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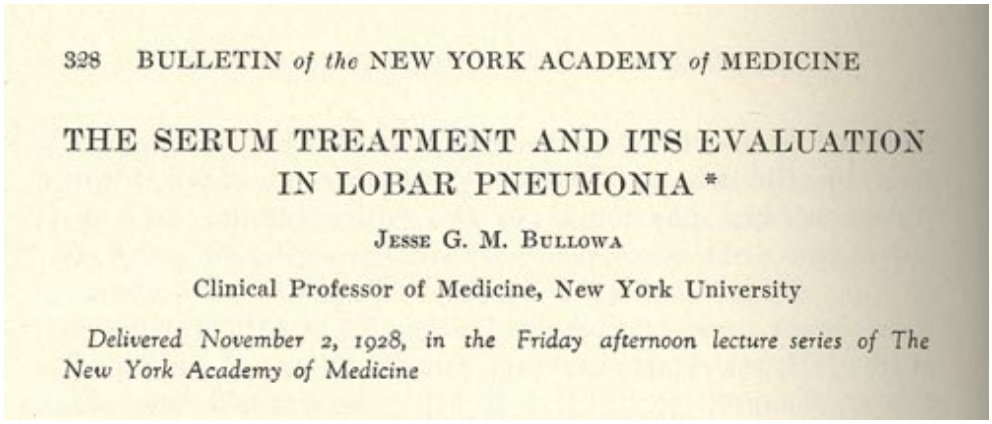

328 BULLETIN *of the* NEW YORK ACADEMY *of* MEDICINE

THE SERUM TREATMENT AND ITS EVALUATION IN LOBAR PNEUMONIA *

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Delivered November 2, 1928, in the Friday afternoon lecture series of The New York Academy of Medicine

Statistical Study—Standard Error

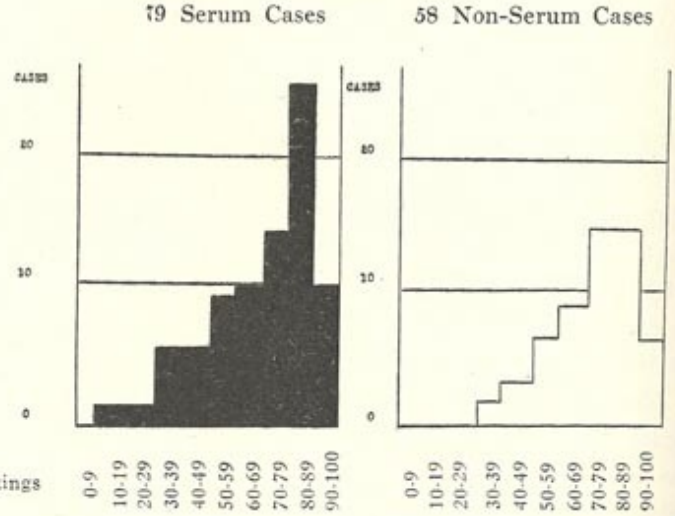
It is fortunate that the statisticians have placed at our service, when we are considering our serum experience, an instrument for determining the effect of serum in a sufficiently large series of cases, adequately controlled. One may readily ask what is a sufficiently large series of cases. Is it 50? Is it 100? The answer cannot be given in numbers until we know that the series must be of such a size that the ratio of the difference in the results of treatment must be twice the standard error. The standard error is to the probable error as three to two. There are two factors which change this ratio, an increasing difference between the results in serum and serumless cases, and the number of cases studied. We have chosen death and recovery as end points, about which none can dispute, though improvement from serum may have occurred in cases which subsequently die, as, from empyema, or exhaustion. Dr. Dublin of the Metropolitan Life Insurance Company has analyzed our data, and guided us in their interpretation.

For Type I cases, we obtained a sufficiently large series by our studies of 214 cases (see Table I), 105 in the control, and 109 in the treated series. We have made the conditions of the experiment as similar as possible, by rating the cases, so that we know that equally severe cases shall be in each series, determined by rating them, by taking alternate cases, and by having a uniform standard treatment. These conditions have been described in another presentation. I have prepared a graph showing the distribution of the cases, by rating, in each group, for Type I and Type II (see Fig. 2, a and b). It will be seen that, in general, the rating is similar.

FIG. 2 (A)

Littauer Pneumonia Fund—Harlem Hospital—1927-28

Type I.

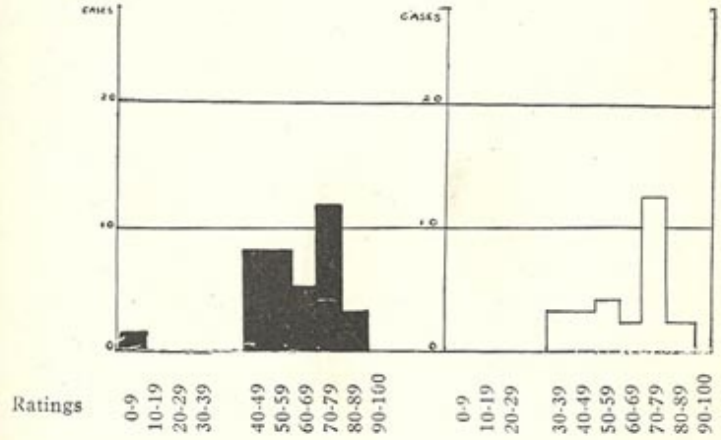


Distribution of cases according to ratings. Serum and non-serum cases,

FIG. 2 (B)

Type II.

35 Serum Cases 26 Non-Serum Cases



Distribution of cases according to ratings. Serum and non-serum cases,

The importance of concurrent control is shown in the graph of the results in two years' statistics. In 1928, both serum and serumless cases showed better results than in 1927. The mortality varies from year to year; therefore, only series of simultaneous cases can be compared (see Fig. 3). We have found, in our studies, that there is a reduction of mortality with serum, in Types I, II, and in what we formally classified as Group IV or the miscel-

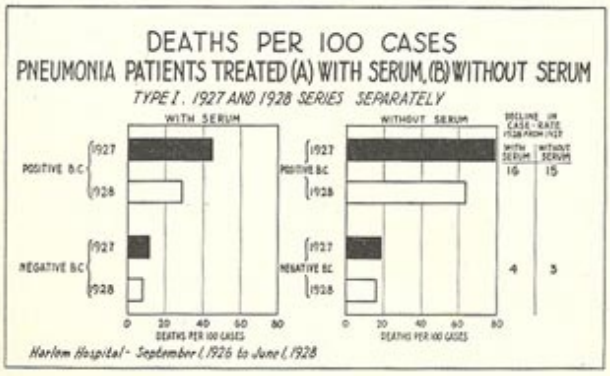


FIG. 3