IMPORTANCE OF PUBLIC HEALTH DENTISTRY

By BRUCE D. FORSYTH, D.D.S.

Assistant Surgeon General, U. S. Public Health Service

Prior to a discussion of problems relating to health and health services, it is fitting and proper that some definition of terms be stated. By the term "public health" is meant the physical and mental well-being of the total population of any given area. When so used, this term encompasses a problem of tremendous significance and one which is vital to the very existence of mankind. The particular phase of this total problem, which I should like to discuss briefly, deals with diseases and conditions of the oral tissues.

Dental diseases today are probably the most common human ailment. Entire populations are afflicted with them, and they frequently induce a train of related maladies. Dental diseases are not peculiar to any one group of people whether defined by age, race, sex, geographic location, economic status, or educational levels.

In the younger age groups, but by no means confined to youth, dental caries is the great offender. Every survey made in the past 14 years has shown that from 75 to 98 per cent of school children examined have dental caries. On the average caries attacks one additional tooth every 16 months in children 6 to 14 years of age. The most recent surveys conducted in certain cities in the United States showed that, on the average, dental caries has attacked from 5 to 10 permanent teeth in each 13 year old child.

In the middle age group, pyorrhea and its attendant ills begin to take a heavy toll of the remaining teeth. Oral cancer, neoplasms, and many diseases of occupational origin are more frequently encountered. Neglected, untreated, diseased teeth and gingivae may be the direct or indirect cause of many systemic disorders, such as arthritis, neuritis, neuralgia, valvular heart disease, diseases of the kidneys and gastrointestinal tract, and even psychosomatic disturbances.

From a consideration of the very real threats to health which may arise as a result of oral disorders, it becomes apparent that dentistry occupies an important place in public health services. The public health attack upon dental diseases is directed upon three main fronts; i.e., dental research, clinical care, and preventive programs.

Progress in the solution of any public health problem depends upon an ever-expanding body of scientific knowledge. In the field of oral disease, there has been a paucity of research into the underlying and contributory causes. The determination of preventive techniques and, indeed, of more effective therapy for these afflictions has been retarded by the lack of basic dental research.
The major emphasis in dental research in the United States has been upon dental caries. Investigations have shown a correlation between the incidence of dental decay and the presence or absence of fluorine in the public water supply of a community. Although the cause of dental caries remains unknown, clinical evidence is available which indicates a reduction of caries in those areas where the potable water supply contains from one to two parts per million of fluorine. It is also recognized that an excess of fluorine ingested by children will result in dental fluorosis, a mottling or discoloration of the enamel structure of the teeth. Studies of long-term duration are now underway to verify these findings, to determine the total systemic effects of ingested fluorides, and to establish the efficacy of artificial versus natural fluorination of water supplies.

In the United States, the addition of fluorine to public water supplies would reach approximately 70 percent of the population. The remaining 30 percent derive their drinking water from wells, springs, etc., which are not readily fluorinated. Realizing this discrepancy, investigators conducted a series of clinical demonstrations from which has been derived a method for the topical application of sodium fluoride to the teeth of children. This technique is reported as being effective in reducing the incidence of dental caries by at least 40 percent.

The procedure consists of four topical applications of a 2 percent aqueous solution of sodium fluoride to the child's teeth. The teeth are cleansed before the first application; and three succeeding applications are made at about weekly intervals. It is recommended that a series of such applications be made at the ages of 3, 7, 10, and 13 years—with a view to preventing caries in both deciduous and permanent teeth.

Because fluorine is readily available, because its cost is low, and the methods of application—topically or in public water supplies—are relatively simple, this substance is an admirable agent for the prevention of caries. To date no undesirable sequelae have been observed. Our enthusiasm for the use of fluorine to reduce dental caries does not preclude recognition of the equally important parts played by diet, nutritional status, endocrine, and metabolic factors. It is realized, however, that fluorine is not the perfect agent, for it does not completely prevent dental caries in children. Neither have we been able to demonstrate significant results from its application to the teeth of adults. Nevertheless, the use of fluorine is one of the important results of basic and applied research.

We cannot over-emphasize the fact that adequately financed and supported research can point the way to suppression or arrest of oral diseases. Investigations into the fundamental problems, with parallel study of the clinical phases and an ultimate dissemination of proved knowledge to the public, will insure future success in the prevention of dental disorders.
The problem of providing clinical care to meet the needs of the total population, is of astronomical proportions. It has been estimated that in the United States alone 400,000 dentists, working diligently for a period of one year, would be required to restore the present defective oral mechanisms of the whole population. With our present supply of dental personnel this would be a never-ending job. The enormity of such a task makes it obvious that clinical care, at present, can only meet emergency needs.

Perhaps the points at which clinical treatment can make its greatest contribution is in the extension of dental care programs to vulnerable population groups. For example, children of pre-school and school age, pregnant women, and nursing mothers. The adolescent child is particularly susceptible to development of dental disease because of the metabolic changes which are going on in the body. The same is true of the pregnant woman and the nursing mother. For these vulnerable groups, adequate clinical care should be provided through such organizations as local health departments and the school systems.

Another large population group with high prevalence of oral disease can be reached easily; namely, the industrial workers. In the United States, the majority of large industries have well-organized industrial hygiene services, including thorough preplacement and follow-up medical examination of employees. A few of these companies have made comprehensive dental examinations an important part of their industrial hygiene programs, referring patients to private practitioners for treatment.

A second step which may be taken is the use of well-trained auxiliary personnel, under the supervision of a dentist, to perform the simpler, routine tasks and thereby spread the services of a skilled dentist more widely. Another approach to the problem, obviously, is to train more dentists and thus increase the total supply of dental manpower.

Clinical care and research are only two of the supporting columns in the effective attack upon dental disease. In addition, there must be a wide-scale program of dental health education to motivate people to utilize the most effective methods of prevention and control. Dental health is a responsibility of the individual, the family, and the community. The problem of educating the average man or woman to take advantage of acceptable preventive and control methods poses a difficult and long-term task. For example, it has been shown that elimination of certain refined carbohydrates from the diet will decrease the incidence and lessen the severity of attacks of dental caries. Yet however worthy this objective may be it becomes insignificant when compared to the fondness of children for sweets.

The programs for the purpose of public education on oral health have in the past been too narrow in scope and have failed to present the knowl-
edge in a realistic manner, adjusted to the culture and customs of the people.

Let us now consider the place of dentistry in a program of public health. Sir William Osler, the father of modern medicine, years ago recognized the significance of healthy oral structures when he said, "There is not one thing in preventive medicine that equals in importance mouth hygiene and the preservation of the teeth." Dental care should be considered as much more than a cosmetic luxury. People need to learn that diseases affecting the oral tissues cannot be eradicated by removing the offending teeth. Teeth cannot be neglected or discarded without serious consequences to the whole bodily mechanism. Biologists have amply demonstrated that robust adulthood and old age are dependent on the small and almost infinitesimal factors of our life processes. Many cases of general debility and ill health occur among people who lack the chewing function. Restoration and maintenance of this function are indispensable in any plan for the total medical and dental care of such patients. Therefore, every factor contributing to the development and natural maintenance of oral structures, and the normal functioning of the mouth, should be promoted to the fullest extent. However important any such health promoting measures may be, the fact remains that the real problem, duty, and purpose of the physician and dentist are the early recognition and successful interception of disease. Only by such alertness can the natural ravages and dire consequences of untreated disease be prevented. Many, if not all, of the systemic ills attributed to the mouth could be successfully intercepted by the proper and timely application of suitable remedies. Therefore, good treatment and sound preventive procedures stand today as the most prominent and promising health measure of the healing arts.

The individual dentist of today can no longer restrict his work to a small dental operating room, with the narrow perspective of its confines. He is a part of the great pattern of public health services. He must remember that the oral tissues act as mirrors to reflect signals which indicate systemic imbalances and upsets. He should recognize his responsibility in the diagnosis of lesions such as those of syphilis, tuberculosis, and the blood dyscrasias. He should accept his obligation to refer patients to specialists for further care.

It is the duty of the medical and dental professions to investigate and develop new methods of prevention and treatment. When proved to the point of acceptability, this knowledge should be disseminated by the professions to the public. The dentist, as a professional man, must constantly stimulate the inauguration and maintenance of community facilities wherein the general public can receive both preventive and restorative treatment.
Notwithstanding the difficulties inherent in the control of oral diseases, the potentialities of improving the public health by well-planned, preventive dental services are so great that no public health official or private practitioner can ignore the challenge. The expansion of dental research, clinical care, and public education programs is essential to progress in the prevention of oral disease and its attendant ill health. Only by these methods can the level of oral health be raised in the total population.

IMPORTANCIA DE LA ODONTOLOGÍA EN EL CAMPO DE LA SALUBRIDAD PÚBLICA (Sumario)

Todas las exploraciones sanitarias hechas en los últimos 14 años, han demostrado que de 75 a 98% de los escolares examinados padecían de caries dental. En el promedio de los casos la caries ataca un diente más, cada 16 meses en niños de seis a 14 años de edad, demostrando las exploraciones más recientes realizadas en algunas ciudades de Estados Unidos que por regla general la caries dental ataca de 5 a 10 dientes permanentes a todos los niños de trece años de edad. Se ha comprobado estrecha relación entre la caries dental y la existencia o falta de flúor en la dotación pública de agua potable de la colectividad. Aunque la causa de la caries dental permanece desconocida, hay pruebas clínicas valiosas de que disminuye en las zonas en que la dotación de agua potable contiene de 1 a 2 partes por millón de flúor. El cuidado clínico y la investigación representan sólo dos de las columnas en que descansa el esfuerzo efectivo contra las enfermedades dentales. El problema de proporcionar atención clínica para remediar las necesidades de toda población, es de proporciones astronómicas. Sólo en Estados Unidos se requerirían 400,000 dentistas que trabajaran eficazmente durante un año para restablecer el estado normal de la boca en toda la población. Es un deber de la profesión médica y dental desarrollar nuevos métodos de prevención y de tratamiento. A pesar de las dificultades inherentes al control de las enfermedades bucales, son tan grandes las posibilidades de mejorar la salud pública por medio de servicios dentales preventivos bien planeados, que ningún empleado de salubridad o profesional particular puede ignorarlas o despreciarlas.