to re-emphasise the value of reporting the occurrence of measles as an aid in control of the disease. Although this procedure is required by law in every State in the nation it is sometimes not done. This failure is due in some instances to oversight on the part of the attending physician, but it is owing also to the fact that in many instances medical aid is not sought. In such cases the public health nurse who comes in contact with suspected cases in the school or home may be responsible for reporting them to the health department. In order to protect adequately the children who may be expected to have the disease in a severe form it is essential to know where the cases of measles exist.

It is well known that measles is most contagious during the pre-eruptive stage of the disease. An epidemic is poorly controlled by quarantining affected children during the eruptive stage only. Parents should be instructed to keep their children at home from the time of onset of any cough, coryza, conjunctivitis, or fever. During epidemic periods they should also be instructed to notify the public health office, if the children are not under the care of a private physician. Closing of schools is generally of little help in controlling epidemic measles. During epidemic periods, however, all school children should be examined, preferably by a physician or a nurse, each morning before school starts so that those children who have any prodromal symptoms of measles can be promptly sent home.

Active Immunity.—Protection from a communicable disease by means of the production of active immunity generally implies that the etiologic agent of that disease is known. A notable exception is the protection which has so long been afforded from smallpox by means of vaccination. Jenner discovered vaccination against that disease many years before its causation by virus was established. Vaccination against measles in a somewhat similar manner has been attempted by various investigators without much success except to induce the disease in some instances. At the present time there is no accepted method of producing active immunity against measles, although work is now in progress about which favourable results have been reported.

Passive Immunity.—In 1901 the successful use of measles convalescent serum for the production of passive immunity against measles was introduced in Italy by Cenci. Similar successful results from its use were reported in the French and the German medical literature in the early part of the second decade of this century. The work of Degkwitz was largely responsible for the subsequent widespread use of this method.

Briefly, the aims of prophylaxis by use of measles convalescent serum are two: (1) the production of temporary complete immunity; (2) the production of a temporary partial immunity. The production of complete immunity is essential among children who are exposed to measles while in hospitals or among those who because of age or debilitated condition presumably will have the disease in a severe form. Partial immunity is desirable among children more than five years of age who are in good condition. This partial immunity generally allows the development of a modified form of measles which in most but not in all cases is followed by permanent active immunity. However, because occurrence of the disease depends on intimacy of exposure, dose of the specific agent, and size and age of the children, the precise result which may be obtained after the use of convalescent serum is unpredictable. Further, the efficacy of any serum is dependent on its antibody titer which varies somewhat from one batch of serum to another. The results which may be expected from the use of any agent for the production of passive immunity are four: (1) failure, the occurrence of unmodified measles; (2) failure, the occurrence of unmodified measles after a prolonged incubation period; (3) partial immunity, the occurrence of modified measles with, but occasionally without, persistent immunity; (4) complete temporary protection, the duration being about two to three weeks.

Until such time as an active immunising agent against measles is available, attempt should not be made to protect healthy children more than five years of age from contracting the disease, although, as has been mentioned, modification of the disease is desirable.

Measles convalescent serum is prepared from the blood of adolescents or adults, which has been collected some time within four months after the patients' recovery from the illness. Because the antibody titer varies from one serum to another, sera are best pooled before being dispensed. The careful selection of healthy donors, with particular care not to select anyone who has any clinical or serologic evidence of syphilis, cannot be stressed too strongly.

The dosage of convalescent serum usually recommended is 4 to 10 cc., the serum to be administered intramuscularly. Doses up to 20 cc. sometimes are recommended for older children and adults. Prevention of the disease may generally be expected if the serum is given to the patient within four days after his exposure. Modification of the disease may be expected if the serum is given between the fifth and the ninth day after exposure. Reactions to the serum are not common but may occur.

Pooled normal adult serum and "overtime serum," that is, serum obtained from blood drawn from patients five to twenty-two months after recovery from measles, have likewise been found to be effective prophylactic agents. Both these types of sera should be given in larger dosage than is convalescent serum. However, by properly concentrating the sera the increased dosage can be avoided. The globulin fraction of pooled normal serum or ascitic fluid have also been used prophylactically with some success in a small number of instances.

Whole blood, obtained usually from the parents of the exposed child, has been used extensively in the prophylaxis of measles. The dosage usually employed, about 20 to 30 cc. is considered by some workers not to be sufficient. They have expressed the opinion that to secure adequate prophylactic effects eight times as much whole blood as convalescent serum should be used. The smaller dose, however, is often effective. Care must be taken that the parent donor is in good health and that there is no past history of syphilis or malaria.

Infants born of mothers who have had measles are immune to the disease until the age of three months, and in some instances until the age of five months. This fact led McKhann and his co-workers to investigate the immune properties of the human placenta. In 1933 they reported the preparation of a placental extract which contained antibodies against measles. This product is now known as human immune globulin. It is less uniform in its potency than is convalescent serum and its use often causes some local reaction at the point of injection. The dosage usually employed is 2 to 4 cc. given intramuscularly at the same time after exposure as is convalescent serum. This material is said to be effective in producing prevention or modification of measles among approximately 95 per cent. of the patients for whom it is used, although some physicians feel that this percentage of success is estimated too high.

Immune human globulin has been accepted by the Council on Pharmacy and Chemistry of the American Medical Association, and of all the preparations mentioned previously it is the only one available commercially. Convalescent serum, however, may be obtained from the various human serum laboratories which have been established throughout the United States. The cost of the two preparations in equivalent doses is approximately the same. Whole blood is frequently the most easily available of all

previous page next page