

## GOITER PREVENTION IN THE UNITED STATES

Preventative medicine now includes within its domains fields which were unheard of only a few years ago. Goiter is probably the most widespread and spectacular of the preventable diseases, so is causing much interest, especially among public health workers.

The prevention of goiter means more than preserving the normal outline of the neck, but means the prevention of cretinism, iodicy and mutism. As adenomas and malignancies of the thyroid, as well as Graves disease or toxic goiter usually begin as simple endemic goiter, it means also preventative surgery. Nor should the high mortality of infants with congenital goiter be forgotten.

The term endemic goiter includes all those thyroid enlargements formerly classified as epidemic, sporadic and endemic, and is an entirely different disease than toxic goiter or hyperthyroidism. Endemic goiter is the type which is preventable.

"This human scourge which has taken its toll of misery, suffering and death throughout the ages" is still tolerated as a necessary evil in many communities. Because it is probably the easiest of all known diseases to prevent, its presence in a community in the future will be regarded as evidence of gross indifference or failure to apply thoroughly dependable preventative measures. (1)

It is interesting to note that the first definite and systematic work on the prevention of goiters was in animals. This was the prevention of goiter in fish by Drs. Marine and Lenhart in 1909 and 1910 at the Penn. State hatcheries, and really pointed the way to the practical problem of goiter prevention in man. Then in 1910 from the Lakeside Hospital, started

the prevention during pregnancy in every maternity dispensary in Cleveland.

The first prophylaxis to be carried out among school children as a public health measure was that of Drs. Marine and Kimball in the schools of Akron Ohio, in 1917, which will be described later.

That goiter is a deficiency disease caused by a lack of iodine in the food and water is now accepted. Also it is known to be increased in frequency by improper hygienic and sanitary conditions, such as overcrowding, overwork, poor ventilation, poor water supply, lack of proper personal hygiene and anything which makes an undue demand upon the physiologic functions of the thyroid gland contribute to the development of goiter. (2) Recently McClendon has shown by accurate chemical analysis, that in localities where the incidence of goiter is high, the iodine content of the water is low.

The disease most commonly develops during one of the following formative periods.

1. During fetal life.
2. Around the age of puberty.
3. During pregnancy.

Marine and Kimball are emphatic in declaring that goiter in the mother and fetus can be prevented as easily as that in the adolescent.

Further they contend that the prevention of goiter in childhood is a problem of public health and education best handled in the schools. On the other hand, the prevention in the mother and fetus had best be undertaken by the family physician. During pregnancy it should be part of the routine care of every expectant mother to be given ten to twenty mgs. of iodine per week throughout term.

It has long been known that goiters were prevalent in the United States, so much so that in certain districts, such as the Cascade Mountain

regions of Oregon and Washington, the basin of the St. Lawrence and the whole of the Great Lake Basin they have come to be considered characteristic, or endemic. Efforts to determine the incidence in different sections of the United States have been made, but no accurate survey of a whole community had been made previous to the work of Marine and Kimball. In Akron, Ohio they found that 50% of the girls from the fifth to the twelfth year had enlarged thyroids. Since then numerous surveys have been made with the result that the incidence has been found high in the above mentioned districts. Clark found that in Huntington, West Virginia that 50% of the girls had goiters and that 12% of both boys and girls were affected in Virginia. In Oakfield, Utah the incidence is near 100%. Hall determined that 18% of the men and 31% of the women at the University of Washington had enlarged thyroids. In 1918 Merr, an army officer determined an incidence of 21% among the soldiers at Camp Lewis, Washington. In Rochester, New York there are 2,000 cases of goiter among the school children, while it has been estimated that Chicago has 200,000 cases. This year in Portland, Oregon a goiter survey of 1,000 school girls from the age of eight to fifteen years was made, and 45% were found to have it. At the present time West Virginia, Michigan, Indiana and other states are considering making state wide surveys. It is always found that many more girls than boys suffer from this disease, and for this reason only the girls are given the prophylactic treatment in most places. However, Kimball in his latest paper recommends treating the boys also in the Great Lakes District and Utah where the incidence seems to warrant it.

These surveys certainly show that there is a real need of goiter prevention, and are the first step in the introduction of prophylactic measures, as each year the results of treatment is compared with the original

survey. A card is used stating the condition of the thyroid and a record of all treatment is kept on the back of the card. The examinations should be made by a single examiner in order to make the standard constant and the data uniform.

The treatment first used by Marine and Kimball was 2 grams of sodium iodid given in 0.2 gram doses for ten consecutive school days, repeated spring and autumn. This is the method being used in the Portland schools. Marine and Kimball found that not a single pupil in whom the thyroid was normal when treatment started, and who took iodine, showed any enlargement at the end of a year, while of those not taking iodine, 26% showed definitely enlarged thyroids. Even more than a prophylactic action is shown in the results, as one third of the "small goiters" disappeared, and one third of the "moderate goiters" decreased 2 cm. or more. It was also found that the danger of iodism and exophthalmis from such amounts of iodine are negligible.

The latest method advocated by Kimball is that of the Swiss. They give 5mgs. of iodid per week to each child in the form of Iodostarine, which is a chocolate-iodine combination, throughout the school year. Their results are even more striking than those reported in this country, and it seems to be a more scientific and practical method. The school nurse is the best one to administer the medicine.

We have shown that goiter is a serious problem in the United States, and that there is a sure, safe and cheap method of preventing it. The next question is, what are we doing about it?

Everywhere the public mind is being educated and awakened. The newspapers are giving publicity to drives and physicians are not only practicing prophylaxis among their private patients, but are teaching it

to lay organizations as The Parent Teacher Association, Womens Clubs etc.

Health departments, medical societies and school boards are conducting drives to get the work started. Once started it always proves popular and grows rapidly.

The Metropolitan Life Insurance Company is considering publishing a goiterbooklet that will circulate in the Pacific Northwest. This will be valueable aid in the direction of obtaining more aggressive public support, for preventative measures.

Many towns and cities in the United States are now giving iodine to their school children. Among these are towns in the states of Michigan, Ohio, Wisconsin, Oregon, Washington and North Dakota. Illinois, Idaho, Utah, Georgia and Maryland are considering starting prophylaxis.

The state of Washington is conducting a state wide campaign through their "Legis of Health". They have recently purchased 20,000 boxes of Iodostarine to be given to their school children. Michigan, Indiana, and West Virginia are considering giving state wide treatment.

In Rochester, New York iodine is being supplied by way of the water. For two weeks spring and fall the Health Department adds iodine along with the chlorine. This is an ingenious method in need of further trial before a definite verdict as to its efficiency can be given.

Iodized table salt has been used with success in Switzerland, and has many advocates in this country. However the difficulties of gauging accurately the dosage and of excluding from treatment the hyper-susceptible are manifest handicaps to its uncontrolled application.

The numerous methods that have been devised for supplying iodine indicate interest in the subject, and that in the only thing now needed to eradicate this disease which is so easily prevented.

Summary:

Goiter is a serious problem in the United States, especially in the Pacific Northwest, The Great Lakes District, and the Valley of the St. Lawrence.

Prevention in children is a problem of public health, best carried out in the schools, while prevention in the mother and fetus should be left to the private physician.

There is a safe, sure and cheap method of goiter prevention.

Prophylaxis is already being carried out in many towns and cities in the United States, and many others are considering it.

Bibliography;

1. Western Reserve University Bulletin. July, 1923
- 2 Preventive Medicine and Hygiene. Rosenau