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LIVING VICTIMS OF THE TRAGEDY

Fire kills. But fire has its *living* victims too: those who grieve the loss of loved ones killed by fire, those who manage to get out alive (while others close to them may not have), those who are left homeless or jobless or impoverished because of fire. The victims most poignant to consider are those maimed and disfigured by burn injuries. About half of these victims are children. Their scars, psychological as well as physical, often last a lifetime.

Among the illnesses and injuries that require long hospitalization, few are as traumatic as severe burns. The frightening circumstances of the injury, the long isolation from family, the feeling of helplessness, the continuous pain during recovery, the cosmetic operations that fall far short of expectations, the stigma of disfigurement--all contribute to a deep despondency that impairs recovery.

Often the patient is not the only one to endure psychological wounds. If the victim is a child, parents are likely to feel guilty for what has happened. Some parents find it impossible to accept and love a disfigured child. Nurses, who must inflict considerable pain on the patient over long periods of treatment, are subject to stress. In many burn care facilities there is a 100 percent turnover in nursing staff every 6 months.

The Long Road to Rehabilitation

The average hospital stay for a burn victim is over three times that of medical and surgical patients. An individual's hospital stay and later treatment can add up to $60,000 or more. (Reducing fire accidents, therefore, should be among the top priorities in the national effort to control health care costs.)

If the severely burned patient is fortunate, he or she will be treated in one of a dozen "burn centers" in the United States. In these special facilities, patients receive expert medical and surgical care from the outset, and physical and emotional rehabilitation through the long weeks of recovery. The process can be described through an actual case history:

It is the fall of 1970. Eight-year-old Susan and her older brother are playing in their garage. An unsealed can of gasoline tips over and, an instant

later, the pilot light of the nearby water heater ignites the vapor. In the flash fire and explosion, Susan's face and arms are badly burned, her dress set afire. She is rushed to a local emergency room, where she is treated for shock. Because the burns are extensive and predominantly third degree (the most severe kind), the doctors arrange for her admission to a burn center, 100 miles away.

There, intensive care begins. The wounds are cleaned and treated with antibacterial agents; intravenous lines are inserted; and a catheter is placed into the bladder to collect urine, which serves as a guide to the fluid needs of the body. Nurses in the intensive care unit keep a close watch, lest she go into shock or turn blue from smoke inhalation injury. Later she is anesthetized and wheeled into surgery, where a doctor begins debridement, the cutting away of burned tissue. The wounds are covered with antibiotic dressing, and Susan is given penicillin to ward off infection.

More debridement operations follow. Doctors and nurses continue to monitor closely Susan's fluid management and the functioning of her vital organs. On the third day, having survived the acute phase in which fluid imbalances can be fatal, Susan is taking food by mouth, and the intravenous lines are removed. For the first time, she complains of pain from her wounds.

On the seventh day there is a marked change in Susan. She refuses food, she is unruly. But the staff members have seen this kind of behavior often, for it signals the onset of guilt or fear of parental reaction about the accident. After conferring with staff, Susan's parents discuss the accident, assuring her they were concerned but not angry. Her mood soon brightens. But there will be other periods of irritability. Having less than the normal amount of skin is a depressing condition, and it is common for patients to be difficult, irascible, or complaining until the wounds heal or are successfully skin-grafted.

During the second and third weeks, operations are performed to remove further dead skin. **As** ***so*** often happens, the wounds become infected and for a time her life is in jeopardy. In the fourth week grafting operations begin-four in all, staged at 1O-day intervals. Between operations, Susan undergoes intensive physical therapy, since grafted skin tends to contract and hamper the body's movements. Despite all precautions, contractures of her neck, right wrist, and right hand begin to develop, drawing her chin toward her chest, her wrist backward, and her fingers out of joint. Though Susan is discharged after 80 hospital days, the deformities already developing grow worse, despite frequent physical therapy and splinting. She is readmitted twice during the ensuing 4 months for reconstructive surgery.

More plastic surgery awaits her. It will never totally erase the scars. And despite the efforts of the psychiatrist on the burn center staff, Susan still carries psychological scars. She is introspective, self-conscious, and overly dependent on her father.

ONE CHILD'S ORDEAL

"Todd was burned on both sides. He kept rejecting grafts for 5 weeks. They would leave him in one position as long as the graft seemed to take, then they would turn him over and try grafting another area."

He would stay in that position?'

"Yes, for 2 or 3 weeks.

"During the time that he was in the unit, he exhibited the typical signs of withdrawal. He wouldn't speak to us. He would turn his face to the wail. . . .

"We were able to touch him through plastic gloves only. We were not able to touch him at all until 10 weeks, until he was out on the floor, and even then we had to wear a mask. . . .

"After he was out he had to learn how to walk all over again. Being bedridden for that amount of time, he was extremely weak. He was very bent over at this particular time because the folds were burned right around his hips and in the groin area, As time went on the scar tissue was contracting, pulling down. . . .

"This [indicating brace] Todd wears for his nap and also at nighttime. When he first came home, we tried everything to keep this on his legs. We had restraints made ourselves. We would spend an average of an hour a night getting him into this splint, because it was very important that his knees remain straight so that his hip would be flat. . . .

"[Before applying ointment] you have to take the scab off that forms, so that the wound will not heal on the outside and stay open underneath. So you have to pick this off your child's skin while he screams and cries, 'Please, Mommy, don't hurt me."

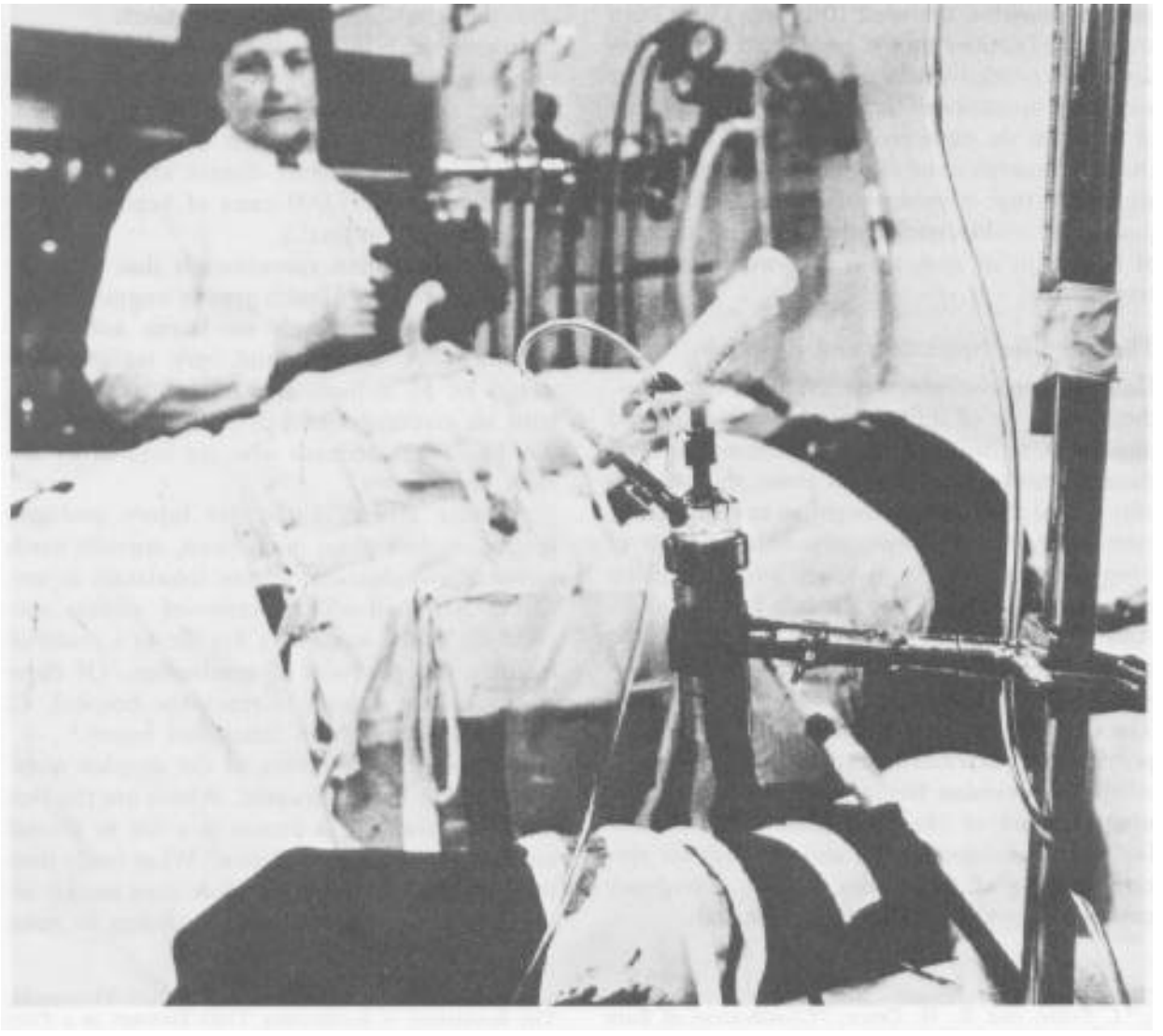
From testimony to the Commission (February 15,1972) of parents of a 3-year-old bum victim.

Most Treatment is Inadequate

At present, fewer than 100 of the 6,000 general hospitals in the United States provide specialized burn care. Together these few hospitals treat only 8 percent of the Nation's patients with serious burn injuries.

Of the burn centers like the one that treated Susan, there are only 12 in the United States. These are separate hospital facilities with research and teaching programs as well as patient care. Typically, a burn center employs a large staff of general, orthopedic, and plastic surgeons, specially trained nurses and physical therapists, psychologists, psychiatrists, social workers, and others who mount a coordinated effort to treat all aspects of the patient's problem.

The difference between the treatment in burn centers and the treatment in most hospitals can be a matter of life or death. For example, of all the 2-year-olds treated in hospitals for second- and third-degree burns over 45 percent of the body, only one in ten survives. Of the small proportion of these children who are lucky enough to be treated in burn centers, more than six out of ten survive. Among 8-year-olds suffering second- and third-degree burns over 60 percent of the body, the national survival rate is only two out of ten. Among patients in this category treated in burn centers, half survive.



Only 8 percent of the Nation's seriously burned patients receive treatment in specialized hospital facilities.

Not only do burn centers save more lives than most hospitals, they also expend more effort on rehabilitation-psychological and vocational as well as physical.

There is obviously a great need for additional burn centers in the United States. There is also a need for less elaborate facilities to handle less serious cases. Presently there are 20 hospitals in the Nation with "burn units"--that is, specialized facilities of at least four beds used only for burn victims. An additional 46 hospitals are known to have "burn programs"-a staff of burn injury specialists but not separate facilities.[1]

The Commission recommends that Congress enact legislation to make possible the attainment of 25 burn units and centers and 90 burn programs within the next 10 years. These burn treatment facilities should be located where they are most needed-that is, close to populations with high incidence of burn injuries. The number of facilities we have recommended is far fewer than the number some experts say are needed, but we believe that other measures we recommend in this report could significantly reduce the number of burn injuries and, hence, the need for costly treatment.

The Need for Specialists and Research

If these added facilities were available tomorrow, they would be of little value without dedicated physicians, nurses, and other professionals to staff them. Considering physicians alone, the hard reality is that there is little incentive to specialize in burn treatment. A disproportionate number of burn patients come from lower income families who cannot afford to pay the bills for treatment. And that treatment is expensive. Clearly, the needs of burn patients will never be adequately met unless the treatment is heavily subsidized. **The Commission recommends that Congress, in providing for new burn treatment facilities, make adequate provision for the training and continuing support of the specialists to staff these facilities. Provision should also be made for special training of those who provide emergency care for burn victims in general hospitals.**

The most experienced specialists in burn treatment are quick to admit that the state-of-the-art is limited by lack of knowledge. For example, understanding of the fluid shifts and transfusion requirements in burn patients is limited. There is uncertainty among medical scientists about the best techniques for warding off infection, a major killer of burn patients. How burn injuries affect a patient's immunity is another matter little understood.

In fiscal year 1972, the National Institutes of Health spent about $1.25 million on research connected with burns and their treatment. The Social Rehabilitation Service of the Department of Health, Education, and Welfare spent an additional $380,000 on special studies having to do with the rehabilitation of burn patients.

In contrast, NIH spent $34 million on renal disease research, $16 million on studies of hypertension, and $5.5 million on hepatitis research. (Renal diseases claim about 9,000 lives every year; hypertensive heart disease about 16,000; there are about 54,000 cases of hepatitis every year, few of them fatal.)

The Commission recommends that the National Institutes of Health greatly augment their sponsorship of research on burns and burn treatment. A minimal and very realistic goal would be $3 million, which would correspond with an investment of $10 per year for each of the 300,000 Americans who are injured by fire each year.

Another aspect of the fire injury problem, largely overlooked for many years, urgently needs research investigation : smoke inhalation injury. More than half--53 percent-of victims succumbing at the scene of a fire die a a result of inhaling the products of combustion. Of those who live long enough to reach the hospital, 42 percent succumb from inhalation injury.'

Surprisingly, even some of the simplest questions remain to be answered. Which are the best simple methods for a person in a fire to protect himself from smoke inhalation? What really does the damage to the lungs? How does smoke inhalation affect the ability of the lungs to resist

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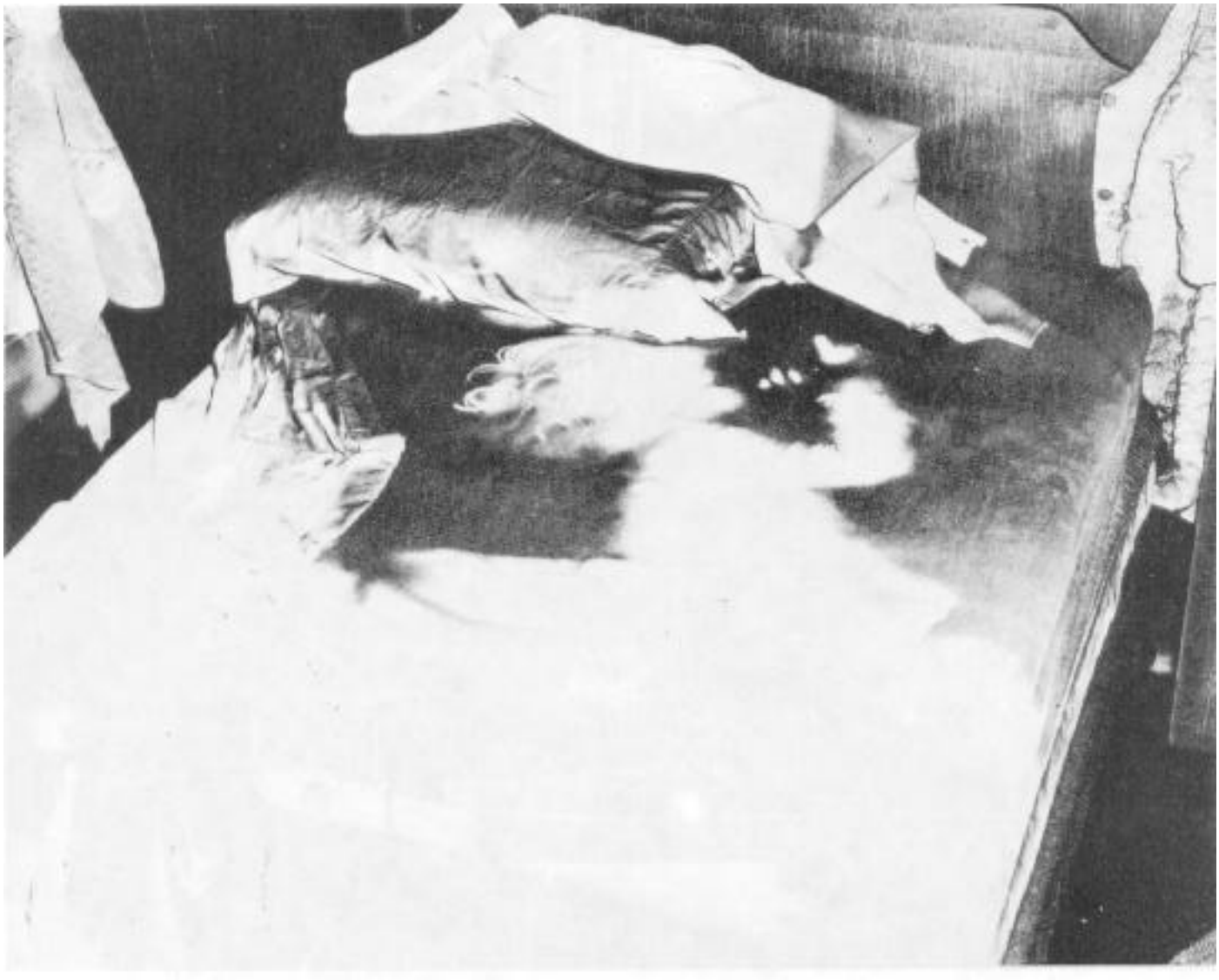
'I. Feller, and K. H. Crane, "Classification of Burn Care Facilities in the United States," ***Journal of the American Medical Association,*** Jan. 18, 1971.

[2] Anne W. Phillips and Oliver Cope, "Burn Therapy II, The Revelation of Respiratory Tract Damage as a Principal Killer of the Burn Patient," ***Annuls*** of Surgery, January 1962 (pp. 1-19).



Many of fire's victims never awaken. Smoke, toxic gases, or lack of oxygen kills them while they sleep.

infection? What emergency measures at the scene of the fire could counteract the effects of irritants?

These and other questions deserve more attention than they have received. **The Commission recommends that the National Institutes of Health administer and support a systematic program of research concerning smoke inhalation injuries.** At a minimum, NIH should receive an additional $250,000 in the coming fiscal year for this purpose.

A Final Word

Accidents happen-but not randomly. There is increasing evidence from research that deep emotional disturbances lead to accident-proneness. In one study of children with burn injuries, personality disorders (such as delinquency) and family disorders (such as alcoholism and strained marriages) were found to be commonplace conditions prior to the accidents."

Strengthening of affection in American families, it can be inferred, would do much to counteract the problem of fire injuries. That imperative lies beyond our powers to recommend, but not beyond our fervent hopes.

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[3] Robert T. Long and Oliver Cope, "Emotional Problems of Burned Children," New England ***Journal of Medicine,*** 264: 1121-1127, 1961.