

neutralize that being formed at the local point of disease, while we are exterminating the bacteria there. Antitoxin being harmless, all authorities are agreed that the serum of the animal from which it is produced is found to be the cause of the rare cases of anaphylactic shock. The large single dose of a concentrated antitoxin or globulin is more likely to eliminate the shock, as it very rarely seems to occur except in repeated doses. The unit of toxin is the amount that will kill a guinea-pig in four days. The unit of antitoxin is the amount that will just neutralize 100 units of toxin. The dosage of antitoxin differs the world over. In Boston light cases get from 6,000 to 10,000 units, repeating if improvement does not follow; in moderate cases 10,000 units, repeated every 6 hours, bad cases from 20,000 to 30,000, repeated every 6 to 8 hours till 200,000, 300,000 or even 400,000 units have been given. In Philadelphia Municipal Hospital one-half to one-third these doses are given.

Koplik, of New York, advises a maximum of 20,000 units.

Whyte, of the Isolation Hospital, Toronto, advises 10,000, 20,000 to 40,000 units. Many of our best physicians differ greatly as to dosage for either age, size, or severity of the disease. After 12 years' experimentation in New York the following dosage was found to be quite satisfactory: Very mild cases, 2,000 to 3,000 units initial dose; moderately severe, 4,000 to 6,000 units initial doses; very severe, 8,000 to 10,000 units initial dose; laryngeal patients, 6,000 to 10,000 units initial dose.

More than 25,000 for a child, or 50,000 units for an adult was found to be unnecessary and useless, and probably an initial dose of 10,000 units in a child to 20,000 units in an adult is sufficient for the whole course of the disease. Antitoxin by the mouth is found to have some efficiency, also by the bowel, but given subcutaneously is the best method to use except in severe cases of long standing; then intervenously gives much more rapid action of the antitoxin, which then acts immediately on the toxins in the blood and seems to induce the cells to give up rapidly the toxins they have absorbed. Subcutaneously the absorption of the antitoxin may be found to be the greatest at the end of the second day. The over-sensitiveness or anaphylaxis of some patients, particularly those who have asthma or status lymphaticus, to serums, raises a strong question as to whether these patients should receive a dose of serum at all. Goodall says pointedly that in severe cases of diphtheria he would risk the anaphylactic shock. In such cases a very good reason presents itself for a large single dose of antitoxin, in the fact that repeated doses increase the over-sensitization of the patient. Goodall also says that in using antitoxin as a prophylactic the life history of the