Report of

The State Department of Public Health

Pursuant to Senate Concurrent Resolution No. 31

Relating to the

INVESTIGATION OF RHEUMATIC FEVER

PUBLISHED BY THE
SENATE
OF THE STATE OF CALIFORNIA

GOODWIN J. KNIGHT
President of the Senate

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LETTER OF TRANSMITTAL

STATE OF CALIFORNIA, DEPARTMENT OF PUBLIC HEALTH
SAN FRANCISCO, January 5, 1949

The Honorable Earl Warren, Governor
The Honorable Goodwin J. Knight, Lieutenant Governor
The Honorable Sam L. Collins, Speaker of the Assembly

GENTLEMEN: In accordance with Senate Concurrent Resolution No. 31 of the 1947 Session of the Legislature, the State Department of Public Health has conducted a survey of the problem of rheumatic fever in California, and I have the honor to transmit to you this Report on the Rheumatic Fever Survey.

Very sincerely yours,

WILTON L. HALVERSON, M.D.
Director of Public Health

Report of the

STATE DEPARTMENT OF PUBLIC HEALTH

Pursuant to Senate Concurrent Resolution No. 31

Relating to the

INVESTIGATION OF RHEUMATIC FEVER

SENATE CONCURRENT RESOLUTION NO. 31

Introduced by Senator Herbert W. Slater

WHEREAS, Statistics show that rheumatic fever is the first cause of death in children from ten to fourteen years of age and causes almost five times as many deaths in children of school age as the combined total of deaths from infantile paralysis, whooping cough, diphtheria, scarlet fever, measles and cerebral meningitis; and

WHEREAS, It is estimated that 60 percent of the children who have an attack of rheumatic fever suffer varying degrees of crippling, depending to a large extent, on the care they receive; and

WHEREAS, The child with rheumatic fever has a chance for complete recovery and normal life if he has prolonged convalescent care; and

WHEREAS, It is the desire of the Legislature of the State of California to protect the children in this State from the ravages of rheumatic fever; and

WHEREAS, It is necessary in making proper provisions for the care of the children that the Legislature be fully informed of the problems involved; now, therefore, be it

Resolved by the Senate of the State of California, the Assembly thereof concurring, That the Director of the State Department of Public Health is hereby requested to investigate the problem of rheumatic fever and rheumatic heart disease as it affects the children in this State who are in need of diagnostic treatment and hospital and convalescent care, including occupational therapy, medical social services and school health programs related to this disease and the costs of such care, the facilities needed to provide for them; to include the study of the problem in child health in the 1947 program, and to submit to the Legislature by January 1, 1949, a report on which it will be possible to base a state-wide program for the care of rheumatic children; and be it further

Resolved, That the Secretary of the Senate is hereby directed to forward a copy of this resolution to the Director of the State Department of Public Health.

ACKNOWLEDGMENT

The State Department of Public Health wishes to acknowledge with appreciation the assistance of the Heart Advisory Committee of the California Tuberculosis and Health Association which gave technical consultation in the preparation of this report. This committee was composed of the following:

S. J. McClendon, M.D.----------San Diego
Louis E. Martin, M.D.----------Los Angeles
Howard Bosworth, M.D. ----------Los Angeles
William Paul Thompson, M.D.----------Los Angeles
Charles A. Noble, Jr., M.D.----------San Francisco

In addition, Doctor Harold Rosenblum and Doctor Edwin L. Bruck of San Francisco acted as consultants to the department in editing the study in accordance with the suggestion of the advisory committee.

SUMMARY

Evidence has been accumulating for the past 20 years on the existence and extent of rheumatic fever cases in California and for getting an understanding of the problems of their care. On the basis of material in this report it is estimated that there are 7,000 children with rheumatic fever in California in need of services, some of which are not now available.

Rheumatic fever is a disease which causes permanent damage to the hearts of many of its victims. Like tuberculosis, it requires many months of bed rest under close medical supervision. This treatment is expensive. Ninety-five percent of the families cannot afford all of it.*

The primary object of a program for the control of rheumatic fever is to prevent permanent heart damage.

These children must be found; the diagnosis of rheumatic fever must be verified; treatment must be provided during acute illness; and subsequent supervision maintained to attempt prevention of further attacks.

EXTENT OF RHEUMATIC FEVER

Evidence has been accumulating for the past 20 years on the existence and extent of patients with rheumatic fever in California and for a better understanding of the problem of their care.

On the basis of surveys and experience in certain areas where diagnostic and treatment services have been available, it can now be said that in the school population of 1,500,000 children in California, there are probably seven thousand cases of rheumatic fever each year, some of which are in need of services which they now do not receive. It is not possible to evaluate the number of cases now receiving care from private physicians. The two basic problems are, first, the lack of beds, particularly for convalescent care; and, second, the immediate need for funds to purchase services in facilities which now exist.

* Statement by T. Ducket Jones, eminent authority on rheumatic fever. Reference: San Francisco County Medical Society Meetings—October 23 1947.

This is substantiated by studies made in private practice, health departments, local medical heart advisory committees, through surveys and reports of investigations since 1930. (1).

An intensive study was conducted in Contra Costa and Solano Counties for five years (1940-46), which included diagnosis, consultation, and treatment. Of 1,097 rheumatic fever suspects referred by physicians, schools, health and welfare departments, 666 had rheumatic fever. Of these, 303 required hospital and convalescent care. The cost of this care was greater than could be financed completely by most of the families. It is worthwhile to point out that 81 percent of these children were either born in California or had their first attack in this State.

In 1947 in five counties having a school population of 108,000, 884 children suspected of having rheumatic fever were referred for diagnosis. Of these, 572 were found to have rheumatic fever. (2).

If the experiences in these counties were applied to the California school population of 1,500,000, an estimated 12,300 children per year would be rheumatic fever suspects, 7,950 rheumatic fever cases, and of these, 22 per cent or 1,649 would require bed care outside the home.

The care of many of these children could not be financed privately because of the need of prolonged hospital and convalescent care.

Studies of rheumatic fever have been made in every part of the State —in the damp coastal regions of Humboldt County, in the mountainous areas of Lassen County, in the "citrus belt" of Redlands, Pasadena, and in San Diego. Imperial Valley has its share of rheumatic children. San Francisco, Los Angeles, Kern, Santa Barbara, and San Joaquin Counties tell the same story. "Rheumatic fever is where you look for it," Doctor Louis E. Martin, past president of the California Heart Association tells us.

Some 11 counties* have tried to meet the need for care of children with rheumatic fever, by organization of services either by public or voluntary agencies. The experience in these widely scattered and highly diversified areas points out these basic facts:

1. The state-wide prevalence of the disease is greater than previously realized.
2. Local resources, voluntary or public, are not now providing the necessary type and quality of care.
3. Children with rheumatic fever in remote areas of the State do not always have accessible medical care.
4. Rheumatic fever is too costly for many families.
5. Many families are not acquainted with the significance and importance of rheumatic fever.
6. When adequate care is not given to the child with rheumatic fever, permanent heart damage frequently occurs.
7. Rheumatic fever profoundly affects the child's family relationships and sense of security unless great care is taken to provide him with social, occupational and vocational outlets.
8. It is not uncommon to find several children in one family ill with rheumatic fever.

* Humboldt, Sonoma, Solano, Contra Costa, San Joaquin, San Francisco, Merced, Stanislaus, Kern, Santa Barbara, Los Angeles.

WHAT IS RHEUMATIC FEVER?

Rheumatic fever is the disease which causes permanent damage to the hearts of many of its victims. It is a disease found most often in school children, although it may attack at any age. It shows itself in many ways. The child may have an extended severe illness with pains and swelling in muscles and joints. More often he may have a combination of vague aches and pains in the limbs, abdomen, and head, accompanied by a fever, loss of weight and strength. Each attack may last for long periods of time—often six months or longer. The heart is in danger of permanent damage no matter how mild or how short the attack may be. Children who have one attack have an increased susceptibility to further attacks. Each new attack may cause further heart damage.

WHAT IS THE CAUSE OF RHEUMATIC FEVER?

The cause of rheumatic fever is unknown. The following information is available. With great frequency acute streptococcal diseases, such as streptococcal sore throats, tonsillitis, or scarlet fever precede an attack of rheumatic fever.

Streptococcal diseases spread easily. This spread is greatest in overcrowded homes and in houses poorly insulated against cold and dampness.

It is not uncommon to find several children in one family bedridden with rheumatic fever. Rheumatic fever has appeared to be most prevalent in temperate zones.However, recent complete studies indicate that it can be found everywhere. The desert areas of California are no exception.

HOW IS RHEUMATIC FEVER RECOGNIZED?

No single specific test will determine whether or not a child has rheumatic fever. An accurate diagnosis requires a complete medical history of the child and his family; a thorough physical examination by a physician; laboratory study of the blood; X-ray studies to determine the size and shape of the heart, and electrocardiograms to give additional knowledge concerning the presence and amount of cardiac injury. All of these examinations and tests must often be repeated over a period of time to make certain of the diagnosis of rheumatic fever. This is necessary because the majority of the children affected have vague, generalized symptoms which require prolonged observation for their interpretation.

HOW IS RHEUMATIC FEVER TREATED?

Science has not yet devised any drug which will cure rheumatic fever. Like tuberculosis, treatment consists mainly of rest throughout the activity of the disease. During the first few weeks when the disease process is most acute, hospital care is frequently needed to give the child the benefit of special nursing care, the use of oxygen tents, and other treatments.

Since the disease may be active for six months or more, this means that the child should remain in bed during this period in an atmosphere devoid of emotional stress and strain. The long weeks of convalescence

may be spent at home if good care can be provided; if such care cannot be arranged at home (as it frequently cannot), care in a good con-

valescent or foster home must be provided in order to maintain the bed rest regime and avoid or minimize heart damage.

It is extremely important that the child be kept mentally interested and psychologically well adjusted. Education, occupational therapy, and vocational training are essential, since these children will need later to earn their livelihood in the more sedentary and skilled fields.

WHAT IS AN ADEQUATE PROGRAM IN CALIFORNIA?

An adequate rheumatic fever program consists of developing methods of education of professional and lay groups; searching for the cases; verifying the diagnosis of rheumatic fever, and seeing that the child is cared for during the activity of the illness, and maintaining medical and other supervision of the case through the inactive stage.

I. Education

An effective rheumatic fever control program presupposes both professional and lay groups oriented to the problems of rheumatic fever. This can be achieved by:

A. Education of Physicians. 1. Planning for such education through the medical schools; the California Medical Association and the Heart Division of the California Tuberculosis and Health Association; post-graduate instruction programs, and the programs of the public health department and voluntary agencies.

2. Providing physicians with training through these sources so that they may assume leadership in the control of rheumatic fever.

3. Providing additional experience in diagnosis and treatment for medical practitioners in rural and urban areas through consultation services, teaching clinics and other post-graduate activities.

B. Community Education. Study of the subject by community leaders, service clubs, parent-teacher organizations and other groups.

C. Training of Public Health and School Health Personnel. 1. Developing conferences, consultation methods and other education tools so that public health and school health personnel may become familiar with the problems of rheumatic fever and methods of control.

II. Case Finding

Through the educational methods outlined, a program of organized case finding will develop and will include:

A. Recognition of suspected cases by medical, public health, and school health personnel.

B. Referral of such cases to diagnostic services. Those requiring care should be directed either to private physicians or, where the family is shown unable to afford private care to such public community resources as are available.

III. Making the Diagnosis

The diagnosis of rheumatic fever is difficult and time-consuming and requires specially trained personnel, adequate facilities for examination, and pertinent laboratory tests, often repeated.

A. The diagnostic process involes: 1. Personal and family history taken by the physician.

2. Complete physical examination by the physician with special attention to signs of heart disease and other manifestations of rheumatic fever.

3. Laboratory tests consisting of X-rays and fluoroscopy, electrocardiography, blood count, and blood sedimentation rate, urine analysis, and such other tests as may be necessary in selected cases.

B. These facilities and staff are needed to carry out the above procedures and to interpret the findings and the necessary recommendations to the patient.

1. Physician—especially trained for work in this field.

2. Public Health Nurses to assist both patient and physician.

3. Laboratory Technician trained to do clinical laboratory procedures and X-rays.

4. Medical social service personnel either attached to the facility or to a cooperating organization who can assist in planning with child and family.

5. Clerical personnel.

6. A suitable location, preferably an existing one, which will meet community needs.

IV. The Care of the Child During the Active Stage of the Illness

The primary object of this care is to minimuze damage to the heart and thus reduce the number of permanent cardiac cripples. The necessary factors in good care are:

A. Continuous medical supervision by physicians with special training or by general practitioners with consultant services from the specialists' group. Such supervision should be by private physicians, or where the family is shown to be unable to provide private care, it should be by such public community resources as are available.

B. Uninterrupted bed rest for the duration of the attack whether for weeks, months, or years, either at home or in an institution, which can be accomplished in the following ways:

1. Bed rest at home. About 50 percent of the cases are mild enough for this procedure.*

2. Bed rest in an acute pediatric ward. This is required for the most acute cases and for those with severely damaged hearts.

3. Bed rest and gradual resumption of activity in a foster home or convalescent institution for less severe and convalescent cases.

C. Continued schooling by home teachers and in hospital schools.

D. Suitable recreation and vocational guidance and assistance in rehabilitation.

V. Follow Up During the Inactive Stage of the Illness

A. Medical supervision at regular intervals either by private physicians with consultant services available, or in follow up clinics, to discover early signs of recurrence of the disease, to evaluate heart damage and relate the child's home and school life to the findings.

B. Public Health Nursing and School Health supervision to assist with problems of physical and social adjustment to school and home conditions.

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* Statement by T. Duckett Jones, eminent authority on rheumatic fever. Reference: San Francisco County Medical Society Meetings—October 23, 1947.

C. Vocational rehabilitation for those cardiac cripples who need vocational training and placement.

WHAT IS NEEDED FOR AN ADEQUATE PROGRAM?

California has already taken some steps in the direction of developing rheumatic fever control programs.[3] Private physicians and voluntary agencies have tried to meet the problem. The Crippled Children Services of the State Department of Public Health has offered service to children to the extent of available funds. These funds have been insufficient to provide care beyond a limited area. An adequate program in California, however, will require:

I. Consultation Centers

Sufficient space and equipment is now available or could be made available in both urban and rural areas either in existing hospitals or clinics or other facilities.

II. Hospital and Convalescent Facilities

It is well known that hospital facilities in California have not kept up with the increase in population. It is not, however, so well known that facilities for pediatric care are even more meager. The inclusion of pediatric units in new hospital construction is essential if sufficient beds for acute care are to be available. Joint planning with communities and the Bureau of Hospitals of the State Department of Public Health will lead toward a solution.

In spite of the greater need for convalescent beds, convalescent facilities are even less available than hospital beds. There are certain facilities now available which could be developed as convalescent resources. It is estimated that approximately three hundred fifty beds might be made available which could provide a high quality of care provided certain adjustments and extensions are made.

III. Personnel

A considerable number of trained physicians is available in the urban areas. Since these physicians have full-time practices, it will be necessary to provide training opportunities for other physicians especially in rural areas. The same need for training applies to hospital and public health nurses and to social workers.

IV. Community Education

It is important that the level of information regarding rheumatic fever be raised throughout the community to improve the effectiveness of the program for the individual child.

V. Administrative Responsibility

Since the rheumatic fever child is now included in the administrative definition of a physically handicapped child, it is recommended that the Crippled Children Services of the State Department of Public Health administer the rheumatic fever program.

Its responsibilities would include planning with the medical profession, voluntary health agencies and public agencies, including the State Departments of Education and Welfare.

WHAT ARE THE NEXT STEPS?

Although the extent of rheumatic fever as a major health problem is known, certain facilities, especially for convalescent care and in some cases for hospitalization are inadequate in California at this time. While medical personnel is available in metropolitan areas, this is not the case in many outlying districts. There is a shortage of nurses throughout the State. Therefore, the extent of services which could immediately be provided must be determined by the facilities and personnel currently available.

The experience of the counties which have attempted to provide services for children with rheumatic fever clearly indicates that the costs are too great to be met entirely from available local financial resources. Neither present state crippled children funds, private agency treasuries, nor family income can pay the total cost of necessary care.

It is recommended that steps be taken in the Fiscal Year 1949-50, to meet the immediate needs of as many children as possible within the present limitations of personnel and facilities.

Provisions should be made for the following:

1. Financial assistance to rheumatic fever programs which are currently operating.
2. Extension of rheumatic fever programs to areas where facilities and personnel are available and where community planning and education have been carried on.
3. Consultation services and opportunities for treatment at nearby centers in those areas where local program organization is not feasible.
4. An intensified professional education program; of physicians by the California Medical Association and California Heart Association or other appropriate professional association; of hospital and publiic health nurses and medical social workers by health departments.
5. Provision for necessary technical and administrative staff for planning, coordination and extension of facilities.

A program which will fully serve the needs of all of the children requiring care for rheumatic fever must await the further development of resources for such care. The above steps, however, which will partially meet the need, can be initiated in 1949-50. At a cost of not less than $1,000,000, it would be possible to implement them within the scope of present facilities. The largest proportion of these funds will be needed to finance care for those shown unable to meet the costs themselves, in hospitals and convalescent homes currently or potentially available, and to pay for services necessary for diagnosis and consultation. At least 15 percent of such a budget will be necessary for training and administration in addition to the present administrative staff in the Crippled Children Services for this program.

1. References

(1) Richter, Ina M. Incidence and Variety of Heart Disease in School Children of San Francisco. J. A. M. A., V. 97, Page 1060, 1931.

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(3) Christie, Amos. Rheoumatic Fever in Northern California. Am. Heart J., V. 12, Page 153, 1936.

(4) Sampson, J. J., Christie, A., Geiger, J. D. Incidence and Type of Heart Disease in San Francisco School Children. Am. Heart J., V. 15, Page 661, 1938.

(5) McClendon, S. J. Rheumatic Fever, Its Incidence in the Southwestern States. California and Western Medicine, V. 59, No. 2, 1943.

(6) Sampson, J. J., Hahman, P. T., Halverson, W. L., Shearer, M. C. Incidence of Heart Disease and Rheumatic Fever in the School Children in Three Climatically Different California Communities. Am. Heart J., V. 29, Page 178, 1945.

(7) Robinson, Saul, Aggeler, D., Daniloff, G. Heart Disease in San Francisco School Children. Journal of Pediatrics, V. 33, Page 49, 1948.

2. The data from five of the counties are available for analysis and are given in the following table.

NUMBER OF CASES RECEIVING SERVICES—1947

County	*School pop. (K-14)**	*Number suspected cases receiving services*	*Number diagnosed rheumatic fever*	*Number per 1,000 school pop. diagnosis rheumatic fever (K-14)**	*Number per 1,000 school pop. receiving services*
Merced	12,552	94	62	5.0	7.5
Stanislaus	22,922	77	60	2.6	3.3
Contra Costa	48,913	494	340	7.3	10.1
Sonoma	13,911	145	67	4.8	10.4
Humboldt	10,012	74	43	4.3	7.4
TOTAL	108,310	884	572	5.3	8.2

* Kindergarten through Junior College.

3. Rosenblum, Harold. Rheumatic Fever Control Program in California. California and Western Medicine, V. 66, Page 233, 1947.

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