

MEDICINE

New Ways of First Aid

Surgeons say leave the tourniquet on if you use one. Do not loosen it until doctor comes. Danish method for restoring breathing is now widely taught. Navy has life-like model.

See Front Cover

By JANE STAFFORD

► PROMPT FIRST aid to an auto accident victim or in drowning may save a life. And it may be your life that is saved.

Doctors and scientists are learning new and better ways that you and others can use in case of emergency. Everyone can learn what to do and not wait around for professional assistance while a life that might be saved is ebbing away. This is a startling fact: Each of us runs a 1-in-15 chance each year of being in an accident serious enough to cause disabling injury.

Here are some new procedures being taught in first aid classes today.

For doctors, there is a trend away from the use of blood plasma for patients in shock. Albumin from human blood is preferred. Dextran, one of the new blood expanders, is also being used increasingly, and other blood expanders are getting wider trial. This change is coming about for two reasons:

1. Blood plasma, life-saving though it can be, can and too often does carry the virus of one kind of hepatitis, or liver inflammation—jaundice to the layman. 2. Supplies of blood and plasma have never been large enough for the mass casualties expected in case of atomic attack, and the blood expanders have been developed and tested and found satisfactory for helping out.

Latest change in first aid procedures for the layman concerns tourniquets. A tourniquet is an instrument for compressing a blood vessel. In case of severe bleeding from an artery, the first aider may not be able to stop the bleeding, or to keep it stopped, by manual pressure alone, that is by pressing with his hands on the bleeding spot or the appropriate pressure point.

Used to Fear Gangrene

For many years first aiders were told that if they applied a tourniquet, they must be sure to release it every 15 or 20 minutes. Otherwise circulation would be cut off so long that the affected part of the body, such as an arm or leg, would turn gangrenous and die.

Some surgeons, however, have been saying for years that it is a mistake to loosen the tourniquet. There is too much danger of bleeding starting again. So now the Federal Civil Defense Administration, on the advice of the committee on surgery of the National Research Council, recommends that a tourniquet should not be released,

regardless of how long it has been on, except by a doctor who is prepared to control bleeding by other means and to replace lost blood.

First aiders still will be cautioned not to use a tourniquet if they can stop bleeding by any other means. But surgical authorities point out that it is better to risk gangrene in a badly damaged leg or arm than to risk death from hemorrhage by removing the tourniquet. Properly applied, a tourniquet can be left undisturbed for three or four hours with little risk of gangrene.

To show how to stop bleeding and how to give other treatments to the severely injured, the Navy now has a life-size plastic manikin that actually "bleeds," shown on the front cover. The pretend blood is a solution of glycerine, water and vegetable dye.

Presents Six Problems

The manikin's body is of plastic reinforced with Fiberglas, fabricated from a sculptured model, and positioned to facilitate the demonstration of various first aid problems. The "skin" over the basic body is fabricated from molds made from a human donor. The material is a vinyl (resilient) plastic cured in dry heat in the metal molds. The manikin represents a person suffering from a leg wound, an arm wound, a belly wound, a penetrating chest wound, a broken jaw causing bleeding from the mouth, and choking because his teeth were jarred part way down his throat.

These wounds give six first aid problems likely to be encountered in cases of emergency or disasters involving large numbers. The manikin was designed by Comdr. John Victor Niiranen, Dental Corps, USN, other members of the staff of the Naval Dental School, and William C. Young, a civilian employee of the audio-visual department, Naval Medical School, Bethesda, Md. It was made to help in teaching Naval dental officers who might be called on in non-dental emergencies.

To make the wounds more life-like, the "blood" is pumped by centrifugal pumps from a storage tank in the base of the manikin to the wounds. The rate of flow from each wound can be individually adjusted. The fluid is collected in drains and returned to the storage tank to be used over and over again.

In addition to the manikin, the Naval Dental School has a facsimile arm for teaching how to insert a hypodermic needle into vein, muscle, or under the skin; a neck for teaching how to open an obstructed airway;

and an abdomen and chest for other teaching problems. All of these are now in an exhibit fabricated by Rogal Models of Washington, D. C.

While these were designed for teaching Navy dental officers, the method could be used, Comdr. Niiranen points out, in civil defense and Red Cross teaching.

Persons who have been suffocated by gas or rescued from drowning accidents have a better chance of survival because first aiders now are being taught an improved method of giving artificial respiration, called the back-pressure arm-lift method. It was developed by Holger Nielsen of Denmark and used successfully in the Scandinavian countries for two decades before its official adoption in this country.

Here are directions for this life-saving method:

1. Place the subject in the face down, prone position. Bend his elbows and place the hands one upon the other. Turn his face to one side, placing the cheek upon his hand.

2. Kneel on either the right or left knee, at the head of the subject, facing him. Place the knee at the side of the subject's head close to the forearm. Place the opposite foot near the elbow. If it is more comfortable, kneel on both knees, one on either side of the subject's head. Place your hands upon the flat of the subject's back in such a way that the heels of the hands lie just below a line running between the arm pits. With the tips of the thumbs just touching, spread the fingers downward and outward.

Rock Forward

3. Rock forward until the arms are approximately vertical and allow the weight of the upper part of your body to exert slow, steady, even pressure downward upon the hands. This forces air out of the lungs. Your elbows should be kept straight and the pressure exerted almost directly downward on the back.

4. Release the pressure, avoiding a final thrust, and commence to rock slowly backward. Place your hands upon the subject's arms just above his elbows, and draw his arms upward and toward you. Apply just enough lift to feel resistance and tension at the subject's shoulders. Do not bend your elbows, and as you rock backward the subject's arms will be drawn toward you. Then drop the arms gently to the ground. This completes the full cycle. The arm-lift expands the chest by pulling on the chest muscles, arching the back, and relieving the weight on the chest.

The cycle should be repeated 12 times per minute at a steady, uniform rate. The compression and expansion phases should occupy about equal time, the release periods being of minimum duration.

If you want to learn more first aid methods, call your local Red Cross about joining one of their classes.

Science News Letter, October 31, 1953

ENTOMOLOGY

New Mist Blower Passes Chemical-Spraying Tests

▶ A NEW spraying device designed by the U. S. Department of Agriculture has successfully passed rugged tests at the Connecticut Agricultural Experiment Station, New Haven, proving that it can treat small orchards with insecticides economically.

The 200-pound machine can be mounted on a farm tractor, small trailer or pick-up truck, and is highly maneuverable. By means of a powerful air blast, it delivers tiny particles of highly concentrated insecticides to small plants and trees.

Tests showed the machine is not suitable for treating shade trees more than 40 feet tall, but that it can easily handle nursery stock, row crops, grapevines and small fruits. It also can be martialled against insect pests and mosquitoes.

Mist blowers are said to hold an advantage over ordinary spray machines because mist blowers economize in chemical consumption and give better foliage coverage. This reduces labor needed for frequent re-filling of the spray tank.

Science News Letter, October 31, 1953

AGRICULTURE

Iron Chemicals Produce Greener Trees and Plants

▶ IRON-CONTAINING CHEMICALS known as "chelating agents" can make pallid trees turn a rich green and cause plants to survive in barren soil with irrigation water previously too alkaline.

Drs. Arthur Wallace, C. P. North, A. M. Kofranek and O. R. Lunt of the College of Agriculture at the University of California at Los Angeles report that much of the pallor in trees growing in southern California and other semi-arid areas is due to a condition known as chlorosis, resulting from excessive lime in the soil.

Treating lime soils with these chemicals controlled the chlorosis effectively. The trees became green and stayed green for several months without additional treatment.

For ornamental plants the treatment is very economical. No economic data are available on the use with commercial fruit trees.

Technical nicknames for the "chelating agents" are EDTA, DTPA and HEEDTA. They should be thoroughly watered into the soil and then normal irrigating procedure followed. Excessive applications can result in leaf burning similar to that caused by excessive use of fertilizers.

Science News Letter, October 31, 1953

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WEIGHED IN THE AIR—The clamshell bucket of ore being unloaded from this ship is weighed as it swings ashore by a new electrical method. The load weight is shown on an indicator in the operator's cab shown alongside the bucket. The total weight unloaded is also shown on a totalizing counter. The daily handling capacity of the crane is thus increased substantially.

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