TWO SOCIAL AND PUBLIC HEALTH PROBLEMS

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In the last fifty years more has been accomplished for the physical and mental welfare of human beings than, according to authentic history, had been achieved in all the preceding centuries. A glorious period has just passed by, so recent that men now living can easily recall the days when the cause and control of epidemics of many diseases was unknown, when people laughed at bacteria as being the cause of disease. Surgery at this time was as backward as preventive medicine, only the most simple operations being performed. Modern medicine and hygiene to a greater extent than any other science has had to battle with ancient traditions and superstitions. Primitive man imagined a world peopled by supernatural beings. Thunder and wind were often thought to be the cause of disease, to be responsible for man's ills, and also man's good health. Evil spirits were the cause of all misfortune, including illness. The way to fight disease was to fight evil spirits. Masks, rattles, and the dances of medicine men were intended to dispell such evil spirits.

Today, however, modern civilization has changed its views. Every one is well aware of the fact that most diseases are caused by bacteria, by inhalation of dust, by undernutrition, and that fatigue and lowered resistance are aids for bacteria to gain a foothold in the body. Diphtheria, scarlet fever, tuberculosis, syphilis, tonsillitis, and others are all known to be caused by bacteria, exposure and inhalation. Every one from an imigrant, just arrived in this country, to the small child age ten, has heard about vaccination and antitoxin.(1) Most adults

know that being exposed to infectious diseases is a contributing factor in spreading the disease or even coming down with it themselves. Men and women in industry are coming to realize their health is markedly handicapped, their lives made miserable and even shortened, by such things as poor ventilation in working quarters, dust and dampness, and long working hours. (2)

It is the object of this paper to briefly discuss two of the more important public health problems and their relationship to society. Some plans are suggested with each article, always with two things in mind, namely to improve the public health of the nation and to make it, thereby, a more suitable place to work and live.

The first problem is that which deals with tuberculosis, its relationship to society and methods whereby the incidence and death rate can be lowered even below the present level. The second subject is the prevention and lowering of the incidence and death rate of diphtheria and ultimately its complete prevention.

TUBERCULOSIS

A review of the conditions of tuberculosis is difficult to make in an accurate manner. The number of cases in a state like Wisconsin is not exactly known and there is no way of estimating with any degree of exactitude. It is commonly estimated, however, that the number of cases in existence is somewhat near that figured with the so-called Framingham ratio. This is figured on the death rate, nine active cases for each death. In 1930 there were one thousand fifty four deaths from tuberculosis in Wisconsin.(3) By this ratio, then, it can be estimated that there is 13,326 cases of active tuberculosis in Wisconsin, or approximately 14,000. This is, of course, far in excess of the number of reported cases, but it must be remembered that only a small percentage are diagnosed and a few are not even reported to the Boards of Health.

The number of cases in the twenty-one state and county institutions in Wisconsin on November 30, 1931,(3) as given in a report by the State Board of Health, was 1,806. To this must be added about eighty-five cases in two private and semi-private institutions, and about two hundred fifty for the tuberculosis division of the National Home for Tuberculosis, at Milwaukee, Wisconsin, making an approximate total of 2,140 patients hospitalized.

The number of sanatoria and institutions in the State of Wisconsin are twenty four in all,(4) 17 county sanatoria, 1 county preventor-

ia, 1 county institution for the tuberculosis male insane, 1 state sanatorium, 1 state convalescent camp, 1 federated institution for veterans, 1 private and 1 semi-private institution.

The average length of stay in a sanatorium by a patient varies.(3) In a four year study of the Lake Tomahawk State Camp, including all cases an average stay of 9.4 months was found. In a five and one-half year study of Forest Lawn Sanatorium at Jefferson, Wisconsin, including all cases, an average of 11.7 months was found. This varies with various institutions, varies with different years, and also whether transfers, deaths and so on, are included. Pinehurst, at Janesville, Wisconsin, reports 5.6 months for the fiscal year, 1930-1931. One soon learns that figures along this line are very meager. It is undoubtedly true, however, that the average length of stay in a sanatorium for each patient is increasing.

For many years there have been Chest Clinics held in various states of the Union to aid in the diagnosis of early incipient tuberculosis.(5) In 1930, in Wisconsin, the monthly Free Traveling Clinics, under the auspices of the Wisconsin Anti-Tuberculosis Association, totaled 339.(3) A total of 15,552 patients were examined and 2,093 were placed in the tuberculosis classification. This does not mean that there were that many cases, the examiners found enough positive evidence, however, to wish for more diagnostic data and observation to rule out tuberculosis. This further work is not done by the Wisconsin Anti-Tuberculosis Association but is carried out in part by the patient's

family physician. This total above does not include those cases examined by the Tuberculosis Division of the Milwaukee Health Department. When one recalls that the number of cases with a tentative diagnosis as given above is greater than the number of cases in sanatoria, one realizes what an enormous health problem faces us. Multiply this figure by 48, for the number of states in the Union, and a figure is reached which will astonish the medical profession and lay people.

The cost per patient for tuberculosis hospitalization varies to the type of institution he is in. The average cost is probably about seven dollars per week. All patients are permitted to pay for their care in all or in part, but the percentage of full pay patients is small. By Wisconsin's laws, county sanatoria can charge only the charge of maintenance and hence this is figured anew each year. The total costs for caring for sanatoria patients is probably close to two million dollars per year. It is probably true, although no figures are available, that the cost per patient has decreased somewhat during the last year.

What are the problems we must face to cut down this great number of tuberculosis cases? How can we get in touch with more of these cases? (2) How can we get patients that are tuberculous positive to the hospital at an earlier date in the course of the disease, at an earlier stage of a tuberculosis lesion? (1) How can we reduce the number of cases of tuberculosis in children? How can we make sure that patients stay in the sanatoria until cured or arreasted and not

leave when their conditions are so poor that a quiescent lesion may spring up anew at any time? How can we, the medical profession,keep in touch with patients who have been discharged from the sanatoria, to follow them up more closely, so that when a lesion is reactivated the case can be readmitted into a sanatorium while the lesion is still in its so-called"second infancy"? These and many other questions face the medical profession today. A discussion and a few suggestions follow concerning the above questions in hope that they will be partially answered.

1. How can the medical profession get in touch with more tuberculosis cases?(6) This is a most vital problem. If it were possible to talk to each tuberculous person with a suggestion to later visit a diagnostic clinic a great stride would have been made.(7) How are we to meet these 14,000 cases in Wisconsin? One might suggest more chest clinics by the Wisconsin Anti-Tuberculosis Association. This organization, however, is overworked already. Why could not the family physician in association with the county medical society, the county health board, the county and school nurse, and the confederated charities in the various counties, be enlisted to do their share? The family physician seems to me the pivot around which the county and school nurses, and even the Wisconsin Anti-Tuberculosis Association itself, should revolve. Why should the Wisconsin Anti-Tuberculosis Association work separately? The family physician could make many suggestions. He knows partially those who should be examined.

How is this to be done? My suggestion is through the county and state medical societies. The county medical society could give individual instruction to their school nurse and their county nurse,and make a so-called social worker out of all members associated with charity associations. It would be the duty of the county medical society to educate these workers, to give individual instructions in symptomatology. The society could appoint several members as instructors, or in a larger community lectures and group instruction could be given. It would make these workers similar to those under the auspices of the Wisconsin Anti-Tuberculosis Association at present.

Why couldn't the school nurse under the direction of the school board pick out cases which are suspicious of tuberculosis and take them to the family physician, the expense,which would not be too great, to be paid by the county? The county nurse could do the same thing. She could go into the homes and bring each case which had a history suggesting tuberculosis to the family doctor. It should not be necessary that a patient have an active lesion and be in the later stage of the disease before being seen by the physician. The Confederated Charities could send their workers into homes likewise and, instead of giving just poor aid, could bring any suspicious cases to a doctor. In this way, when a patient with any suspicious sign or symptom was visited by these workers, they could, knowing the symptoms of tuberculosis, bring them immediately to a physician for diagnosis. It would be the duty of the medical society to instruct the workers as to who must

be visited, and how members of tuberculous families should be watched. It would be the duty of the medical society to arrange for chest clinics to be held by the Wisconsin Anti-Tuberculosis Association, and it is my suggestion that the physicians in a city cooperate and meet with these workers. It would not only enable the workers to examine more cases, but would also give the physician an impetus to carry this work on while the workers were not in the field. A program such as this could be organized by the Wisconsin Medical Society. Each county society could institute a plan thought suitable by this more central body. This plan would increase the so-called social workers by many hundreds and it is thought would be an aid in bringing suspicious patients to the physician.

Earlier diagnosis would lead to earlier hospitalization. The whole problem is in getting the patient to the doctor at an earlier stage, diagnosis can be made, after which hospitalization can be arranged.

2. (8) How can we cut down the number of cases of tuberculosis in children? According to Pirquet, 56 per cent of all children have been exposed to tuberculosis before the age of fourteen.(9) His data and experiments were compiled using the children who were patients in the Infirmary for Infectious Diseases, at Vienna. In a similar group of cases, Hamburger showed that 95 per cent of children below the age of fourteen had been exposed or were tuberculin positive.

In London, in recent years serious attention has been given to

the care of children in whose home there had been found active tuberculosis. Five schools with accomodation for 362 cases have been built to take children suffering from this disease or those who were tuberculous suspects. They have also built many open air schools for those who would probably develop tuberculosis if their health was not supervised. Children are removed from their homes for twelve months where one has just died of tuberculosis and where the child has been present during the terminal stage of the disease.

I would strongly suggest the removal of a child from a tuberculous mother. The ideal procedure, of course, is to remove the mother to a sanatorium but many times this is impossible. The only alternative is to remove the child. The baby could be kept at home for tuberculous children. This arrangement could be for only a limited number of cases. The one and only other arrangement is to board them out either with relatives or in homes where people are willing to do it for compensation. After the age of four the child could be returned to the parents with the idea in mind of an annual visit to an outdoor camp. This breaks up the integrity of the family, but one would rather have well healthy children than to have them inflicted with tuberculosis.

3. <u>How can we make sure the patient stays in the sanatorium until they are cured or arrested</u>, and not leave when their condition is so poor that a quiescent lesion may reactivate later? This task takes in more problems than is commonly thought. So often it is impossible

for a patient to make a prolonged stay in an institution because of his poor financial status.(7) He cannot figure out ways or means to keep his family while he is away. The business in which the man is engaged will suffer. If the patient is a mother there is no one at home to carry on the responsibility of housekeeping.

Who is to make these arrangements to carry on a family or business while one is away? Can a family physician do this? Often he is too busy. This is the work of the county social workers, the county nurse and the charity organisations. When a patient is diagnosed as having tuberculosis and told that he must go to a sanatorium, a social worker should be called into the case. She can make inquiries and make investigations as to the financial condition. She can make arrangements with the county or charity organizations to take care of the family or perhaps find someone to run a business. She can assure the patient that his family will be well cared for while he is away, she can reassure him at intervals while he is being hospitalized.

County and charity organizations are always asked to care for a family. It is a hardship for them. Granting this to be true, it is better to take care of a patient for a few months in a sanatorium until he is arrested and again is able to take up the duties of a bread-winner, than it would be to have him go on for a year or two and then have his whole family to support for a much longer time. It is true that if a patient could be assured that his family is supported he will not want to go home until cured. Throughout the course of hospitali-

zation it is the job of the social worker to arrange for visitation of wife and family.....Happiness and contentment does much to bring about an arrest of tuberculosis.

It is as much a problem to get rid of the patient when he is cured as to keep him until cured. Too often the patient while in a sanatorium gets discouraged, loses all interest in himself, his condition, and his future. Whether he gets well and is able to assume his previous responsibilities or not does not worry him. He becomes a so-called mental wreck. Nothing the sanatorium faculty can do will help him. He is weak minded and gradually degrades until he is in a class known as the hospital psychoneurotic. Even if he were well he would not want to go home. It is the duty of this same social worker to cheer him up, to keep him at ease, and always interested in his recovery. Later, when discharged, it is the duty of the social worker to have a place for him to go, relatives, friends or a place where he can earn a living.

4. How can we keep in contact with patients that have been discharged from a sanatorium? When a lesion is reactivated a patient must be readmitted without delay while the lesion is in its so-called second infancy. This can be done by the family physician. He can more closely follow the patients condition. Often he knows the patient personally. Sanatoria often send written reports to physicians concerning their findings and diagnosis. This gives him an opportunity to carry on further treatment and give satisfactory advice.

Why would it not be possible for a patient to keep a record of his temperature, pulse and weight? This could be charted and taken to the family physician once a month. This he could learn while in a hospital. He could start it several months before discharge and would, therefore, be in the habit of doing this simple task.

It happens often that the patient moves away to another city, he loses interest in the people who have helped him. Thw Wisconsin Anti-Tuberculosis Association, the family physician, and social worker, loose contact with him. It is better to have a heart to heart talk with the patient, tell him frankly about his condition, keep him always interested. Results would be astonishing. The time now spent in trying to locate patients after hospitalization could be better spent in educating this same patient, teaching him the importance of always, until death, checking his condition, his pulse, temperature, and weight, as stated above.

DIPHTHERIA

In past centuries, and even within the early years of the present century, diphtheria was one of the major causes of death. It is a communicable disease that of late years has become preventable. Great strides have resulted from well organized drives of toxin, antitoxin, vaccination programs. In the year 1881 there were 2,202 deaths from diphtheria in Wisconsin. In the years 1916-1925 there were in Wisconsin an average number of about 3,000 cases and about 300 deaths annually. In 1926 there were 2,054 cases with 157 deaths. In 1927 there were 1,862 cases with 134 deaths. In 1928 there were 1,155 cases with 100 deaths. In 1929 there were 1,025 cases with 80 deaths, and in 1930, the last figures available, there were 799 cases with 72 deaths.(10) These figures show the general trend of the decline in diphtheria cases and deaths - all the result of toxin antitoxin programs and better methods of treatment. Other cities and states show statistics which are equally as astonishing.

In Philadelphia, Pennsylvania, in 1931 the death rate for diphtheria was 1.48 per 100,000 population, the lowest in the history of the city, 283 cases were reported with only 29 deaths.(11) The death rate was 16.7 per cent in 1925 as compared with the above. The marked decrease was attributed to the many persistent campaigns for use of toxin antitoxin.

The cases and death rate from diphtheria in 1930 were the lowest which the Public Health Service has ever recorded.(12) There were

54.2 cases and 4.9 deaths per 100,000 population. Ten years ago, 1920, the diphtheria case rate was a 155 per 100,000 and the death rate 15.3 per 100,000. The report also states that in the registration area of the United States in 1928 there were 8,262 deaths from diphtheria.

In Canada a similar condition exists. In the period 1921-24 diphtheria ranked first as a cause of death in age groups from two to fourteen years. It accounted for over 15 per cent, or 1 in every 7, of the deaths in that age group. The annual mortality rate per 100,000 population varied from 14 to 23. The number of deaths in a year varied from 1281 to 2072.

In the countries of Europe diphtheria is more prevalent than in the United States and Canada. In France, in 1929, there were 20,400 cases reported,(13) and in the following year the number had increased to 23,700 cases. This figure as compared with those of the United States is greater proof of its prevalence.

Figures for 1931 are not available but such reports as the following can be found in the literature: According to the annual report of the Registrar of Public Health at Miami, Florida,(14) not one death was reported during the year 1931. This is the first time this record has been attained since Miami began compiling statistics. Another article states that no diphtheria has been reported in Pueblo, Colorado, since January 17, 1930.(15) This record was attained as a result of an extensive immunization campaign among school children and the con-

trol of persons described as diphtheria carriers who were discovered after cultures were taken by the Public Health Department in 1930. In Wisconsin the report from Bayfield County, dated December 8, 1931, stated that diphtheria had broken out in the schools and that twelve children were reported ill.(16)

Of the 8,262 deaths from diphtheria in the United States Registration Area in 1928, sixty per cent were in children under five years of age; of this group, the first, second, and third year furnished the largest number of deaths.(17) It is true that the child in age groups from one year of age to ten is more susceptible to diphtheria than persons in any other age group. As children become older they become more immune to diphtheria. In New York City eighty per cent of all deaths from diphtheria were under ten years of age. In Wisconsin between 1916 -1925, 74.6 per cent of the deaths were in children under 10 years of age.

It is a fact that the incidence and death rate from diphtheria is decreasing, but it is also true that it is altogether too high. Why should such a small town like Bayfield, Wisconsin, have outbreaks in their schools? Why should there be 799 cases in Wisconsin in 1930, with 72 deaths? Why should there be approximately 8,000 deaths in the United States each year? Diphtheria is preventable in one hundred per cent of the cases and methods which are in force now should be extended until all cities are able to report as was done in Pueblo and Miami. This would ultimately lead to a complete blotting out of this

disease.

How can this be accomplished? Why have the persistent preventive toxin antitoxin programs failed? Why do we have sporadic cases popping up intermittently both in the rural and urban districts? Why cannot all children be immunized? What further means have we for controlling diphtheria carriers?

Every one is familiar with the toxin antitoxin programs which have been extensively carried out in the United States in the last fifteen years. These programs have accomplished wonders. It is necessary to carry them still farther to immunize everyone, so that there will be no cases of diphtheria and, therefore, no deaths. At present these programs are carried out by the various city health departments, in conjunction with the state health departments. I want to offer two new plans which are already in use, in part, in some sections of the country. The first is the organization of an extensive program of immunization organized by the State Medical Society, and a second plan carried out by the family physician to immunize all infantw in a locality after they are six months old.

The first plan is the appointment of a committee by the State Medical Society to develop a state wide program, a program of immunization that could be carried out in every community, local and urban, to vaccinate everyone, adults as well as children, against diphtheria. The Committee shall work jointly with the State Board of Health, with the

County Board of Health and the County Medical Society. It shall be the duty of the State Medical Society with the State Board of Health to provide the necessary toxoid or toxin antitoxin to the County Medical Society or Board. It shall be their duty to distribute public educational material to each community, posters, bulletins, pamphlets, and also to prepare speeches to be given by the county health nurses, school nurses and local physicians. It shall be their duty to see that each physician shall know the technique of immunization. This can be done by the holding of group demonstrations in each county by workers from the State Board of Health.

The County Medical Society shall work in cooperation with the County Medical Society.(15) It shall be their duty to arrange the preliminary work and distribute the educational material. The county nurse shall work under them, she shall attend all clinics held and keep records of all children and adults immunized.

I would strongly suggest a state law requiring the immunization of all children and adults who are found to be susceptible by a preliminary Schick Test. If this could not be done the community organization could, if organized properly, talk to each parent or guardian, and suggest and insist that all be immunized. The active work should be done by the physicians of the State. They are the only ones able to do it scientifically. They can examine the cases previous to vaccination and follow them after, they are better able to judge what to use in each particular case, toxoid, or toxin antitoxin and the amount to be

(18,19)

used. This program should be carried out in every community in the county. It would result in a populace who have all been immunized. Carriers would not be dangerous because ninety five per cent of the population would be immune. The number of carriers would be lessened because the number of active cases would be so few in number, the chance of exposure would be almost nil.

Again, as in all articles written previously, I would suggest that the young children from one to seven years of age be immunized first. It is a conservative statement that the immunizing of a child in the first five years of life is equal in its effects upon the death rate of diphtheria to the immunizing of three school children.

It is hoped that a more complete program of immunizing carried out every year over a three year period would soon blot out this disease, that it would become even more rare than typhoid fever. Entire states could make reports of not a single case or death as is done now by a few cities.

A second plan is to have the family physician immunize every child under his management. This, of course, is already done in part. Many physicians ask that the baby be brought to them at the required age. Others go as far as to notify the parents that their child is old enough and should be vaccinated. This, however, is carried out by a limited number of doctors. I want to emphasize the importance of each doctor immunizing those infants and children under his care. He is acquainted with the parents or guardian, and it would be a simple matter

for him to make the suggestion and then insist that the work be done, this necessarily entials a cost of a few dollars to the parents. It is suggested that the doctor charge those parents who can pay. The remaining must be taken care of by the doctor and the expense charged to the county in which they live. The general price for this immunizing could be fixed by the State Medical Society, a fixed price of one dollar would probably be sufficient to cover the costs of injections. I see no reason why a State law requiring the immunization of infants at six months of age would not be a good thing. This law would be similar to that now in force for the prevention of ophthalmia neonatorium. Statewide program of immunization of infants would certainly lower the number of cases of diphtheria and deaths therefrom. Why could not this be done?

CONCLUSIONS

1. It is thought that a plan organized under the State Medical Society in cooperation with other agencies will help materially in diagnosing early pulmonary tuberculosis.

2. Children should be removed from tuberculous mothers and homes in which tuberculosis is present.

3. The social worker should aid in keeping patients in sanatoria until cured.

4. The family physician should follow tuberculous cases closely after discharge from sanatoria.

5. A plan for the patient to take his own temperature, pulse and weight has been suggested.

6. It is thought a more extensive plan of diphtheria immunization should be carried out in all states. This plan to be organized by the State Medical Society, with the cooperation of the State Health Department, the County Medical Society and the County Health Board.

7. Emphasis has been accorded the plan of each family physician immunizing the infants and children under his care.

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