

MEDICINE

Cholera Cure

Blood plasma, sulfadiazine and salt solution were used in controlled experiments in India, Navy medical officer reports.

By FAITH BREWER

Former American Red Cross Staff Correspondent in India

► Discovery of what is described as "a complete cure" for one of mankind's oldest and most deadly enemies, cholera, was made by U. S. Navy epidemiologists in a controlled experiment held during a recent epidemic in Calcutta, India.

Begun as a protective measure for thousands of Americans stationed in India, China, Burma, Ceylon and the Philippines, where annually the disease rages in epidemics, the experiment has resulted in a new step forward for medical science. Where before there was only vaccination against this dread disease, and that not a sure-fire preventive, there is now tested knowledge that through the proper use of blood plasma, sulfadiazine, and saline solution, "no one need die of cholera."

Where previously 30% to 80% of all cholera victims died, 100% recovery is assured through this new treatment, according to Comdr. Julius M. Amberson, MC, USN, officer in charge of the experimental unit, now in Washington.

Dramatic description of the effects produced by this combination of plasma and drugs was first given me shortly after the history-making Epidemiology Unit No. 50 first came to Calcutta in June of this year.

The Burning Ghats or funeral pyres were then piled high with bodies of Hindus who had died of cholera. The American scientists became familiar with the sunken eyes, pinched noses, and anxious expressions of the victims. They learned to recognize the signs: shrunken "washerwoman" hands and feet, feeble rapid pulse, a fever, constant diarrhea and vomiting which leaves the body dehydrated, toxic absorption which causes muscular cramps and collapse.

While the majority of the cholera victims came from the poorer, less educated classes, it also strikes the homes of the richest. No respecter of class, age, sex, or race, the epidemic struck down 3,335 people in Calcutta from Jan. 1 through June 16, 1945. Of these 1,192 died. Only a few Americans, who were

civilians, contracted the disease, and only one, an American Negro pianist, died. Fifteen British military residents of the Grand Hotel in Calcutta were stricken and one died.

All American military were bombarded with radio reminders and posters exhorting them to "eat only at Army messes or Red Cross clubs, eat no raw fruits or vegetables, drink no unapproved water, and renew your vaccinations!" Because of this excellent preventive campaign, no death among the American military personnel was reported during that epidemic. But, hardly had this epidemic reached its peak when another broke out in Chungking, China.

Comdr. Amberson radioed the procedure which his experimental unit had already determined to be highly successful to the Navy Surgeon General, Vice Admiral Ross T. McIntire, who gave this new medical news not only to the American medical units there, but also to their allies, the Chinese. A plane loaded with plasma, sulfadiazine, and

saline solution went over the "Hump" to save the lives of hundreds.

Of the 400 cases in Calcutta selected by the Navy epidemiologists for their experiment, one group was treated with sulfaguanidine, one with sulfadiazine, one with penicillin, and one with sulfadiazine and penicillin combined.

In laboratory experiments it had been determined that these drugs worked against the cholera organism. But in humans, the onset of the disease was so sudden and severe, with circulation slowed down because of dehydration and loss of blood serum, the valuable drugs could not be mobilized rapidly enough to make the battle an equal one. Because of the great concentration of red blood cells which would not circulate, gangrene set in in the feet and hands of the victims.

Comdr. Amberson conceived the idea of using blood plasma to thin out the thick, jelly-like consistency of the cholera-infected blood, and help the patient's body perform its normal functions while the sulfadiazine got in its good work.

As soon as the plasma was pumped into the collapsing veins of a Hindu dying of cholera, the pulse in the bony brown arm grew stronger. His lids opened, and his hazy black eyes began to focus, as he opened swollen lips to whisper huskily for "Panee!" "Panee!" (Hindustani for water.)

Eight or nine days later, the cholera



HE'LL RECOVER—Here an attendant is tying off a vein of a Hindu patient preparatory to giving an injection. Official U. S. Navy photograph.

victim, who would have been on a funeral pyre within 12 hours had he not received this treatment, walked out of the hospital, completely cured.

In summing up the results of the experiment, Comdr. Amberson says in his report which will be published in December issue of the Naval Medical Bulletin:

"From results of the tests made by our Epidemiology Unit No. 50, we recommend:

"That sulfadiazine plus adequate quantities of salines and supportive therapy be accepted as the treatment in mild and uncomplicated cases of cholera.

"That this treatment be supplemented with penicillin in cases of moderate severity, especially where pneumonia is a complication.

"That plasma plus salines be admin-

istered in sufficient amounts to elicit a rapid clinical response in severe cases of shock or circulatory failure, and that this be continued long enough to mobilize the effect of the penicillin or sulfadiazine."

Only two of the cases treated had previously had cholera inoculations. In both the onset was sudden but the symptoms were mild, and both were discharged after three or four days treatment. This led Comdr. Amberson to observe that "cholera vaccine is of value in lessening the severity and duration of illness. Death is almost certain without treatment. Chemotherapy and saline solution alone will lower the expected death rate, and with the additional use of plasma, the recovery of every cholera victim can be assured."

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rubber having a very smooth outer surface. The metal is first covered with a strong cement, over which a layer of sponge rubber is applied. Moderate pressure and some heating in a mold makes it stick and also expands it. Then a layer of fabric is laid over the sponge rubber, and on top of this a final layer of dense rubber is cemented.

On this invention Mr. Pitman has been granted U. S. patent 2,389,210, which he has assigned to E. I. du Pont de Nemours and Company.

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ELECTRONICS

Static Partly Conquered

► HOW the Army and Navy working together attempted to decrease flying hazards caused by what technical men call "precipitation static," which prevents radio communication between aircraft and ground, is no longer a military secret. No simple solution to the important problem has been found, but scientific investigation has given means of reducing the hazard and also a practical approach which is expected to lead to a realization of complete success in the immediate future.

Much radio and navigational equipment fails to operate when the pilot needs it most, during bad weather. The loss of communication may be for 10 to 15 minutes, which usually is not a serious matter. In certain weather the aviator may be without communication for hours. Under these conditions navigation is impossible and flying is hazardous.

Two main types of precipitation static are recognized. One is when a plane is flying through dry crystalline snow that puts a tremendous free electrical charge on it and causes the plane to break into a corona. The other is encountered when a plane flies near thunder clouds or in the vicinity of lightning. In this case corona is produced on the outer edges of the airplane and interferes seriously with radio, navigation and communication.

A joint Army-Navy committee was established in 1943 to find means to combat radio interference or precipita-

tion static. The committee undertook the development of equipment suitable for the discharging of the accumulated electrostatic charges. This led to the development in the Naval Research Laboratory of an early type of wet-wick discharger, later superseded by a dry type requiring practically no attention.

These dischargers, mounted on the outmost surfaces of the airplane, are employed to keep the voltages below or close to the electric field for corona. In this way the radio interference on the plane is reduced. Improvements in the design of the antennae and radio circuits have been made and these, in conjunction with other developed equipment, will play an important part in the reduction of precipitation static.

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AERONAUTICS

High-Speed Airplanes May Be Rubber-Coated

► SMOOTHER surfaces for the super-high-speed airplanes now coming into use are an imperative necessity. The thousands of rivet-heads and other minor projections that cover the naked metal surfaces of present-day wings, fuselages and control areas are recognized as a power-eating nuisance; and as speeds go up such sources of parasitic drag become simply intolerable.

To overcome this, Earle C. Pitman of Red Bank, N. J., has invented a method for coating aircraft surfaces with