BURN PATIENTS: COMING OF AGE?
The 1993 Presidential Address to the American Burn Association

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It is with great pride and humility that I address you today. Pride because I feel a great sense of honor in being elected to the presidency of an organization with which I have been associated for over 20 years and whose membership I not only hold in high esteem, but also consider many of you to be my closest friends. I feel a great sense of humility because I realize that any recognition that I have been afforded is primarily the result of my association with many outstanding individuals with whom I have had the great pleasure to work and whose efforts have contributed so much to my own success. I want to give thanks publicly to the many people who have helped me during my career, including my mentors, Colonel Basil Pruitt and Dick Mason, and the staffs of the three burn centers with which I have been associated, the Institute of Surgical Research in San Antonio, the Intermountain Burn Center at Salt Lake City, and the Shriners Burn Institute and the Burn Special Care Unit in Cincinnati, and most important, give thanks to my family and my parents, who have been my constant support. Finally, I wish to thank my wife, Norie, who for the past 23 years has been my mother to my children, my ultimate supporter and companion. She has been my eyes when I forgot to see. She has been my ears when I forgot to hear. She has been my heart when I forgot to love. Happiness truly means being married to your best friend.

During the past year I pondered on what to say for this Twenty-fifth Presidential Address. I thought of reviewing the history of the American Burn Association and its leadership during the past 25 years; however, David Heimbach did such a review for the Twentieth Annual Meeting. I would emphasize as we celebrate the twenty-fifth year of the American Burn Association that we do progress by learning from our mentors and those who have traveled the same path at an earlier time.

I thought of reviewing the many advances in burn management during the past 25 years. For many years Dr. Mason and Dr. Pruitt have eloquently presented the determinants of survival and care in three-dimensional graphs such as this one relating pneumonia and inhalation injury to survival; thus I reviewed all the determinants of care and asked a biostatistician to analyze the data with discriminant analysis and came up with a formula that would quantify the medical advances. But alas, the formula made no sense for obvious reasons. I then placed the formula onto a multidimensional graph (Figure 1). But once again, it proved that not only am I computer illiterate but also that true outcome from burn trauma cannot be measured by a formula.
I thought of being morbidly serious and speaking of the problems currently facing burn centers and medicine in general, including staffing, unfunded patients, DRGs, and Medicare/Medicaid funding, to name just a few; however, we live with these problems daily and don’t need to be reminded of them in this twenty-fifth year celebration.

As we have just completed the replacement facilities at the Cincinnati and the Galveston Shriners Burns Institutes and are beginning the replacement of the Boston unit, I thought of reviewing the history and accomplishments of the Shriners Units. However, Dr. Bruce MacMillan presented the history of Shriners Hospitals’ commitment to pediatric burns in his presidential address in 1974. Indeed, the contributions in the management of pediatric burns by these specialized burn hospitals is outstanding, and on behalf of the chiefs of staff of the units we invite you all to visit these fine facilities that will be the state of art in burn care facilities for many years to come.

In desperation, I looked for help from religion and friends and was told everyone falls asleep during presidential addresses, so at least keep it “short and sweet,” and for goodness’ sake, don’t mumble.

Finally, I looked to the past presidents for guidance and reviewed the previous 24 presidential speeches for some insight. Although the presentations have varied from thought-provoking economic and social issues to reviews of lifelong research, there was a recurring theme that has come from these presidential addresses, namely, maturation or coming of age.

COMING OF AGE: THE FIRST 25 YEARS

A Respected Medical Specialty. How have we “come of age” during the past 25 years? First of all, we have “come of age” as a respected medical specialty. In the past we were an isolated and silent specialty. I have for many years started the basic burn lecture with the slide, “Burns, the Silent Epidemic.” Although responsible for three times as many injuries and deaths as were sustained in the Vietnam conflict during the same time period and the second leading cause of death in the pediatric age group of 1 to 4 years, we have had difficulty being accepted and understood. Haven’t we all heard the statement, “My aunt had a 100% third-degree burn when she was a child. She put vitamin E on it and it healed without a scar.” Although the treatment of burns still has much voodoo associated with it, we have progressed tremendously during the past 25 years and now are an accepted medical specialty with geographical, designated patient care areas and burn team members who have committed their careers to the care of burned patients.

Burn Team. Second, the burn team has “come of age.” President Carter Nance at the 1983 Annual Meeting presented the pros and cons of making the...
associated members full members of this Association. The discussion at the Business Meeting that year was lively, to say the least. I daresay there were many burn directors who did not vote either for or against the proposal, not daring to vote against it because they would have to face the burn team back home. Although we burn surgeons may be the directors of the units, we know who really runs the units, and most of the time we are not the ones—we just do what the rest of the burn team tells us to do. The entire burn team came of age with the realization that just as full membership in the American Burn Association is required to meet the goals of the Association, the successful outcome of a burn patient depends upon the entire burn team, and with the loss or failure of any of the burn team members,
whether physicians, nurses, rehabilitation personnel, social workers, nutritionists, or respiratory therapists, the outcome is less than optimal.

The Twenty-first Presidential Address in 1988 by Dr. Gil Ward reflected that burn surgeons had come of age although still only 21 years old. Knowing personally most of the burn surgeons in the United States for the past 22 years, I am still not convinced that burn surgeons ever mature, and that is probably the secret to our success—staying young and energetic, always looking toward the future. Besides, we are only 25 years of age at the present time, and I'm not too sure that all 25-year-olds are mature.

American Burn Association. Finally, the American Burn Association has also come of age during the past 25 years. Founded in 1968 as the first multidisciplinary professional society, we have progressed from an educational forum to a multidisciplinary society that represents the entire burn team and burn centers in areas of political and economic issues, including a burn registry, burn unit verification, and physician and burn unit reimbursement. We have a specialty journal developed under the persistence and leadership of Dr. Charles Baxter. The journal represents the entire burn team with educational forums in all areas to share new knowledge in the treatment of our patients.

Yes, during the past 25 years we have come of age as an accepted medical specialty, as a multidisciplinary clinical care team, and as a multidisciplinary medical association.

BURN PATIENTS: COMING OF AGE?

But what about the most important team members—the burn patients? Have they “come of age”? As a way of answering this question, I will use quality assurance terminology, even though I know that usually the mention of the term “QA” immediately brings out basic animalistic emotions, namely, anger and frustration. As most of you know, we have changed from quality assurance to quality improvement and now to total quality management. Total quality management, or TQM, was originally developed for industry, relating to production and products or customer service. I use the patients as our “product” or “customers” only for illustrative purposes and would emphasize strongly that our patients are much more than a product. I hope we will never reach the point in medicine that the burn patient is only a client or a product. In our first 25 years our QA monitors were initial burn shock resuscitation, treatment and prevention of infection, inhalation injury, metabolism and nutrition, wound coverage, and somewhat in psychosocial alterations and pain control. The success or quality improvement of our “product” has been measured in decreased mortality and morbidity and decreased length of hospitalization.

Are decreased mortality and decreased length of stay really the measure of productivity of our specialty? I think not. The real product or measurement of customer service is a patient who can successfully return to society and even more important can be a useful productive member of society and can successfully interact socially.

In terms of decreased mortality and decreased length of stay, we have been successful and the results have been truly outstanding and amazing. When I was drafted into the Army in 1971, survival statistics at the Institute of Surgical Research in San Antonio demonstrated an LD-50 of approximately 40%; thus 50% of the patients with burns of only 40% died. Now the LD-50 approaches 80%, and if no inhalation injury is involved, patients with burn injuries greater than 80% to 90% of their total body surface area regularly survive. Dr. Herndon's survival statistics in massively burned pediatric patients are truly impressive. In almost every burn unit in the United States, the length of stay has decreased from nearly 3 days per percent burn to less than 1 day per percent burn. The success can be stated simply: patients with larger and more severe burns are surviving. However, are these patients returning to society to become productive citizens? What is the real outcome of the massively burned patient? Do pediatric burn patients become functional adults? How do they function socially in later life? What is the long-term effect on the patients, families, and society? I would ask you, “Are survival and decreased length of stay really the measure of productivity of our specialty?” I think not.

Our real product or measurement of customer service is a patient who can successfully return to society and, even more important, be a useful, productive individual who can successfully interact socially in the community.

Yes, patients with larger and more severe burns are surviving, but this has created new problems for our patients' quality of life. Although the problems are magnified in the massively burned patient, they exist even in smaller burns. These problems are best demonstrated in this pediatric burn treated at the Galveston Shriners Unit, with 95% total body surface area burn (Figure 2). Cultured keratinocytes were utilized to achieve wound coverage. The child survived; however, if we examine this patient's current and future reconstructive needs, they total 33
potential reconstructive procedures. Thus the reconstructive problems are monumental in a child with very few donor sites. The problems are again exemplified in this child with an 87% total body surface area burn, treated at our institution in December of 1991 (not illustrated). The depth of injury is obviously severe, with nonviable fingers demonstrated at admission on postburn day 3 and on postburn day 13. She also had severe head burns with exposed calvarium. Utilizing fresh allograft as a temporary dressing, she survived and is currently in school. Both of these patients have significant hearing loss and loss of all digits on both hands. In regard to survival, results such as these two are impressive. However, we must ask the question, “Has the medical expertise in terms of survival progressed past the ability to reconstruct and rehabilitate the patients?” Unfortunately, the answer is clearly, “Yes.” Are we returning our patients to a society that is not ready financially, psychologically, or socially to accept them? Again, unfortunately, the answer is clearly, “Yes.”

**COMING OF AGE: THE NEXT 25 YEARS**

What are the problems preventing our patients from “coming of age?” Remarkably, the problems facing our patients following survival of a burn are the same problems the burn team should be addressing during the next 25 years, namely, burn prevention, wound coverage and scarring, rehabilitation, and social acceptability.

**Burn Prevention.** The problem of burn prevention is not a patient problem, for obviously if we were perfect at burn prevention, there would be no burn patients. The problem of burn prevention is basically quite simple. We do not have sufficient time to devote to the problem and, realistically, being involved with burn prevention will not advance our academic careers. This is a problem in all of medicine. We are willing to spend millions of dollars on neonatal intensive care units but have not been willing or able to initiate adequate prenatal care for the entire population. Yes, there are burn team members who have devoted their entire careers to burn prevention, such as Mathew Maley and Liz McLoughlin, but basically the research in burn prevention is short-term, the efforts in the communities are usually intermittent, and we really don’t know whether our efforts have decreased the incidence of burns. We, the members of the American Burn Association, cannot solve the problem; we are too small. The solution lies within our educational system and, in my opinion, the efforts of the firefighters. Safety and prevention of medical diseases should be in the curriculum of all schools. The members of the American Burn
Association can and should be the catalyst for these programs. Hopefully, our closer association with the firefighters during the past few years will prove to be beneficial in these endeavors.

**Wound Coverage and Scarring.** The problem of wound coverage and scarring is paramount. We have made many advances in wound coverage during the past 25 years. We have learned the importance of early wound coverage through the use of excisional techniques. In the early 1970s the benefit of excision and grafting of deep dermal burns was demonstrated and may be one of the most important advances, if not the most important, in burns during the past 25 years. The early return to work of the patient with deep dermal burns to the dorsum of the hands has had a real impact on society. However, there are still areas that need improvement, including cosmetic coverage, scarring, pigmentation, and itching.

Cosmetic wound coverage is the ultimate goal of burn management. The problems facing the burn team and the burn patient in regard to cosmetic wound coverage are the widespread use of meshed skin grafts even in small burns, the unacceptable cosmetic and functional results obtained utilizing cultured keratinocytes, and the hypertrophic scarring and contracture formation associated with burn trauma.

The problem of the widespread use of meshed skin grafts in acute wound coverage is one of education and the inability to change. We surgeons, I'm afraid, tend to continue to do things the way we were trained to do them. Maybe we just get old quickly and get set in our ways. We can improve cosmetic appearance with the use of sheet skin grafts, utilizing full-thickness skin grafts when possible. We can minimize the scarring associated with donor sites by utilizing the scalp and back as the first choice for donor sites. If these are true statements, then why do we persist in utilizing meshed skin grafts on small burns? In 1992 at the Shriners Cincinnati Unit, 71.8% of the acute autograft procedures utilized sheet grafts. In addition, 8.2% of the procedures used full-thickness sheet grafts. Meshed skin grafts were utilized exclusively in only 28.2% of the acute procedures. The time in pressure garments where sheet skin grafts are utilized is decreased by 6 months, and the cosmetic appearance is markedly improved. I would implore you all to think each time you are planning burn wound closure to ask yourself, "What is the technique that will give the best cosmetic and functional result?" This may not be the technique that gives the fastest closure or the shortest hospital stay. I would also implore all the burn team members to examine their treatment protocols yearly. If the protocols are not changing, then we are not advancing and have become stagnant in our care.

I would like to emphasize the problems associated with cultured keratinocytes. The excision and skin grafting of deep dermal burns has truly been a marked advance in cosmetic wound coverage. As we all know, deep dermal or deep partial-thickness burns heal from epithelium growing from the skin appendages—the hair follicles, sweat, and sebaceous glands. These injuries take longer than 2 to 3 weeks to heal, and they heal with unstable epithelium, marked hypertrophic scarring, and severe contracture formation. Cultured keratinocytes heal full-thickness wounds in the same manner and thus are converting a full-thickness injury to a deep dermal burn. These problems are demonstrated in this patient transferred to our institution with only a 58% total body surface area burn. He is at the time of these photographs 1014 days postburn (Figure 3). We are slowly replacing the areas grafted with cultured keratinocytes with split-thickness autografts. Although there are benefits with the use of cultured keratinocytes in the patient with massive burns—those greater than 80% to 85% total body surface area—we must remember that this wound coverage modality is still experimental and should be reserved for the massively thermally injured patient. During the past few years, various investigators are beginning to evaluate skin substitutes utilizing dermal replacement with either very thin autografts or cultured keratinocytes. The goal for the next 25 years will be to develop wound coverage techniques that are similar to full-thickness skin grafts, not split-thickness, and thus can be used for reconstructive procedures.

Although we try to control scarring with pressure dressings, silicone inserts, and early wound coverage using sheet grafts when possible, we still know little about wound healing and the whole process of inflammation and maturation of scar tissue. Only recently have we begun to investigate wound healing. Our knowledge of the wound healing process is in its infant stage. Various cytokines, currently named wound healing factors, have only recently been discovered. It will be through the knowledge of inflammation and wound healing that we will be able to modulate the scarring process. Skin pigmentation alterations after thermal injury remain another important problem area for the burn patients. With the use of sheet skin grafts, frequently the long-term problem is poor color match, as demonstrated in this patient who was burned in 1975 and now, 10 years later, demonstrates severe hyperpigmentation (not illustrated). We know from histological studies that melanocytes increase remarkably in skin grafts imme-
diately following grafting. Why does this occur and what can we do to decrease the hyperpigmentation? We simply do not know. Bleaching agents such as the commercially available 4% hydroquinone are of little value. In 1968 we demonstrated that a 10% concentration of hydroquinone showed promise, as in this patient with hyperpigmentation of a sheet graft of the neck and 9 months later, and in this child with decreased pigmentation after 6 months of use (not illustrated). However, the company has no interest in making the 10% preparation a commercial product—the burn business is just too small.

Although I probably would not receive the Nobel prize for medicine if I could control itching, I would surely become rich and would help our patients tremendously. During the first 6 months after their discharge, itching is an enormous problem. We have not advanced at all during the past 25 years in this area. We still use Benadryl or Atarax with a variety of moisturizing creams that vary from patient to patient in their effectiveness. Remarkably, very little research is being done to understand and control this severe problem.

Rehabilitation. The third major area of concern is rehabilitation. The American Burn Association, as you are all well aware, has made rehabilitation a major emphasis. We have created a standing Committee on Rehabilitation, and it has grown in importance under the direction of Roger E. Salisbury, your twenty-fourth President. Dr. Salisbury emphasized the problems of rehabilitation in his 1992 Presidential Address. He reminded us that rehabilitation of the burn patient is a large, glaring area where quality work remains to be done. The National Institute for Disability and Rehabilitation Research, the NIDRR, hopefully will be making available research grants to study this problem. However, we must do more than just study the problems of rehabilitation. We must do something about it. An interesting program is being conducted at the Shriners Hospitals called “CHOICES.” This is a demonstration project funded by the Federal Maternal and Child Health Bureau and the Shriners Hospitals for Crippled Children. The program involves the state crippled children agency programs in eight states and three orthopedic and one burn unit of the Shriners Hospitals. This is the first program to utilize the expertise of both public and private programs to deliver the optimum care for children with special health care needs and their families. Although thought to be useful for orthopedic pediatric patients, the Cincinnati Unit is the pilot site for burns and has utilized the program to obtain community-centered rehabilitation care for our pediatric burn patients.

Figure 4. Nightmare on Elm Street—Freddie Krueger, evil, deformed, and scarred. (1985 New Line Productions, Inc. All Rights Reserved. Photograph by Roger Jans. Photograph appears courtesy of New Line Productions, Inc.)

Public Acceptance. The last and probably the most important problem facing the burn patient is public acceptance. Goffman in 1963 stated the way that burn-disfigured patients have dealt with the world has been shown to be affected by society's generally negative responses to visible burn scars. The burn-disfigured person has his or her own attitude toward body image with which to deal, as well as the attitudes of the people and of the culture around him or her. TV and radio have altered not only family standards but standards of self-perception as well. The young and the beautiful are emphasized. Everyone must be a “ten,” as illustrated by Bo Derek. This is tough even if you are not burned. I was born a “three,” and according to my daughters I have degenerated to a “one.” Although it is fun to make jokes about oneself, having scars is not humorous for our patients. The patients with burns, like the paraplegic or quadriplegic, have an injury that can be seen and understood by the public. However, there is also a marked ambivalence about the patient with burns, as emphasized by the movie industry that has frequently characterized the evil person as being deformed. The Phantom of the Opera, a burn victim; Vincent Price in The House of Wax, burns of his hands; and the popularity of A Nightmare on Elm Street, now, I think, in the fifth sequel, depicting Freddie Krueger, evil, deformed, and scarred and, I
might add, appearing to be noncompliant in wearing his pressure garments (Figure 4). The burn patient must deal not only with his burn injury but also with society's built-in impressions that are fostered early in our lives through cartoons, advertising, television, and movies. This is especially important in the pediatric burn patient for whom returning to school can be difficult, to say the least. Back-to-school programs can be very successful but are just the beginning. We have had pioneers in all these areas including Marion Doctor, Dr. Bernstein, who, sadly, passed away last year, Phala Helm, Mary Knudsen Cooper, and Steve Fisher, to name just a few. Burn camps have been utilized by various pediatric units including our own to help integrate the pediatric burn patient back into society. But, once again, these endeavors are only a beginning.

During this twenty-fifth year of the American Burn Association, we are presenting our advancements, our accomplishments, and our history, and I do not wish to belittle them, for hopefully I've had a small part in making them occur. However, in the next 25 years, we must not only continue with what we have been so successful in the past but also place our efforts on enhancing the burn patient's potential and quality of life. As we are reviewing the past 25 years during this silver anniversary meeting, I would like to close this address with the real accomplishments of the past 25 years—the many burn patients whom we have treated and hopefully have returned to society.

There are children raised in sorrow on a searched and barren plain.
There are children raised beneath the golden sun.
There are children of the water, there are children of the sand.
And they cry out through the universe, their voices raised at one.
I want to live, I want to grow, I want to see, I want to know,
I want to share what I can give, I want to be, I want to live.
We are standing all together, face to face and arm in arm.
We are standing on the threshold of a dream.
No more hunger, no more killing, no more wasting life away.
It is simply an idea and I know the time has come.
I want to live, I want to grow, I want to see, I want to know,
I want to share what I can give, I want to be, I want to live.
I want to live, I want to live.
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Members and guests, during the next 25 years, with your efforts the burn patient will come of age and will become a survivor, not a victim.

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