EFFECT ON LOCAL DEATH RATES OF RECENT CHANGES IN THE STATISTICAL TREATMENT OF HOSPITAL DEATHS

BY

DAVID HEWITT

Department of Social Medicine, University of Oxford

A previous communication (Hewitt, 1957) drew attention to the disturbances in official mortality rates for local areas of England and Wales which had resulted from a change in the statistical treatment of deaths occurring in hospital. There have since been two further changes in the official procedure, and some revaluation is called for.

Successive modifications of the statistical practice have been announced in the explanatory notes to the Statistical Review of England and Wales (Registrar-General, 1954 (Corrigenda), 1957, 1960). In outline these have been as follows:

- (i) Up to and including 1951, all deaths in hospital were assigned to the area of the deceased's usual residence.
- (ii) This rule was relaxed for certain institutions in 1952, and in 1953 all deaths occurring in chronic sick, mental, and mental deficiency hospitals were treated as belonging to the area of the hospital.
- (iii) In 1954, the original system was restored in the case of some chronic sick and mental hospitals which had a high ratio of deaths-plus-discharges to beds.
- (iv) In 1956, the method of computing Area Comparability Factors was changed, so that, besides adjusting for local variations in the age-sex composition of the population, these factors now also made an allowance for variations in the proportion of locally-

registered deaths which were "non-transferable".

- (v) In 1958, deaths in all chronic sick, mental, and mental deficiency hospitals again became "transferable"—provided that the deceased had been in hospital less than 6 months.

Some consequences of these changes, so far as they affected areas containing a disproportionately large number of chronic and mental beds, have been traced out in the Figure (opposite). The areas here referred to are the 129 listed in the previous paper plus a further 37 identified from more recent data as net importers of chronic or mental patients, a total of 166. In the years up to 1951 a little over 8 per cent. of all deaths in England and Wales used to be assigned to these areas (see the points marked as circles in the Figure). A slight rise in this percentage in 1952 was followed by a large rise to nearly 12 per cent. in 1955, a small fall in 1954 (on account of *iii*, above), and a further fall in 1958 (on account of *v*)*. The average Area Comparability Factor in these areas was close to 0.9 in all the years up to 1955, was lowered to about 0.7 in 1956 (on account of *iv*, above), and was raised again by a few points in 1958–9. The adjusted local mortality rates for these areas necessarily responded to changes both in the numbers of non-transferable deaths and in the Area Comparability Factors (see continuous heavy line in

* The *net* reduction was rather small, because some areas which had, under the 1954 dispensation, been exempted from the new rules, retained far more imported deaths in 1958 than in 1957.

FIGURE.—Trend of certain mortality statistics in 166 areas of England and Wales which import chronic sick and/or mental patients, for the years 1948–59

the Figure). From a level fully 10 per cent. below the national mortality standard in years up to 1951, the average “adjusted” death rate rose to nearly 40 per cent. above the national standard in 1953, fell back to about 25 per cent. above the standard in 1954–5, and then reverted to a near-normal level from 1956 onwards. If we compare the most recent available year (1959) with the last fully normal year (1950—excluding 1951 because of its influenza epidemic), we find that 104 of these areas show a reported increase, relative to the national rate, in “adjusted” mortality, 56 a decrease, and six no change. The disproportion between the numbers of increases and decreases may reflect some upward bias in the rates as now computed for importing areas, but this is certainly small, since the average change is only +4 per cent.

Unfortunately, it does *not* follow that the mortality rates, either of these areas or of the much larger number of exporting areas, have recovered their former value. The present method of computing Area Comparability Factors is explicitly designed to “spread the deaths and the populations in chronic sick, mental, and mental deficiency hospitals over all areas of the country in proportion to their non-institutional populations” (Registrar General, 1957).

But this is a mistaken objective which, if pursued to its logical conclusion, would eventually make all local death rates equal by definition to the national

death rate. While restoring a more reasonable comparison between the aggregate of importing and exporting areas, the present method must also erode much of the true difference between individual areas.

It is, of course, impossible to say how far the official rate for any individual area deviates from its unknown, proper value. One can, however, test how far the established *pattern* of local mortality rates has survived these administrative changes by correlating the rates in successive years with any local indices known to have predictive value. This has been done for the 28 Metropolitan Boroughs comprising the County of London (see Table), which is a severe test of the present system because of the rather low proportion of chronic and mental patients in London who are taken to hospitals in their own borough. Three indices have been used: average number of persons per room at the 1951 Census; percentage of males aged 15–64 belonging to Social Classes IV and V at the same Census; Standardized Mortality Ratio for a period approximately 20 years earlier. Up to 1951 all three indices had correlations of about 0.8 with the current borough mortality ratios. In 1952 there was a small drop and in 1953 a large drop in all three correlations. A partial restoration of the former pattern was achieved in 1956 (presumably because of the revised method of calculating Area Comparability Factors), but no further improvement has yet resulted from the change of rules instituted in 1958. The present level of these correlations therefore

TABLE

CORRELATIONS BETWEEN ADJUSTED DEATH RATES FOR THE 28 METROPOLITAN BOROUGHES
AND CERTAIN PREDICTIVE INDICES, EACH YEAR FROM 1948-59

Year	Non-transferable Deaths	Special Adjustment to Area Comparability Factors	Correlation with:		
			Persons per Room, 1951	Per cent. of Males in Social Class IV-V	Standardized Mortality Ratio of Borough, 1930-32
1948	None	Not Needed	0.83	0.84	0.84
1949			0.84	0.85	0.89
1950			0.84	0.74	0.84
1951			0.83	0.77	0.76
1952	A Few	No	0.73	0.55	0.62
1953	All those in Chronic Sick, Mental, and Mental Deficiency Hospitals		0.16	0.15	0.24
1954			0.20	0.11	0.29
1955			0.14	0.05	0.19
1956		Yes	0.41	0.46	0.47
1957			0.50	0.45	0.46
1958	0.13		0.07	0.20	
1959	Those during first 6 months in Chronic Sick, Mental, and Mental Deficiency Hospitals		0.43	0.44	0.53

averages only a little over one half of that found in any year up to 1951.

1951, and this is clearly so in the case of areas within London.

SUMMARY

The more obvious anomalies in the local mortality rates of England and Wales which resulted from changes in official practice during 1952-53 have now been removed. Nevertheless, recent figures may be less trustworthy than those for the years up to

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