a claw deformity. We make sure the patient stays in that position until the intrinsics have either scarred down or become functional enough or tight enough to prevent clawing. We go from the Crane outrigger to an antclaw splint at the appropriate time in the healing process.

**Dr. Breidenbach:** We are aiming for and we assume that the intrinsics are going to scar. So we are religious about keeping that patient in either the outrigger followed by the antclaw for up to six months.

**Dr. Lee:** Dr. Breidenbach, do you think the lack of scarring could be related to his high dose of steroid?

**Dr. Breidenbach:** It could. I think the most impressive thing about the steroids is that immediately following the surgery it looks as though the hand is completely normal. There is no swelling.

**Dr. Lee:** Dr. Benhaim, you have performed many hind limb transplants in rats. Do you consider the early experience in hand transplants human experimentation? If so, how are the experiments going?

**Dr. Benhaim:** To some extent, I actually do consider them experiments. We have approximations of what humans will do, but we never have a full understanding until we actually try these procedures and the associated medications in human subjects.

I think, for example, we read a lot in the literature about some of the complications that experimental animals have had. The toxicity that you can observe in these animals is sometimes related to the medication themselves and sometimes it is a species-specific response to the medications. For example, we see myelosuppression with some medications and renal failure with others. When we get to the human, it is interesting to see, for example, a CMV colitis, which I don’t think has ever been documented in a rat, primate or pig model. The human hand transplants thus far give us a better understanding. I think, of the specific procedure, the specific antigenic load that the patient sees with regard to the composite tissue nature of the transplantation and the specific complications that are incurred in humans. In that respect, I think we are still learning. Of course, the procedural part of it is well worked out. This is not experimental, although I think Dr. Breidenbach points out importantly the differences between an acute replantation versus something that has happened many years before.

**Dr. Breidenbach:** In Louisville we consider this a clinical experiment which has gone through an IRB protocol. I want to make this really clear. We are not saying that hand transplant is a viable procedure at this point. We are doing the experiment to learn.

**Dr. Lee:** Dr. Van Beek, you have performed your share of replants. How do you assess the experience so far in human hand transplants?

**Dr. Van Beek:** I think that the Louisville group is one of the appropriate groups to study experimental hand transplants in this country but there are some really hard issues that everyone that hails hand transplants must consider. Likewise there are some significant consideration that everyone who criticize it has to judge. Following every hand replant that I have ever done, the patient would never allow me to take the hand back off even though the function was significantly compromised. From what I have heard the transplanted hand is a blind hand that has intrinsic paralysis, that it has mass flexion action and that the dexterity is low. It is a helper hand, not the dominant functional hand.

Hand replants are pretty much that also. So functionally the transplanted hand is mimicking the replanted hand. However, while similar there is this huge difference. We have to ask ourselves are the prolonged systemic risks that we take with transplantation to achieve this level of function warranted. Are the lifetime risks of immunosuppression, grafted versus-host reaction, superinfection, metasynchronous malignancies justified by the functional, well-being or psychological gains that the person gains? Will the transplanted hand be functionally a lot better than the same individual with a very functional bioprosthesis? I’m sure this conflict of factors is something that Dr. Breidenbach has had volleying around in his brain ever since he wrote the experimental protocol.

The question I would like to ask having said all of that is, Dr. Breidenbach, are you happy that you let the hand transplant genie out of the bottle or would you like to stuff it back in?

**Dr. Breidenbach:** Quite frankly I am ecstatic. I am surprised looking at the world experience that we have the success that we have. We have 100 percent one-year success in terms of graft survival now. Of those that have gone on past a year, there is something like 90 percent survival. One patient had his hand amputated because of absent function.

So I am happy where we are, but I am not at this point all willing to
say that this is a procedure which I would advocate outside of the strict scientific protocol. I agree with everything you just said about the description of the hand and the issues that are involved. Is the risk worth the reward? What will be the function? In terms of function, there is an issue of the way the patient looks at it and in the way the physician looks at it. Those may be two very different views.

**Dr. Van Beek:** Dr. Breidenbach, if you were to select the patient that you would most likely have benefit from a transplanted hand or a transplanted extremity, what patient would you select?

**Dr. Breidenbach:** The ideal patient would be a younger patient, preferably between the age of 25 and 40. I am being prejudicial assuming that is the age group where people are old enough to be able to make mature judgement, but young enough that they can handle the immunosuppression. A bilateral amputee at the distal radius, guillotine amputations where the surgeon who did it anticipated a transplant, tagged and tethered the tendons. This patient preferably would have used a prosthesis for at least six months or a year. Then he would understand what he could do with a prosthesis, and better evaluate the value of a hand transplant. His profession should be one requiring a low demand hand.

**Dr. Van Beek:** Dr. Breidenbach, in your protocol, tell me why you selected the wrist. For instance, let’s say you had a bilateral upper arm amputee where there are no elbow, wrist, and digits. The functional deficit is huge.

**Dr. Breidenbach:** I think there are two reasons. Number one, the functional results at the level of the wrist are going to be much better than above the elbow primarily because of neuroregeneration. Number two, I am not sure we fully understand what the bone marrow load will do in terms of chimeraism and graft-versus-host disease. I certainly didn’t want to get into that whole problem by starting with a big piece of the humerus and both bones of the forearm. So we started far distally and in all of the cases that have been done to date there has been no evidence that the donor bone marrow is surviving in the recipient.

**Dr. Van Beek:** But the functional significance of not having an elbow or wrist is greater than the functional deficit of not having a hand, wouldn’t you agree?

**Dr. Breidenbach:** I would agree, but the problem that I see is that the functional results drop off as you go up the arm. So you would anticipate that you are going to get a much worse result.

**Dr. Van Beek:** I think, for me, it is the more rational question because someone with bilateral arm losses is extremely incapacitated. In my experience with bilateral above the elbow replantation, if unsuccessful—

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2002 Application for Research Grants

The AAHS Research Grant Awards were established to further the purpose of the Association as stated in its Bylaws and to foster creativity and innovation in basic and/or clinical research in all areas pertinent to hand surgery.

Awards and Eligibility

Grants will be made for a one year period to up to three investigators. Grants are available to all AAHS members. One of the investigators must be an active or affiliate member of the association.

Grant Application

Applications may be obtained from:
American Association for Hand Surgery
20 N. Michigan Avenue, Suite 700
Chicago, Illinois 60602

Applications (an original plus seven copies) must be received by the committee chair no later than Thursday, November 1, 2001, in order for the judging to be completed in time and the recipients to be announced at the Annual Meeting.

The AAHS and the Research Committee are required by the IRS to document disbursement of grant funds. Award recipients will be required to sign a letter of acceptance and submit a progress report once each year. The AAHS must be acknowledged as the source of funding in any presentation or publication. A final report must be submitted at the completion of the study. It is expected that the results of the funded research be submitted for presentation at an Annual Meeting within two years of the receipt of the award.

Funds must be returned to the AAHS if the study is not undertaken within twelve months of the receipt of the award.

Failure to follow these guidelines will disqualify the recipient from any further grant opportunities and from presenting any papers at the AAHS Annual Meeting for a period of three years following such default.

Mail Grant Proposals to

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AROUND THE TABLE

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ly replanted, those patients often require personal attendants to help them more or less survive. Contrast that to replanting them successfully: Those individuals live independently using orthotic devices because they have elbows and, usually, wrist function. So from my perspective, the real question here is, isn’t the bigger need in limb transplantation for the bilateral above-elbow amputee?

Dr. Breidenbach: You know Dr. Van Beek, there is a very famous saying by Ralph Waldo Emerson: “A foolish consistency is the hobgoblin of a little mind.” After the way you have presented it, I am going to switch my position right here on paper. I think that is a very interesting idea. I never thought about it that way. An argument can be made that there is enough evidence, particularly from Gunther Hoffman’s work in Germany where he has been transplanting femurs that graft-versus-host disease is not a problem. And I think that at least I would like to consider it some more.

Dr. Lee: I would like to hear comments from Dr. Benhaim on whether the antigenic load affects the immunosuppression required? Do we know any correlation between the volume of antigenic marrow and the graft-versus-host response?

Dr. Benhaim: There is a connection. A very low level of chimerism may be one of the ways to establish tolerance, but a high level of chimerism, especially coming from the bone marrow, may serve as a definite impetus for development of graft-versus-host disease. I think that has been shown fairly conclusively in experimentation. Now, in a real world evaluation there has not been a major level of graft-versus-host disease either in the human subjects thus far or in the experimental models that have
been published. But I still think it is at the very least a theoretic concern.

Dr. Lee: I want to make a couple of observations. In our pig experiment the limb allograft could survive without any chimerism at all. In human experience, graft-versus-host disease has not been detected either in Dr. Breidenbach’s patients or in the German experiment with knee transplantation probably because the patients have been maintained on immunosuppression.

We have found in our animal experiments that a greater anti-genic load from different tissue components in a limb allograft actually led to decreased immune responses from the host. Thus we may not necessarily assume that a patient needs more immunosuppression from an arm transplant at the humerus level as opposed to a hand transplant at the distal radius level.

Dr. Van Beek: Dr. Breidenbach, I just wanted to challenge your thinking about who should be transplanted because I think the genie is out of the bottle. I think the success was predictable from everything that I knew, at least short term. We don’t have long-term data and I don’t think that we are going to know about how many rejection episodes or infections we have for another five or four years.

Dr. Breidenbach: May I ask Dr. Van Beek one question? He said something that is shocking to me and I just want to make sure I understood it. You thought it was predictable that we could use routine immunosuppression at a renal level and get composite tissue allograft survival?

Dr. Van Beek: Sure. I think there is ample animal data that would indicate that you could suppress successfully at least initially. What we didn’t know, of course, are the nerves going to regenerate in the face of steroids being anti-inflammatory and antimetabolite immunosuppressant agents.

Dr. Breidenbach: In 1998 when we presented it in Vancouver at the International Federation for Surgery of the Hand meeting there was considerable concern that the patients would die within the first year and that the hand would not function at all. So I think to me the biggest surprise has been the level of success. The level of function that we have obtained is about that in a replantation with the same types of injury. That wasn’t a surprise. What was a surprise to me was the ease that we could get composite tissue to survive and how successfully in terms of length of time. What is very important to understand is that when you get a transplant out past a year, when the immunosuppression levels are low, and the rejections episodes have stopped, then it is likely you have broken free from the line of scrimmage and are running towards the goal. We are now waiting just to see whether we develop chronic rejection, which most likely will happen.

Dr. Lee: Dr. Breidenbach, it had been over two years since the first transplant when you performed the second transplant. With the experience that you gained, did you do anything different for the second patient?

Dr. Breidenbach: Not initially but we have as of this point this evening. Let me explain what I think we have learned and then let me be specific about what was done differently with the second transplant.

First, we told our patients there would be a 50 percent probability they would lose the hand transplant in the first year. The world experience is now about 100 percent allograft survival. But that is in a very limited number of patients. We need to keep that in mind. The 50 percent was based on the pig model where there is lots of debate as to what survival represents. Fundamentally, what we said is in the pigs there was often a low level of rejection, but we didn’t treat it. We extrapolated from that to the human model saying if the pigs behaved roughly the same as humans, that we could get pretty easily a 50 percent survival. Second, with our patients, we didn’t see any major complications. Third, we could use drugs to prevent rejection and what was even a little surprising to us was the fact that it was easy to control the rejection episodes; they were steroid responsive. And we felt that the preclinical pig studies, which we did, were very, very helpful to us in making decisions to proceed with the human hand transplant.

Dr. Lee: And you did something different for the second transplant.

Dr. Breidenbach: We have had to give steroids because of the rejection episodes, the rejections became steroid resistant, then his glucose went up, he became a transient diabetic, and he is still getting insulin. In order to combat that we put him on Rapamycin. Rapamycin has never been used in large animal models with composite tissue transplantation. So we warned the patient that, theoretically, it might not control rejection. We just did this within the last week and so far it is controlling rejection. The advantage of Rapamycin is that it is not as toxic to the islet cells and, therefore, it is a better drug to use if you are worried about leaving someone a permanent diabetic. This is exciting because I wonder if we should in the future substitute Rapamycin for FK as standard protocol.

Dr. Lee: Ms. Hodges: the first human hand transplant recipient in the world had his hand allograft continued on page 18
amputated a couple of months ago because of lack of function and also graft rejection. Now we all know as hand surgeons and therapists the importance of patient motivation in determining outcome. Is that any different in transplantation, in your experience, from replant patients?

Ms. Hodges: I do see a difference in the transplant patients because they are choosing this procedure and are going to be highly motivated people to start with. A replant patient has had an accident, not of his choosing obviously, and may have reasons to not be highly motivated. Compliance is a definite issue. The more highly motivated the better candidate the patient is going to be and, hopefully, the better the result we will get.

Dr. Lee: Dr. Benhaim, we have talked about whether the clinical experience could have been predicted from scientific data. What is your view on that? Turning the question the other way around, how do you think the human experience so far has contributed to our understanding of composite tissue transplant?

Dr. Benhaim: I do believe that the experimental protocols and animal models that have been published to date have laid the groundwork for the human transplantations that have occurred thus far. Clearly, I think there was a major improvement in the survivability of composite tissue transplants in animal models with the introduction of cyclosporine A over 20 years ago. The next generation of medications, including mycophenolic acid and FK-506, significantly improved the outcome in the animal studies to the point where there was long-term survival in multiple models and I think for the first time created some sense of hope that there was the possibility for human transplantation.

There are problems if you look at the literature in a very critical way as to whether there is enough data in the animal literature to suggest that we have figured this whole process out based solely on animals before proceeding with humans. For example, I think that the pig model that was published in 1998 by the Louisville group was an important model, but it still stands to this day as the only porcine model that has been published specifically looking at the success of immunosuppression in preventing rejection of limb allografts. Your group in Boston, Dr. Lee, has done a lot of work with the MGH miniature swine model in terms of MHC matching. That has been important work, but in terms of a pure highly mismatched allograft model, there really is only one pig study that has been published to this point with success. We, as a scientific community, can be criticized for still not having perhaps done enough of the basic work to proceed to humans.

Dr. Lee: As a scientific researcher, what was the most significant thing that you learned from the human experience?

Dr. Benhaim: I, to some extent, am also surprised that there hasn’t been a more serious rejection episode, this based on my experience with the animal models. Many of the animal models are highly successful without any rejection events early on. However, as you take the animals out to beyond six-nine months with even potent immunosuppressants like cyclosporine A, there is an insidious onset of chronic rejection or even a late-onset version of subacute rejection that tends to detract from the overall success of the whole model.

So I was very skeptical that we would get to the two-year point without a more serious rejection episode than we have observed.
And if that trust is misplaced, then the surgeon will subsequently suffer and so will the patient.

**Dr. Lee:** We as surgeons and medical practitioners are used to giving patients advice and recommendation. How much should a surgeon’s own judgement or opinion about a procedure enter into the recommendation or informed consent for the patient?

**Dr. Van Beek:** I think that informed consent documents today are more or less legal documents to protect the surgeon if something untoward happened. Patients trust their surgeon to do the best he can and to help them with their problem without exposing them to excessive risk. When trouble occurs the informed consent document becomes a protection document. It would be very difficult to inform a patient of all of the substantial things that could happen on a long-term immunosuppression basis and to have the patient truly comprehend. Experimental informed consent has to be reviewed by investigational review boards; it has to be passed on by unbiased observers.

**Dr. Breidenbach:** I don’t think informed consent was ever meant to mean that the patient gained a level of knowledge, understanding and feeling equivalent to that of the doctor. It had much more to do with that the doctor tried to lay out to the patient as much as was conceivably possible to let the patient know what the treatment was going to be. No hidden agendas, no experiments the patient didn’t know about. So I think if you take informed consent within that context, it is possible to get informed consent. Now it has also taken on legal connotations. In Louisville we tried to embrace the historical and legal concepts with our transplant patients.

**Dr. Lee:** Dr. Breidenbach, a paper from your group recently published in the Journal of Hand Surgery made the point that the patient often has a very different frame of reference from that of the surgeon. Specifically for hand transplant, the patient looks to restore body image and functional gain. Getting back to the surgeon’s own judgement, however, would you ever perform a procedure requested by a patient that you wouldn’t recommend for your family member or yourself?

**Dr. Breidenbach:** Everything else being equal, no. Let me comment on that paper briefly. We in Louisville knew there would be a strong reaction to hand transplant, but we thought we could slowly

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work our way through it. We started working with some cognitive psychologists and epidemiologists. It was totally clear to them that there are many studies showing that doctors view the same situation differently than patients. In one study, they took medical students in one center and asked them to play doctor. They gave them a risky scenario and asked them if they would recommend this risky procedure to a patient. Then they asked the same medical students to play patient. When the medical students were playing doctor, their willingness to advise a risky operation was much less than when the same person was playing patient. And there are a number of studies in cognitive psychology that show that physicians and patients look at the situation differently. Both are rational, both are valid, but both arrive at different views because of different frames of references.

**Dr. Lee:** I would like to ask each panelist to name the one thing that surprised her or him the most from the last two-and-a-half years.

**Ms. Hodges:** I wondered about the tissue’s rate of healing, whether the steroid would change that. And I didn’t see that happen. The initial absence of swelling and the fluctuation of some swelling that seemed to follow along with rejection episodes were interesting as well.

**Dr. Lee:** Dr. Benhaim, anything surprised you?

**Dr. Benhaim:** I will just reiterate my point that my biggest surprise has been the fact that there has not been a more serious rejection episode, specifically with the first patient. Now perhaps I have to eat my words here with the second patient because of the two rejection episodes that have occurred that are now steroid resistant.

**Dr. Lee:** Dr. Van Beek, I know you had strongly held opinions two-and-a-half years ago when hand transplants just began. Have you changed your mind on anything?

**Dr. Van Beek:** No. First, I didn’t expect them to pick the model that they picked. I believe that they picked the model that they did because it is more scientific, but they are also more liable to be criticized. Critics have to understand this is an experiment to see whether they should move forward or backward. We need to understand the effect of ongoing slow, chronic, occult attempts, multiple times of rejection. The whole subchronic rejection phenomena could be going on. They couldn’t rely on the skin biopsies to detect it, so what can we surmise—is it occurring or isn’t it? We don’t really know that, but we will know in five to ten years.

The second surprise for me is that the rejection phenomenon has been as tough to detect as I presume. I have said it at the beginning and I will say it at the end, I am glad it is at the Louisville center where this is being done so that it will come under a high degree of scrutiny, analysis and study.

Because of this experimental study, maybe we will know whether the
The Outcomes Movement Revisited

Those of us interested in medical outcomes, performance analysis, and decision-making have spent hours and hours and hours in committee meetings trying to design strategies that yield answers. Fundamentally, however, the process has a flaw. Traditional clinical research, retrospective or prospective, focuses data collection around a question. As such, detailed data and data relationships can be extracted from past records or determined as they unfold. The outcomes movement idealistically has attempted to measure performance both generally and specifically with much less focus and with a much more limited data collection strategy. Herein lies the difficulty.

Efforts like the SF-36 spurred on the outcomes movement with the philosophy that a relatively painless patient questionnaire could accurately determine how patients fared after particular treatments. But…there were limits. So the Orthopedic surgeons created MODEMS, as series of ‘instruments’ (questionnaires) that were more restricted: pediatrics, back, and the like. Plastic surgeons followed suit creating a core instrument and specific disease state sub-instruments that could be added. Even the AMA was swept forward spending $11M of a $25M budget on their AMAP program that sought to credential all American physicians with performance as one of a multitude of criteria. The project was terminated.

Where are we now? When it is all said and done, ‘functional surveys’ or ‘instruments’ have, indeed, opened everyone’s eyes to just how much useful information can be gleaned from talking to our patients! What a revelation! However, these data sit lifelessly if not combined with co-morbid variables, concurrent medications, detailed technical information, synchronous and asynchronous medical problems, and time-relationship parameters reflecting the patient’s age and medical problem events. By the time ALL of this information is reproduced, the researcher is exhausted, and the entire medical chart has been duplicated! In short, surveys supplement, rather than replace ‘hard core’ clinical medical research.

If we are to make progress, medical information must be electronic and relational. With respect to the object model ‘wonks’ of the world, medical outcomes data interpretation depends on relationships and time-dependencies—the nature of which is tailor-made for existing technology. With the terabyte barrier well managed, the time has come to organize medical data. Watch for XML, HL-7, and high-speed wireless Internet to dominate.

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procedure, what would you tell him?

**Ms. Hodges:** I would tell him that he would have a very intensive first three months and that the intensity would probably slope off just a little bit after that. He should be prepared for another three to six months of fairly aggressive therapy, with the frequency of formal therapy being less and with more reliance on the home program. I think that daily activity will be his therapy after a certain point, which would certainly be much longer term for the transplant and replant patients.

**Dr. Lee:** Dr. Van Beek, I will turn to you next. Dr. Wyndell Merritt told me about his response to patients approaching him for a hand transplant: “Do you want to have AIDS in order to get a new hand?” Is it justified to put patients on chronic immunosuppression, which some would argue is equivalent to having AIDS?

**Dr. Van Beek:** I don’t believe there will ever be justification for chronic immunosuppression for someone to have a hand transplant when the individual has one good hand and an ipsilateral good elbow. I predict we are going to find out that the effects of long-term chronic immunosuppression toxicity are going to eliminate justification for the procedure. Now, is it justifiable experimentally so we can solve some problems? Yes, I believe it is. However, having said that, I believe that if you take someone who has neither arm because he has been traumatically amputated above the elbow, maybe as a young adult, and convert him to an individual who can live independently, there may be justification for chronic immunosuppression for bilateral upper arm transplants. Likewise, a wide spread application of this experiment throughout the world for an individual missing a single hand who has a very functional hand on the contralateral side at this time does not justify chronic immunosuppression to provide a new transplanted but functionally compromised hand. Would I recommend a hand transplant to someone in my practice? No! I would say at this time you are better off with a prosthesis.

**Dr. Breidenbach:** I want to make it really clear for any readers that a patient with AIDS is different than a patient that is HIV positive and very different from a patient who is on immunosuppression. The rate of Kaposi’s sarcoma and a lot of the other complications are very different in those conditions.

**Dr. Lee:** Dr. Breidenbach, you mentioned at the beginning of our discussion that you want to have a limited armamentarium of immunosuppressants for these patients. Why did you say that?

**Dr. Breidenbach:** Personally, I believe that the complications from immunosuppression do justify proceeding with a single hand. But there are many people who don’t and one of the best examples of that that I received was from a transplant surgeon. He told me, “You are wrong, but technology will save you.” And what he was saying by that is by pushing the envelope we are going to start forcing people into this experimental field, both in the animal model and in the clinical model. I believe what we will glean from these experiments is information that will allow us to modify drugs appropriately and to head into the area of tolerance. I think there is going to be a confluence of two fields, those coming from the far tolerance side, those coming from the straight immunosuppression side.

**Dr. Lee:** Speaking of transplant tolerance, Dr. Benhaim, anything on the horizon for the composite tissue allograft?

**Dr. Benhaim:** Yes. I think this actually represents the most exciting area, much more so than specific immunosuppressive medications. At the risk of perhaps going into too much detail, I will limit my comments to just some generalities. We all have some sense of what tolerance is and we now recognize that some of the conventional models for inducing tolerance really won’t work in a human subject. For example, total body irradiation with an allogeneic bone marrow transplantation has been described to induce chimerism, but such an approach presents some major obstacles. For example, lack of matched donors, graft-versus-host disease, failure of engraftment, or just the morbidity of the total body radiation itself.

There is some exciting work now with various manipulations to try to temporarily trick the immune system into a state of naivete in terms of the recognition of self-antigens. One can now create a window of opportunity during which all of the mature T lymphocytes in the body are eliminated. During that window of opportunity, a new antigen (for example, the transplant alloantigen) can be introduced. The self-antigens and the donor alloantigens can then be recognized by the body as self as opposed to different during the time when the immature T lymphocytes pass through the thymus and get reeducated. There are now animal models that show that kidney transplants and kidney/pancreas transplants can have greater than one year or even two year survival with single induction therapy and perhaps every month therapy just as a touch-up.

There has also been some interesting work with the CD40 ligand and the anti-CD3 immunotoxin. Both of these areas of research will potentially bring us to the point to continued on back page
A New Investment Policy is Formalized

Richard A. Berger, MD, PhD  
Treasurer
N. Bradly Meland, MD  
Treasurer-Elect

For the year ending December 31, 2000, the American Association for Hand Surgery had total assets of $918,700, an increase of 26% over the same period last year. The association’s assets included $597,137 in cash and cash equivalents, $268,533 in investments and $53,030 in prepaid expenses. Total liabilities and equity included total deferred revenue of $364,784 and unrestricted reserves of $524,097. (Table 1)

While the Association posted a modest profit for the year, revenue was down approximately 5% compared to 1999. The shortfall can be attributed to the negative effects the stock market had on our long term investments. The Association continues to rely on membership dues and annual meeting receipts as its primary sources of funding. (Table 2)

The Finance Committee and Board of Directors spent a considerable amount of time this past year formalizing an investment policy. The new policy as adopted by the Board of Directors established guidelines for the management of the Association’s reserve fund as well as an overall performance philosophy for the fund. With the new policy in place, Finance Committee Chair, Ronald Palmer, MD, and the

TREASURER’S REPORT

Table 1

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The composition of the Board of Directors was modified in January to include the position of Treasurer-Elect. During the year of transition, the Treasurer-Elect participates in monthly tele-conferences with the Treasurer and Executive Director. The meetings are used as a forum for reviewing monthly financial statements and discussing other financial matters. While the process is still new, we have already seen positive benefits.

We are looking forward to a prosperous year and thank the AAHS leadership for their support.
where we can perform these transplants and many other types of composite tissue transplants with the safe toxicity profile that Dr. Van Beek is looking for and that we all desire, not just in this field, but in the entire field of transplantation. I believe that immune system modulation and tolerance induction represents the next great advance, with potential benefit that far exceeds the advance that the next great drug will produce.

Dr. Lee: Dr. Van Beek, would you embrace hand transplant if immunosuppression can be significantly reduced?

Dr. Van Beek: For me not until we can say okay, the effects of immunosuppression are that we are not going to have synchronous cancers develop that are occult and unknown, that we are not going to affect other organs and cause anything from hepatic, pulmonary or renal failure long term. I also would be interested in hearing whether we are going to have the ability to knock out the antigenic genes and replace them in the future, or is that too far thinking?

Dr. Breidenbach: Well, I think tolerance is one of the hottest topics for many labs. I don’t think they are going to approach it through knocking out necessarily the MHC complex, but they are using all the strategies which Dr. Benhaim has described. I think what will take place is that we are going to get a tolerogenic regime which will be less than complete and needs some immunosuppression. I think it is going to take the knowledge that we are learning from these experiments to push forward.

Dr. Lee: Ms. Hodges, any closing thoughts?

Ms. Hodges: Just one. We touched only briefly on the psychological issues in this discussion. I feel strongly that the importance of the hand is much more than just its basic function. I’m proud that other therapists share my appreciation that a successful hand transplant is much, much more than basic hand function and the ability to control rejection. There is a huge psychological component that is so very important to our patients.

Dr. Lee: On that gracious note we will end our discussion. I would like to thank everyone for the thoughtful comments. The lessons of hand transplantation will go on.

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