

# Incidence of Heart Disease in the Community\*

Out of Systematic Study and Full Records in Every Case Will Grow Adequate Preventive Methods

By LOUIS I. DUBLIN, Ph.D., STATISTICIAN, METROPOLITAN LIFE INSURANCE COMPANY, NEW YORK CITY.

A DISCUSSION of the incidence of heart disease in the community is especially pertinent at this time in view of the high death rate from this disease that has prevailed during the present year. We in the Metropolitan Life Insurance Company have an advantageous position watching the experience among the many millions of our policyholders. We can see month by month and, in fact, week by week, just what conditions of health prevail in the country at large. Since November, 1921, and continuing each month to date, the death rate from heart disease has been appreciably higher than it was during the corresponding months of the previous year. The same has been true for the associated organic diseases, such as, Bright's disease, cerebral hemorrhage, and apoplexy. It must be remembered that the last three years were favorable ones for heart disease mortality. The rates for 1919, 1920, and 1921 were the lowest recorded during the last decade. When the increase began in the winter months of 1922, the change attracted little attention. The possibility that it ushered in a definite check in the favorable downward tendency for heart disease mortality was not seriously considered. But, by the end of January, 1922, there could be no longer any question that a definite upward tendency was in progress. As will be seen from the graph, the heart disease death rate increased sharply month by month until in March the rate reached the maximum of 168.2 deaths per 100,000 living, one of the highest figures recorded in recent years among Metropolitan Industrial policyholders. (Chart I)

Obviously, some of this increase for heart disease is the direct result of the influenza epidemic which broke out in the early months of this year. But this cannot be the whole cause because heart disease death rates that were higher than normal prevailed for several months before the influenza epidemic and have continued for several months after its close. The experience among insured lives would seem to indicate that we are experi-

\*Read before the Boston Association of Cardiac Clinics, Boston, Mass., May 18, 1922.

*The fundamental importance of collecting all pertinent facts in regard to the incidence of heart disease in the community is urged. Uniformity of record, with such details of history and physical findings as will enable comparison, would bring out a mass of data which would justify definite prognosis which is now impossible. Effective preventive work on a wide scale must await such a mode of procedure.*

*Nor should such data, to be effective, be drawn exclusively from mortality records. Morbidity records need to be so extended as to point out the incipient case, and the predisposing environmental or constitutional condition which led to disabling heart lesions. Our present statistical studies are seriously inadequate in this regard.*

encing in the current year a serious increase in the incidence of heart disease deaths quite apart from the effect of influenza and pneumonia, im-

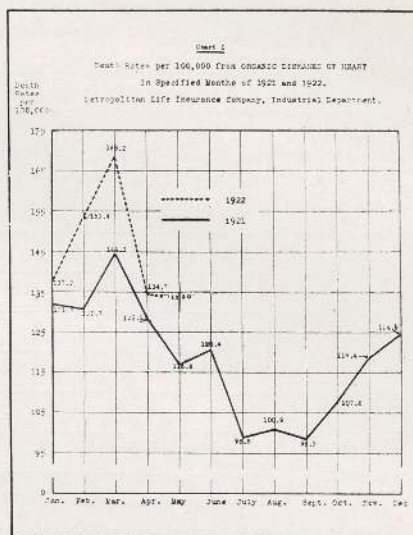


Chart I.—The heart disease rate increased sharply month by month until in March the rate reached the maximum of 168.2 deaths per 100,000 living, one of the highest figures recorded in recent years among Metropolitan industrial policy holders.

portant as these two conditions are in affecting the heart disease rate adversely. We shall have to watch the developments for the rest of the year very carefully.

These facts are disturbing to all engaged in public health work because the figures for recent years had given some encouragement that a definite downward tendency had come for heart disease. It must be remembered that the great improvement in the rate for tuberculosis has left heart disease in the first place as the leading cause of death. During the first eight years of the decade, there was hardly any decline in the figures among insured lives. In the general population of the Registration Area, there was an almost continuous increase in the mortality from heart disease. But, in the years 1919, 1920, and 1921, the great improvement in the figures already referred to gave cause for hopefulness that a new situation had been inaugurated. Conditions at the present time are not very encouraging in this respect and would seem to indicate that the favorable heart disease mortality experience of the last few years was possibly only a temporary one, reflecting in part the result of the influenza epidemic of 1918 and 1919, when a large number of advanced cardiac patients were very likely eliminated, and also the effect of improved economic conditions for the wage working population during the war. It is a good deal of a question in view of all the facts, as shown in the following graph, whether there has been any lasting improvement in heart disease mortality during the last decade. This disease is today the chief cause of death. It is likewise a condition of the greatest importance from a public health standpoint. In spite of its leading position in mortality and morbidity, there has been virtually no gain in its control; the campaign against heart disease is very much in the same position as that against tuberculosis fifteen or twenty years ago (Chart II).

The incidence of any disease may be studied from two angles: (1) as a cause of sickness and, (2) as a cause of death. In respect to sick-

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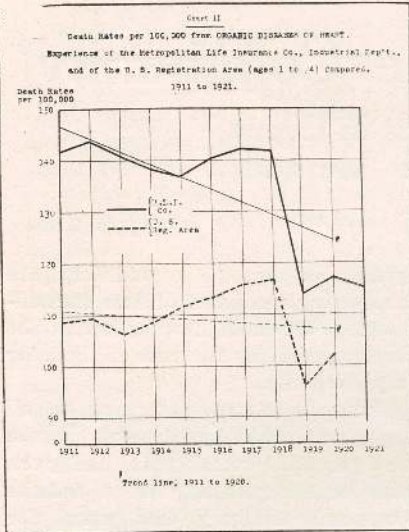


Chart II.—Conditions at present would seem to indicate that the favorable heart disease mortality experience was possibly only a temporary one. All facts considered, it is a question whether there has been any lasting improvement in heart disease mortality during the last decade.

ness or morbidity, we have very few facts indeed. There is very little authentic information on the prevalence of various types of heart affections. More recently, some information has been accumulated on the prevalence of heart lesions among school children as a result of the work of school medical inspectors. The examinations are, however, often made and recorded in a perfunctory manner. The greatest variations appear in the tabulations. It is not always possible to determine whether the figures include functional as well as organic disturbances. The result is the greatest variability, some cities showing an incidence of two per cent of the children affected and others less than one-half of one per cent. On the other hand, careful examinations have been made among certain industrial groups which show a considerable prevalence of heart affections. The findings of Dr. Schereschewsky of the United States Public Health Service among garment workers in New York; of Robinson and Wilson among employees in various industries in Cincinnati; and of Harris and Dublin among food handlers in New York, indicate that about two per cent of working adults have organic heart disease of one kind or another. The army medical examiners in connection with the draft and camp examinations rejected about four and a half per cent of those examined because of heart defects. The figures will, of course, vary considerably with the group of persons examined, the severity of their occupations and the age of the men ex-

amined. But, altogether, the evidence would seem to indicate that at least two per cent of the population show cardiac defects on examination. This means that in the population of the United States, more than two million persons of all ages suffer from serious heart impairments. This fact alone indicates the magnitude of this particular health problem, and what provision we must expect to make in the next decade to provide for the discovery and the care of these persons.

The statistics of heart disease mortality are more satisfactory, both in point of areas covered, of detail as to color, sex and age, and of diagnostic accuracy. Deaths are reported, even if the cause is not always stated absolutely clearly, especially in conditions where heart disease is associated with disturbances of the vascular and renal systems. Valuable use may be made of the figures, however, both in the reports of the Registration Area, and more especially for persons insured in the larger companies. I am in a position to present the figures for the ten-year period 1911 to 1920 among the many millions of persons insured in the Industrial Department of the Metropolitan and to show the incidence of heart disease as a cause of death at the various age periods of life, in each one of the main classes of this group, that is, among the white males, the white females, the colored males, and colored females.

Before we proceed, it is well to

explain just how we measure the mortality from the several diseases. The index, or death rate, is the number of deaths from any disease during a calendar year for each 100,000 persons exposed during the year. The figures in the following table are obtained in this way. The only point to be remembered is that the rates are specific and refer to the particular class of persons designated. Thus, the rate 7.1 in the column "white males" at the ages one to four years means that seven deaths from heart disease occurred among white male children ages one to four for every 100,000 such white male children who were insured in that year. The other figures are obtained in a similar manner—(Table I and Chart III).

The first point that comes to view from an examination of the tables and of the graphic illustration is that the incidence of heart disease as a cause of death increases consistently with age. At the age period 35 to 44 when persons should be at the height of their productivity, one white person dies from heart disease in every thousand living and two colored persons out of each thousand. At the age period 65 to 74, the number of deaths from heart disease has increased to about 15 in each one thousand living, or to put the facts in another way, deaths from heart disease constitute 9.3 per cent of all deaths at ages 35 to 44, but, at the older period, 65 to 74, they are responsible for 21.9 per cent of the

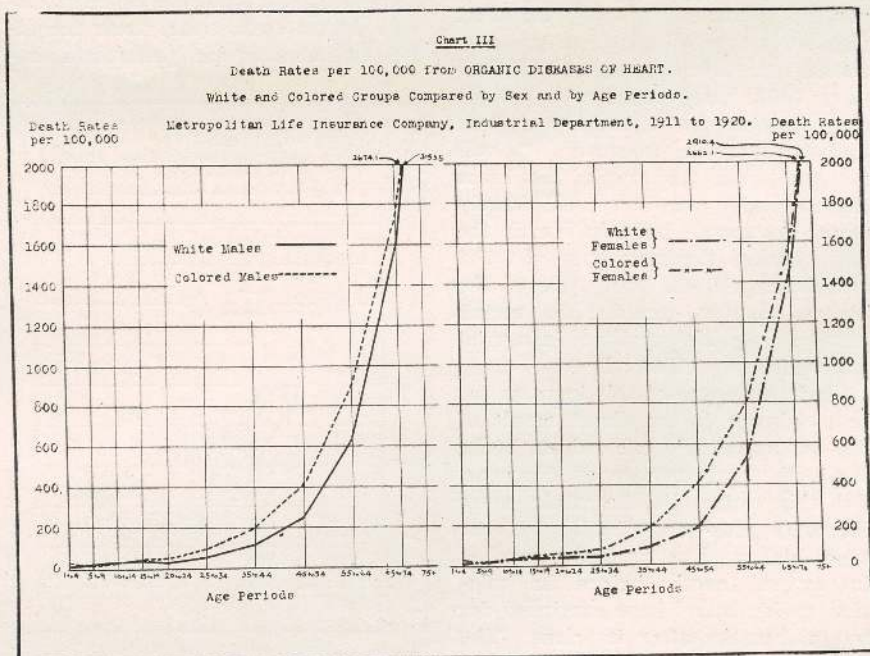


Chart III.—Statistics of heart disease distributed according to color, age and sex, and diagnosis indicate increased incidence with age, greater incidence among colored persons than white. The rates are higher for females in the age groups below thirty, but higher for males from that age onward, the difference being regularly greater for males with advancing years.

TABLE I.—Death Rates per 100,000 from Organic Diseases of the Heart. Metropolitan Life Insurance Company, Industrial Department, 1911 to 1920.

Age Periods	White		Colored	
	Male	Female	Male	Female
All ages .....	118.1	132.3	189.1	200.4
1-4 .....	7.1	5.9	13.4	17.5
5-9 .....	14.0	16.7	12.1	16.5
10-14 .....	21.8	29.1	20.2	28.9
15-19 .....	28.9	30.0	28.6	36.7
20-24 .....	27.6	30.8	32.4	40.2
25-34 .....	47.5	45.3	83.2	75.7
35-44 .....	108.6	89.3	199.0	199.8
45-54 .....	245.1	195.2	403.1	414.5
55-64 .....	622.2	516.0	888.0	785.6
65-74 .....	1,607.0	1,445.9	1,717.0	1,570.0
75+ .....	3,153.5	2,910.4	2,674.1	2,662.1

deaths. There is no exception to this rule. The rates are also very much higher for colored persons than for whites. The sex ratios of heart disease mortality are also rather interesting. The rates are usually higher for females than for males up to age 30. From that age onward, the rates for males are higher, the difference becoming regularly greater with advancing years.

But, if heart disease is particularly important in middle life and at the older ages, it is already an important condition in childhood and early adult life. Thus, the number of deaths between the ages of 5 to 9 are as many as from two such important infectious diseases of childhood as measles and whooping cough. Between 15 and 24 years, the deaths from heart disease are more numerous than from typhoid fever. Between the ages 25 and 34, heart disease caused each year almost as many deaths as lobar pneumonia. So heart disease is not to be overlooked as a factor in the mortality of young people. It takes a heavy toll throughout life.

It is difficult to understand just why the rates for young girls after age 5 should be much higher than for boys at the corresponding ages. Perhaps the same causes are at work which make the death rates from tuberculosis higher among growing girls than among boys. The greater prevalence of heart disease among colored people is notorious. Colored males show rates from heart disease during the main period of life from 65 to 80 per cent higher than for white males at the same ages; those for colored women are twice as high as for white women at a number of age periods of life. Possibly, the higher prevalence of such diseases as syphilis, malaria, and typhoid fever in the colored race plays an important part in creating the excess of heart disease mortality.

Some relations have been discovered to exist between the prevalence of heart disease and occupation. While the figures are not entirely trustworthy, it would appear that of all occupations, those which are carried on upon the water have the highest heart disease rates. Thus, sailors, fishermen, and to a less degree, barge-men, show a very high prevalence of heart affection. It is possible that this relationship is in some way related to exposure to greater dampness and cold. Next to these occupations are those exposed to alcoholism, including brewers, and those exposed to lead poisoning. There are high rates for metal workers, blacksmiths, and especially for cutlers and tool makers. All sedentary occupations have favorable death rates from heart disease.

### Summary

To summarize the facts then, we may say that, according to our best knowledge, there are about two and one-half million persons in the United States who, on examination, would show some type of organic heart lesion. These persons are not all sick. Many of them are engaged in their ordinary pursuits and have no idea of their impairment. Yet, they are seriously impaired lives who, unless they take note of their condition and adapt themselves to their lesser capacity to labor, will break down at a premature age. Insurance studies have shown that persons impaired with such minor defects as mitral regurgitation have, as a group, double mortality for their age. It is the business of American physicians, and especially of those in the cardiac clinics, to discover for each community those who are in any way suffering from one type or another of heart defect. No one knows the amount of loss sustained annually through the disability for work which results from the varying incapacity among these two and one-half million people.

In addition, there are each year in the United States about one hundred and fifty thousand deaths from heart disease and the number is not declining. Even under age 45, there are each year over 22,000 deaths. Each one of these deaths represents a distinct loss to the community since these persons are presumably at an age where production may be expected to be at its highest. They leave good sized families of minor children who suffer from the loss of a parent and, more usually, the father. This is the extent of the community problem which is brought about each year by heart disease.

It is very obvious, however, that our information with reference to heart disease both as a cause of sickness and of death is very fragmentary. At the present time, there is really no agency or machinery for collecting the facts by means of which the campaign against heart disease can be properly guided. It is just this sort of machinery that is called for at the present stage of the movement. This information will provide checks against misdirected enterprise, and will suggest which of many possible lines of activity are really worthwhile.

What promises to fill this need is the plan of the Association for the Prevention and Relief of Heart Disease in the City of New York. This Association, which conducts a considerable number of cardiac clinics, proposes to keep systematic records in connection with its work. The greatest emphasis has been placed upon a full history in each case, and on a complete record of the findings on each examination. A series of follow-up visits by social workers is planned, and the findings from this source are likewise provided for in the record. A system of tabulation and of analysis is being considered, so as to answer the outstanding questions which the directors of this Association have in mind. It is hoped that out of these records it will be possible to throw light on the prognosis in various types of cases, on the duration of the various heart lesions from inception to death and on the value of certain types of treatment in relation to the restoration of working capacity. A goodly number of other factual items will naturally suggest themselves at the outset of a campaign against a disease of such magnitude as heart disease. We append to this article a reproduction of the first page of the record form (Fig. I).

What is being planned for the city of New York should, of course, be seriously considered by associations of heart disease clinics in other cities of the country. It is certainly to be hoped that the clinics of such cities as Boston, Chicago, and Philadelphia, whether carried out under municipal or private auspices, will develop a similar system of records and plan similar tabulations and analyses. The greatest value of this effort will come from the multiplication of sources of information and out of the exchange of experience from place to place.

What will probably remain a most fertile field for the development of knowledge is the practice of individual physicians who must, for a long time, continue to be the chief instruments in the campaign against heart disease. The individual doctor should appreciate, more and more, the necessity of keeping a full history and current record of his cardiac patients. The record form recommended for use in New York City should be indorsed by the leaders of the profession, and its use encouraged by the great body of physicians. It will then be possible at regular intervals to send the material to some central agency where the records might be tabulated and the conclusions made available to the whole profession. On a foundation of established fact, the campaign against heart disease will make rapid and substantial progress.

ASSOCIATION FOR THE PREVENTION AND RELIEF OF HEART DISEASE--First Record																		
Hospital		Out-patient dept. or clinic			Date		Serial No. (A. P. R. H.)			Inaug. Clinic No.								
Name of patient				Address		Sex	Color or race	Age	Single Married Widowed	Religion								
PLACE OF BIRTH:		Country		Town or city		Country of birth of patient's mother		Patient attending SCHOOL?	Number and address of SCHOOL		Days lost from SCHOOL during past five years		1	2	3	4	5	
OCCUPATION OF PATIENT:																		
History	General nature of industry or business			Trade or particular kind of work			Type of Work Heavy--Med.--Light	Time lost each sickness each year	No. of hours per week	Wage per week	Date entered upon work							
Present occupation																		
Past occupation (1)																		
Past occupation (2)																		
Past occupation (3)																		
Past occupation (4)																		
FAMILY HISTORY																		
Item	Father		Mother		1		2		3		4		5					
Alive or dead																		
If alive, present age; if dead, age at death																		
If alive, suffering from any illness?																		
If dead, cause of death (Note heart disease specially)																		
PRESENT HABITS AND HYGIENE:																		
Sleep--hours		Sleep--(Good--fair--poor--very bad)			Sleep--How many pillows		Habits (State "Heavy" "Moderate" "None") Alcohol			Tobacco	Sweets	Drugs	Tobacco					
How many per day?		Cigars	Cigarettes	Chew	Bowels regular? (Yes or no)		Appetite (Good--fair--poor--very bad)											
PATIENT'S PAST HISTORY:																		
HEART HISTORY:	Congestive	Total duration of illness	Years	Months	No. times confined to bed	At Home	In Hospital	Days out of work past year	How many days and in what year was patient disabled for work on past attacks of heart disease?	1st attack	2nd attack	3rd attack	4th attack	5th attack	6th attack	7th attack	8th attack	
HISTORY OF OTHER DISEASE: (If patient has had the disease, indicate by "Y" and give year of occurrence. If not, write "N". Indicate severity: "S"--Severe, "M"--Moderate, "L"--Light)	Disease	Yes or No	Year	Disease	Yes or No	Year	Disease	Yes or No	Year	Disease	Yes or No	Year	Disease	Yes or No	Year	Disease	Yes or No	Year
Rheumatic fever 1st attack				Chorea 1st attack			Tonsillitis			Dysentery			Influenza			Pneumonia		
2nd "				2nd "			Measles			Scarlet fever			Typhoid			Tuberculosis		
3rd "				3rd "			Whooping cough			Typhus			Diphtheria			Erythema nodosum		
Furunculosis				Tooth and gum infections			Typhoid fever			Scarlet fever			Typhoid fever			Erythema nodosum		
Rheumatic nodules				Torticollis			Typhoid fever			Scarlet fever			Typhoid fever			Erythema nodosum		
Erythema nodosum				Muscle or growing pains			Typhoid fever			Scarlet fever			Typhoid fever			Erythema nodosum		
Diphtheria				Joint pains			Typhoid fever			Scarlet fever			Typhoid fever			Erythema nodosum		
Typhoid fever				Joint pains			Typhoid fever			Scarlet fever			Typhoid fever			Erythema nodosum		
PREVIOUS MEDICAL TREATMENT																		
Treatment	Condition Treated	Date	Time in Bed	Baths	Drugs Used	Exercise	Diet	Work Recommended										
Private Physician																		
Clinic																		
Hospital																		
Sanatorium																		
Osteopath																		
Chiropractor																		
Christian Science																		
SYMPTOMS--PAST AND PRESENT: (Answer yes (Y) or no (N), and give dates if possible. If any symptoms are brought about by exertion or excitement, specify symptom by writing (E).)																		
First symptom	Fatigue	Dyspnoea	Orthopnoea	Palpitation	Cough	Swelling--legs or abdomen	Headache											
Pallor	Nausea	Vomiting	Pain under right costal margin	Loss of weight	Giddiness	Faintness	Flushing	Sweating										
Tremor	Nose-Bleed	Pain--site	Pain--radiation	Pain--character														

Fig. 1.—The greatest emphasis is placed upon systematic records in each case of heart disease. This record form, adopted by the New York Association for the Prevention and Relief of Heart Disease provides for full history and complete record of physical findings on each examination. Such records will develop possibilities of prognosis in given conditions.