

# SCARLET FEVER DURING 1915 IN PHILADELPHIA.\*

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**D**URING 1915, 1,072 cases of scarlet fever were reported in Philadelphia, exactly one hundred more than half the number reported during 1914 (1,944); and less than a third as many cases as were reported during 1913 (3,400). This is a morbidity-rate of 63.7 per 100,000, as compared with 117 in 1914 and 208 in 1913. (See Chart I.)

The lowest number of cases was reported during August, only 29 cases; the highest number during December, 147 cases. January, 1915, had only 118 cases as compared with 286 in

January, 1914, and 198 in January, 1916. (See chart II.)

The sex of the 1,072 cases reported was male, 529, of whom 513 were boys; and female, 543, of whom 501 were girls. Thus only 58 adults contracted scarlet fever during 1915.

These figures this year are the lowest since 1900, when what we now consider accurate statistics were begun. The figures coming nearest to these are found in 1906, 1,696 cases, and in 1907, 1,893 cases. The highest number of cases in any year was 4,188 in 1903, with

CHART I.  
SCARLET FEVER.

|                      | Cases.     |       |       |       |       |            |       |       |
|----------------------|------------|-------|-------|-------|-------|------------|-------|-------|
|                      | 1908.      | 1909. | 1910. | 1911. | 1912. | 1913.      | 1914. | 1915. |
| Jan.....             | 5 wks. 299 | 4 274 | 4 202 | 4 203 | 4 114 | 4 431      | 286   | 118   |
| Feb.....             | 4 wks. 260 | 4 277 | 4 166 | 4 180 | 4 160 | 4 442      | 273   | 102   |
| Mar.....             | 4 wks. 325 | 4 306 | 4 148 | 4 180 | 5 337 | 5 559      | 339   | 111   |
| 1st qtr.....         | 884        | 857   | 516   | 563   | 611   | 1,432      | 898   | 331   |
| April.....           | 4 wks. 270 | 4 287 | 5 214 | 5 250 | 4 311 | 4 351      | 242   | 142   |
| May.....             | 5 wks. 278 | 5 309 | 4 185 | 4 287 | 4 280 | 4 406      | 171   | 92    |
| June.....            | 4 wks. 207 | 4 199 | 4 185 | 5 173 | 5 265 | 5 215      | 118   | 71    |
| 2d qtr.....          | 755        | 795   | 584   | 710   | 856   | 972        | 531   | 305   |
| 6 mos.....           | 1,639      | 1,652 | 1,100 | 1,273 | 1,467 | 2,404      | 1,429 | 636   |
| July.....            | 4 wks. 87  | 5 129 | 5 94  | 4 89  | 4 115 | 4 90       | 58    | 48    |
| Aug.....             | 5 wks. 89  | 4 70  | 4 63  | 4 83  | 5 124 | 5 76       | 48    | 29    |
| Sept.....            | 4 wks. 110 | 4 98  | 4 71  | 5 107 | 4 111 | 4 87       | 48    | 37    |
| 3d qtr.....          | 286        | 297   | 228   | 279   | 350   | 253        | 154   | 114   |
|                      | 1,925      | 1,949 | 1,328 | 1,552 | 1,817 | 2,657      | 1,583 | 750   |
| Oct.....             | 5 wks. 233 | 5 186 | 5 171 | 4 93  | 4 187 | 4 179      | 94    | 54    |
| Nov.....             | 4 wks. 243 | 4 170 | 4 197 | 4 120 | 5 375 | 5 298      | 116   | 121   |
| Dec.....             | 5 wks. 250 | 5 284 | 5 229 | 5 163 | 4 493 | 30 d's 266 | 151   | 147   |
| 4th qtr.....         | 726        | 640   | 597   | 376   | 1,055 | 743        | 361   | 322   |
| Year.....            | 2,651      | 2,589 | 1,925 | 1,928 | 2,872 | 3,400      | 1,944 | 1,072 |
| Rate, 100,000.....   | 177        | 170   | 124   | 122   | 179   | 208        | 117   | 63.7  |
|                      | Deaths.    |       |       |       |       |            |       |       |
| Deaths.....          | 181        | 133   | 135   | 179   | 113   | 162        | 129   | 26    |
| Rate, 100,000.....   | 12.0       | 8.7   | 8.7   | 11.3  | 7.0   | 9.9        | 7.8   | 1.5   |
| Case death-rate..... | 6.8        | 5.1   | 7.0   | 9.3   | 3.9   | 4.8        | 6.6   | 2.4   |

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3,756 in 1901, 3,740 in 1904 and 3,400 in 1913. (See Chart III.)

The lowest number of deaths from scarlet fever on record also occurred during 1915, only 26 in the entire city, a case death-rate of 2.4 per cent., as compared with 2.9 per cent. in 1905 and 3.3 per cent. in 1906. The highest case death-rate occurred in 1911, 9.2 per cent. The greatest number of deaths recorded was 220 in 1901, with 201 in 1904. The death-rate per 100,000 was but 1.5 in 1915, as compared with 7 in 1912, 7.8 in 1914 and 12 in 1908. (See Chart III.)

The 1,072 cases were reported as follows:

|  | Cases | Per cent. |
|--|-------|-----------|
| On the day of onset in . . . . .                 | 305   | 28.5      |
| On the second day of illness in . . . .          | 285   | 26.6      |
| On the third day of illness in . . . .           | 210   | 19.6      |
| On the fourth day of illness in . . . .          | 105   | 9.8       |
| On the fifth day of illness in . . . . .         | 64    | 6.0       |
| From the sixth to tenth days in . . . .          | 51    | 4.7       |
| From the eleventh to twentieth days in . . . . . | 52    | 4.8       |

It is interesting to note that 74.6 per cent. (800 cases) were reported to the Bureau of Health within three days from their onset, as compared with 73.9 per cent. in 1914; and within five days from the onset of the disease 90.4 per

cent. of cases (969 cases) had been reported, as compared with 89.8 per cent. in 1914. This prompt reporting of cases, with the early isolation then possible, has greatly helped to diminish scarlet fever in the city. Yet we should not overlook the fact that the case-incidence of scarlet fever varies from year to year, even under the best conditions.

In 112 cases (10.4 per cent.) the patient was well isolated with a trained nurse in attendance; in 279 cases (26.1 per cent.) one member of the family nursed the patient while another acted as housekeeper; but in 681 cases (63.5 per cent.) the same person acted as nurse and housekeeper. Naturally the last figures include most of the patients who were removed, later, to the Philadelphia Hospital for Contagious Diseases.

Girard College furnished the only institutional epidemic during the year, 31 mild cases having developed during two summer months in a building containing about 300 boys aged from 7 to 10 years. There also occurred two small school epidemics, one in a public school (twelve cases in 6 weeks); the other in a parochial school (ten cases in 9 weeks). No cases were traced to milk infection during 1915, which would tend to prove that our milk supply is really well pasteurized.

CHART III.  
SCARLET FEVER.

|              | Cases.         |   |                  | Per cent. cases treated in hospital | Deaths. |                                      |       | Per cent. fatal. |                                      |       |
|--------------|----------------|---|------------------|-------------------------------------|---------|--------------------------------------|-------|------------------|--------------------------------------|-------|
|              | Total reported | Treated in hospital. Number admitted during year. | Treated at home. |                                     | Total.  | Hospital cases admitted during year. | Home. | Total.           | Hospital cases admitted during year. | Home. |
| 1900 . . . . | 2,813          | 717   | 2,096            | 25.5                                | 163     | 94                                   | 69    | 5.8              | 13.1                                 | 3.3   |
| 1901 . . . . | 3,756          | 1,115   | 2,641            | 29.7                                | 220     | 123                                  | 97    | 5.9              | 11.0                                 | 3.7   |
| 1902 . . . . | 3,161          | 673   | 2,488            | 21.3                                | 143     | 56                                   | 87    | 4.5              | 8.3                                  | 3.5   |
| 1903 . . . . | 4,188          | 927   | 3,261            | 22.1                                | 189     | 98                                   | 91    | 4.5              | 10.6                                 | 2.8   |
| 1904 . . . . | 3,740          | 764   | 2,976            | 20.4                                | 201     | 97                                   | 104   | 5.4              | 12.7                                 | 3.5   |
| 1905 . . . . | 1,992          | 586   | 1,406            | 29.4                                | 57      | 37                                   | 20    | 2.9              | 6.3                                  | 1.4   |
| 1906 . . . . | 1,696          | 557   | 1,139            | 32.8                                | 56      | 42                                   | 14    | 3.3              | 7.5                                  | 1.2   |
| 1907 . . . . | 1,893          | 817   | 1,076            | 43.2                                | 100     | 69                                   | 31    | 5.3              | 8.5                                  | 2.9   |
| 1908 . . . . | 2,651          | 1,195   | 1,456            | 45.1                                | 181     | 130                                  | 51    | 6.8              | 10.9                                 | 3.5   |
| 1909 . . . . | 2,589          | 1,574   | 1,015            | 60.9                                | 133     | 112                                  | 21    | 5.2              | 7.1                                  | 3.4   |
| 1910 . . . . | 1,925          | 1,219   | 706              | 63.3                                | 135     | 121                                  | 14    | 7.0              | 9.9                                  | 5.6   |
| 1911 . . . . | 1,928          | 1,245   | 683              | 64.6                                | 179     | 115                                  | 64    | 9.2              | 9.2                                  | 9.4   |
| 1912 . . . . | 2,872          | 1,917   | 955              | 66.8                                | 113     | 87                                   | 26    | 3.94             | 4.5                                  | 2.7   |
| 1913 . . . . | 3,400          | 1,742   | 1,658            | 51.3                                | 162     | 103                                  | 59    | 4.8              | 5.9                                  | 3.6   |
| 1914 . . . . | 1,944          | 1,165   | 779              | 59.9                                | 129     | 77                                   | 52    | 6.6              | 6.6                                  | 6.7   |
| 1915 . . . . | 1,072          | 625   | 447              | 58.3                                | 26      | 21                                   | 5     | 2.4              | 3.3                                  | 1.1   |

The greatest number of cases occurred in the 39th ward (74 cases), in the extreme southeastern part of the city; with 60 cases in the first ward, just north of the 39th ward; 57 cases in the 42d ward; 53 cases in the 15th ward; and 50 cases in the 22d ward. The rate per 100,000 of population was greatest in the 42d ward (241), with 163 in the 48th ward, 140 in the 47th ward, and 136 in the 39th ward. The 25th, 41st, 42d and 48th wards, in which the population is least dense, stand No. 45, 43, 3 and 17 in the list of frequency of occurrence of scarlet fever; while the 42d ward leads in the rate per 100,000, with the 48th ward next. In both of these wards the density of population is low. The third ward, in which the density of population is greatest, stands No. 37 in the list of frequency of scarlet fever. (See Chart IV.)

The lowest number of cases occurred in the 9th ward, 0; in the 6th ward, 1 case; and in the 10th ward 2 cases; with the lowest rate per 100,000, also, 0 in the 9th ward, 10 in the 10th ward and 16 in the 6th ward.

When the city is divided into six districts, Central, West, South and North Philadelphia, Germantown and Frankford, the local distribution of scarlet fever becomes interesting. Central Philadelphia, with six wards, had 27 cases, an average of  $4\frac{1}{2}$  cases per ward; Frankford, with 3 wards, had 21 cases, an average of 7 cases per ward; North Philadelphia, with 21 wards, had 439 cases, an average of 21 per ward; West Philadelphia, with 6 wards, had 160 cases, averaging 27 per ward; South Philadelphia, with 9 very congested wards, had 282 cases, averaging 31 per ward; and Germantown, with 3 wards not densely populated, had 143 cases, or an average of 48 per ward. (See Chart V.)

Although the officials of the Bureau of Health are hard at work trying to trace the source of contagion in each case reported, it seems almost impossible to find the definite origin of the disease in more than about one third of all cases. Each year, however, brings to light more cases of contact. During 1915 there was known contact in school in 100 instances (9.3 per cent.), as compared with 6.6 per cent. in 1914. Other contact, as in homes, moving picture theatres, playgrounds, etc., was discovered in 117 instances (10.9 per cent.).

When the primary case was treated at home,

117 secondary cases (10.9 per cent.) occurred later than 24 hours but within one month after the first case, as compared with 7.9 per cent. in 1914 and 5.7 per cent. in 1913. But only 31 secondary cases (2.9 per cent.) occurred in houses from which a case had been removed to the Philadelphia Hospital for Contagious Diseases, later than 24 hours but within one month after the first case, as compared with 3.9 per cent. in 1914 and 5.9 per cent. in 1913. These figures show a continued increase in secondary cases when the primary case remained at home, and a continued decrease when the primary case had been removed to the Philadelphia Hospital for Contagious Diseases. It is natural to conclude from this that even more cases of scarlet fever ought to be removed to the hospital for treatment.

New cases probably due to the return home of cases discharged from the Philadelphia Hospital for Contagious Diseases, the so-called "hospital return" cases, occurred in 33 instances (3.1 per cent.) as compared with 2.6 per cent. in 1914 and 2.4 per cent. in 1913. A note of warning might be inserted here against allowing children returning from the hospital, or from isolation, after scarlet fever, to mingle intimately with other children for some weeks. It is so easy for these children to become contagious again, if they catch cold. Whenever possible, such children should get away for a change of air.

Late secondary cases, those occurring several months after the primary case, occurred in only 3 instances (0.28 per cent.) as compared with 0.4 per cent. in 1914 and 0.3 per cent. in 1913. Adding together all the secondary cases gives a total of 184 cases (17.2 per cent.) as compared with 14.9 per cent. in 1914 and 14.3 per cent. in 1913. When the cases in which there was known contact are added to the secondary cases, we have a total of 401 cases in which the origin was discovered, 37.4 per cent., as compared with 32.8 per cent. in 1914. This increase proves that better work is being done each year in discovering the source of contagion in scarlet fever.

The number of cases of scarlet fever removed to the hospital for treatment during the past 15 years varied greatly each year. The greatest number of cases removed to the hospital in any one year was in 1912, when 1,917 cases went (66.8 per cent.), the lowest number went

CHART IV.

DISTRIBUTION OF SCARLET FEVER IN RELATION TO DENSITY OF POPULATION, ARRANGED BY WARDS. 1915.

| Ward.  | Population per acre. | Cases. | Rate per 100,000. | Number in order of frequency. |
|--------|----------------------|--------|-------------------|-------------------------------|
| 1....  | 107                  | 60     | 126               | 2                             |
| 2....  | 143                  | 22     | 54                | 21                            |
| 3....  | 210                  | 7      | 27                | 37                            |
| 4....  | 152                  | 4      | 18                | 42                            |
| 5....  | 83                   | 3      | 18                | 44                            |
| 6....  | 31                   | 1      | 16                | 47                            |
| 7....  | 98                   | 11     | 40                | 31                            |
| 8....  | 50                   | 10     | 72                | 32                            |
| 9....  | 20                   | 0      | 0                 | 48                            |
| 10.... | 85                   | 2      | 10                | 46                            |
| 11.... | 86                   | 5      | 43                | 40                            |
| 12.... | 122                  | 7      | 46                | 36                            |
| 13.... | 119                  | 17     | 86                | 23                            |
| 14.... | 128                  | 5      | 26                | 41                            |
| 15.... | 70                   | 53     | 112               | 4                             |
| 16.... | 90                   | 8      | 49                | 34                            |
| 17.... | 109                  | 6      | 34                | 39                            |
| 18.... | 65                   | 13     | 48                | 30                            |
| 19.... | 118                  | 20     | 38                | 22                            |
| 20.... | 97                   | 36     | 79                | 11                            |
| 21.... | 7.8                  | 36     | 102               | 10                            |
| 22.... | 10                   | 50     | 71                | 5                             |
| 23.... | 16                   | 16     | 50                | 27                            |
| 24.... | 21                   | 19     | 35                | 24                            |
| 25.... | 60                   | 16     | 38                | 28                            |
| 26.... | 61                   | 48     | 87                | 6                             |
| 27.... | 49                   | 15     | 62                | 29                            |
| 28.... | 71                   | 30     | 61                | 15                            |
| 29.... | 58                   | 31     | 103               | 14                            |
| 30.... | 88                   | 8      | 27                | 35                            |
| 31.... | 68                   | 7      | 23                | 38                            |
| 32.... | 72                   | 24     | 60                | 18                            |
| 33.... | 27                   | 29     | 56                | 16                            |
| 34.... | 18                   | 35     | 71                | 12                            |
| 35.... | 0.5                  | 2      | 19                | 45                            |
| 36.... | 53                   | 33     | 73                | 13                            |
| 37.... | 69                   | 17     | 74                | 25                            |
| 38.... | 19                   | 17     | 35                | 26                            |
| 39.... | 18                   | 74     | 136               | 1                             |
| 40.... | 8                    | 23     | 55                | 19                            |
| 41.... | 3.9                  | 3      | 19                | 43                            |
| 42.... | 4                    | 57     | 241               | 3                             |
| 43.... | 46                   | 46     | 106               | 8                             |
| 44.... | 52                   | 46     | 118               | 7                             |
| 45.... | 14                   | 10     | 38                | 33                            |
| 46.... | 22                   | 22     | 57                | 20                            |
| 47.... | 73                   | 42     | 140               | 9                             |
| 48.... | 5.2                  | 26     | 163               | 17                            |

in 1905, 586 cases, 29.4 per cent. During 1915, 625 cases were removed to the Philadelphia Hospital for Contagious Diseases, 58.3 per cent.

On the other hand, the greatest number of cases remaining under treatment at home in any one year was 3,261 cases in 1903, 77.9 per cent., while the highest per cent. of cases treated at home in any one year was 78.7 per cent. in 1902. The lowest number of cases treated at home occurred in 1915, only 447 cases, 41.7 per cent.

The hospital death-rate was greatest in 1908, 130 deaths, 10.9 per cent., and lowest in 1915, 21 deaths, 3.3 per cent., which was the lowest per cent. of deaths in the hospital. The highest per cent. of deaths in the hospital was noted in 1904, 12.7 per cent. The death-rate among those treated at home was also lowest in 1915, 5 deaths, 1.1 per cent., while it was greatest in 1904, 104 deaths, 3.5 per cent. The highest per cent. of deaths among those remaining at home occurred in 1911, 9.4 per cent., and the lowest in 1915, 1.1 per cent., with 1906 and 1905 coming very close with 1.2 per cent. and 1.4 per cent. While the death-rate among those treated in the hospital has diminished, the death-rate among those cases remaining at home has decreased even more; and the death-rate for the entire city has fallen during 1915, to the lowest yet on record, 26 deaths, 2.4 per cent.

CHART V.

DISTRIBUTION OF SCARLET FEVER BY DISTRICTS, 1915.

|  | Cases. | Cases per ward. |
|--|--------|-----------------|
| 1. Central Philadelphia<br>Wards 5, 6, 7, 8, 9, and 10...  | 27     | 4.5             |
| 2. Frankford.<br>Wards 23, 35 and 41.....  | 21     | 7               |
| 3. North Philadelphia.<br>Wards 11, 12, 13, 14, 15, 16,<br>17, 18, 19, 20, 25, 28, 29,<br>31, 32, 33, 37, 38, 43, 45,<br>and 47..... | 439    | 21              |
| 4. West Philadelphia.<br>Wards 24, 27, 34, 40, 44 and<br>46.....   | 160    | 27              |
| 5. South Philadelphia.<br>Wards 1, 2, 3, 4, 26, 30, 36,<br>39 and 48.....  | 282    | 31              |
| 6. Germantown.<br>Wards 21, 22 and 42.....   | 143    | 48              |