

MEDICINE

New Hope for the Burned

Relief for burns has top medical research priority. For the first aider the rule is to relieve pain, prevent infection and treat shock.

By JANE STAFFORD

Third in a series of atomic bomb first aid.

► BURNS and how to cure them are today's hottest medical problem, thanks to the danger of A-bomb radiation added to the more peaceful accidents such as smoking in bed.

The best cure for burns is to prevent them. But if you are burned badly, the chances are you will get the best treatment the world has ever been able to give to burns.

Ugly, dangerous burns with the flesh literally cooked and charred and the skin totally destroyed are called third degree burns. The sign of a second degree burn is the blister, though you cannot always tell by this sign immediately, because the blisters may not form until hours or even a day later.

First Degree Burns

The first degree burn, unlike murder, is the least serious. The reddened skin of a mild wind or sunburn is an example of a first degree burn. The damage is confined to the most superficial layers of the skin which may "peel" in small powdery flakes. If you blistered after that day at the beach, however, you had a second degree burn. How sick you were depended on how much of your skin got that seriously burned.

The amount of body surface burned as well as the degree of the burn plays a part in the severity of the burn. Up to the time of the second World War, first degree burns involving two-thirds of the body surface and, in adults, second-degree burns involving one-third of the body surface were generally fatal. But in 1945 a Navy surgeon could report the recovery and return to duty within three months of a young Marine who had second and third degree burns over 83% of his body.

To get such results requires practically the whole armory of medical weapons from gauze to steaks and the surgeon's skin grafting instruments. And it requires also a corps of trained medical personnel.

Discovery of the sulfa drugs and then of penicillin and other antibiotics has greatly aided the victims of severe burns. Infection has long been a major problem in burns, particularly those occurring in disasters in which the victims may have other wounds besides the burn. In the event of an atomic disaster, the infection prob-

lem is greater because radiation from the bomb reduces resistance to infection.

Medical scientists have not yet agreed on the best method of fighting infection in burns. Some believe that sulfa drugs or penicillin should be put directly onto the burn, usually in the form of an ointment, when the first dressing is put on.

Others think it better to put nothing on the burn itself except a sterile dressing or a sterile dressing impregnated with petrolatum. This group thinks the penicillin or other anti-infection drug should be given by hypodermic injection, as in the case of pneumonia or other infection, to be carried to the burned area and all other parts of the body by the blood stream. But, says the other side, this method of giving penicillin requires more trained personnel to give the hypodermic injections.

Both sides agree that when there are other wounds besides burns, as there are likely to be in case of an atomic or other great disaster, "shots" of penicillin would have to be given.

The solution may come, at least for atomic bomb burn victims, through aureomycin or some other antibiotic which is effective when given by mouth in pills or capsules.

Exposure Treatment

One of the methods of treating burns now under trial in a couple of burn research centers is the "exposure method." With this method nothing is put on the burn. It is left completely exposed to the air, but the burned part is immobilized in some way. Good healing of superficial burns, without infection in one to four weeks, has been reported with this method. Penicillin "shots" are given the patient as part of the treatment. How well this method works with deep burns that extend through all layers of skin and sub-skin tissue remains to be seen.

Direct opposite of the exposure method is the pressure dressing which came into use during World War II and has continued in use since then. These are large pads of absorbent, resilient material bandaged on tightly and left in place for a week or 10 days. With this dressing pain is greatly relieved and almost all superficial burns, mild or deep, heal in one to four weeks if infection does not develop.

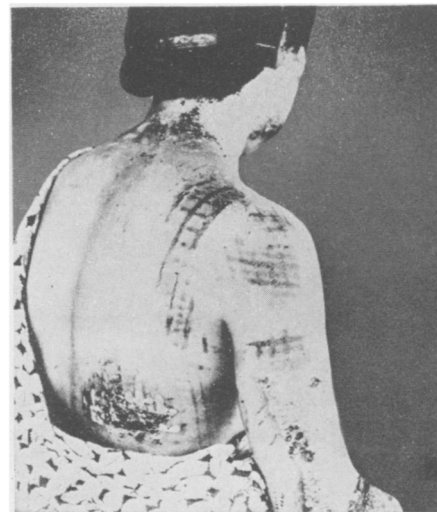
Nylon is also on trial as a burn dressing. English doctors have been trying nylon bags to cover burned hands and pieces of nylon to cover other burned areas.

Flash burns, such as come in atomic attacks, and also in explosions, are superficial but extremely painful. Small doses of morphine or codeine do a good job of relieving pain in superficial burns, and even in deep burns, especially when the burn is covered. The covering of the burn alone does much to relieve pain and this is one reason medical scientists have been working hard to find good simple ways of covering burns without contaminating them for use in large scale disasters.

Morphine's Second Role

Morphine, however, may turn out to have another important value in treatment of burns besides that of relieving pain. It may reduce the swellings from accumulations of fluid, known medically as edema, which come with severe burns. In studies with guinea pigs, scientists have found significant decreases in the swellings with increasing doses of morphine given before the burn. The studies are still going on and it is not known yet whether the preliminary results will prove out, especially when applied to burned humans instead of burned guinea pigs.

Severely burned patients suffer shock, anemia and, if they survive the first shock period, a kind of poisoning from the absorption of poison products from the burned tissues or from infection or both. Plasma, the fluid part of the blood, as well as red blood cells are lost from the circulation



BURN DESIGN—Survivor of an atomic bomb blast, this Japanese woman was burned in a pattern corresponding to the dark portions of a kimono she wore. Where the garment was tight across the skin, the heat flash burned through, charring the flesh.

into the burned tissues.

Plasma and blood albumin help fight the shock. But severely burned patients need whole blood as well. As one doctor puts it, burned patients "seem to burn up transfused blood."

An A-bomb victim needs even more blood because the radiation from the bomb damages the blood-forming organs in his body. This makes him worse prey, also, to germs not only in the burn or other wounds but to those in the air.

Because the burn patient loses the fluid part of the blood, this also must be replaced, as must salt and other minerals and vitamins. So plasma, albumin, whole blood and salt solutions are given by vein and as soon as he can drink and swallow, fluids of all kinds are "forced."

Proteins for Patients

Steaks and their equivalent in good protein are a "must" in the diet of the burn patient. A protein ration of at least 125 grams per day is advised. That is four ounces or more, and the four ounces means protein, not just meat. It would take at least a pound of sirloin steak, weighed without the bone, to furnish the four ounces of protein.

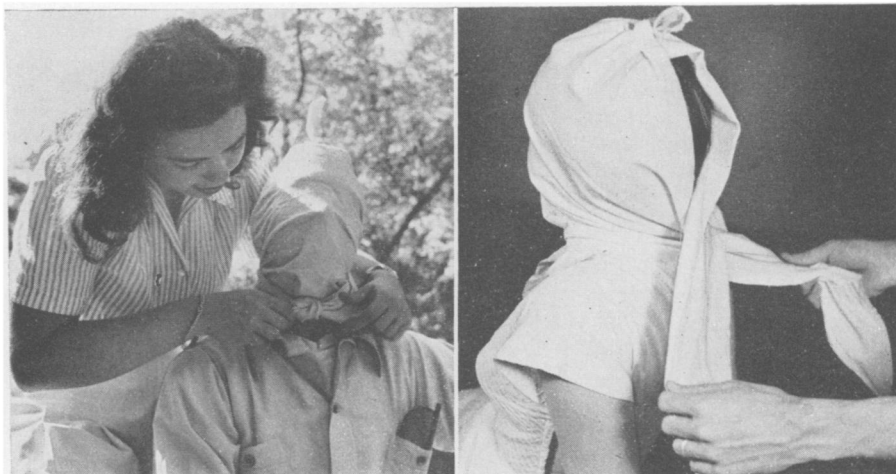
Because of the vast amounts of blood that would be needed to save victims of an atomic attack, scientists are vigorously pushing research on blood substitutes. More correctly, these should be called plasma substitutes, because so far no one knows of any real substitute for whole blood. Of the plasma substitutes, useful for fighting shock and therefore important, dextran seems at present to hold most promise. This is a Swedish product developed during World War II, a by-product of sugar manufacture.

Being pushed also, under the American Red Cross national blood program, is research into ways of keeping whole blood or red blood cells longer. At present, three weeks is the limit of the useful life of red blood cells and therefore of whole blood that has been drawn from the body. Any material extension of this time limit would make possible stockpiling of blood on a larger scale for use in case of large scale catastrophes.

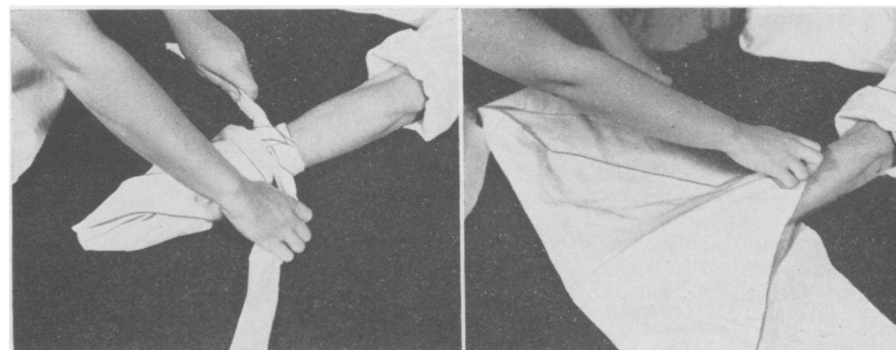
Burns are expected to make up anywhere from one-fifth to one-half the casualties in such an attack.

Estimates based on the Japanese experience may be too high. With any warning of the attack, large numbers of people should be able to find shelter from the heat flash accompanying the bomb burst. If fire-fighting plans now being made are carried out, it should be possible to reduce the number of burn casualties still further, because many of these were caused by uncontrolled fires after the atom bombings in Japan.

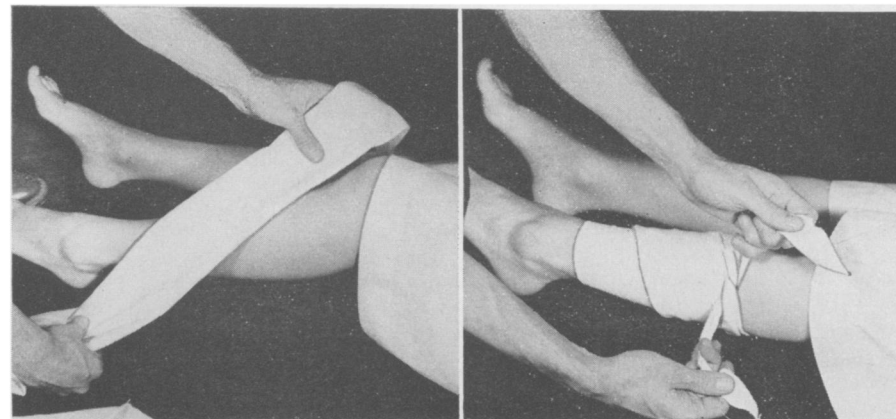
Several thousand severe burn casualties, however, can be expected in any community that is atom bombed. It is to care for these as well as for the victims with serious



HEAD BANDAGE—A shirt, old sheet or handkerchief makes an open face bandage to keep the air from a facial burn or scald.



HAND BANDAGE—Place a dressing over the wounded area; then secure as shown above.



LEG BANDAGE—Start diagonally, take the longer lower end firmly around the ankle once, then spiral up the leg and tie the ends.

bleeding, broken bones and torn and mangled flesh, that 20,000,000 lay persons must be trained in first aid.

Some of you, through your local civil defense organizations, may be called to take special training for work on a burn team. But everyone can learn the simple, immediate first aid treatment for burns, whether caused by atom bombs or an upset pot of boiling liquid on the kitchen stove.

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The How of First Aid to Burns

The first thing to remember about a burn, no matter how severe or slight, or what the cause, is to keep it from getting infected. In other words, keep germs out, just as you are careful to keep germs out of an open cut or other wound.