

in cases seen previously did not continue in 1980. Importations of the disease into the rest of Europe continued to decrease, as reflected in the British figures.

Levels of resistance have been determined by laboratory testing and may not accurately reflect clinical response to an antimalarial drug. Resistance of *P. falciparum* to chloroquine is spreading. Notably, RIII resistance (where parasitaemia does not clear on treatment) has been detected in Brazil, Colombia, and Venezuela, in Bangladesh and in India (Assam and Meghalaya), and in Laos, Sarawak (Malaysia), Papua New Guinea, Thailand, and Vietnam. Of greater interest for Britain is the confirmation of RI resistance (parasitaemia clears with treatment) in Tanzania and Kenya. There are also recent reports of resistance to Fansidar (sulfadoxine) not only in south east Asia but also in East Africa.

## Conclusion

The main cause of the drop in numbers of cases of imported

malaria into Britain over the past two years is probably the improving control of the disease in the Indian subcontinent. The proportion of patients with falciparum malaria did not increase in 1981, and this may in part be due to better education of travellers in the need for chemoprophylaxis. There are still small numbers of tourists, business people, and schoolchildren, however, returning each year with falciparum malaria. Continual publicity on sources of advice on chemoprophylaxis is needed together with the distribution of concise acceptable information. Knowledge of other forms of protection against malaria apart from chemoprophylaxis also needs to be promoted.

## Reference

- <sup>1</sup> World Health Organisation. Synopsis of the world malaria situation, 1980. *Weekly Epidemiological Record* 1982;16 July.

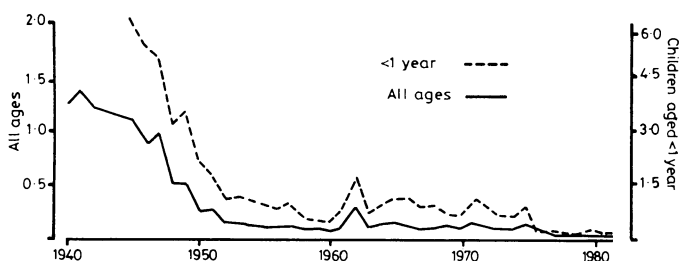
# Deaths from whooping cough

## PHLS COMMUNICABLE DISEASE SURVEILLANCE CENTRE

The death rate in England and Wales from whooping cough has been declining for more than 100 years, as have those for most childhood infections. In the 1860s the rate was about 1372 per million children (under 15 years) compared with 1148 per million for measles, 1122 per million for diphtheria, and 2282 per million for scarlet fever. By 1901-10 this had fallen to 815, by 1921-30 to 405, and by 1940 to about 140 per million. Throughout the early 1940s the rate decreased only slightly until 1947-8, when the rate halved to 73 per million. By the late 1950s the rate had fallen to 5 per million and has never risen above this point since. From 1940 whooping cough became notifiable so that it was possible to relate deaths to secular changes in the disease itself. The age distribution of notified cases was not available until 1945.

## Case fatality ratio

Although the case fatality ratio was falling throughout the early part of the 1940s (figure) in 1948 it fell sharply so that by 1950 it was only about a quarter of the ratio for 1947 and a fifth of that for 1940. As the yearly number of deaths by the



Case fatality ratios for whooping cough in England and Wales 1940-82 (deaths per 1000 notifications). Figures are given for all ages and for infants aged under 1 year.

late 1950s was small, less than 100, the case fatality ratio varied somewhat during these years, but overall there was little real change for about 25 years. In 1976 the case fatality

ratio again fell sharply and has remained very low during both the present epidemic and the last.

The case fatality ratio for deaths under 1 year of age and notifications of cases under 1 year of age has, in general, followed the trends of case fatalities for all patients since 1945, though the ratio in those under 1 year has been about three times higher (figure). During 1945-54, about two thirds of all deaths from whooping cough were in infants aged less than 1 year (table). This proportion increased steadily in successive

Deaths from whooping cough among all ages and those aged under 1 year

	All ages	< 1 year (%)
1945-54	5087	3252 (63.9)
1955-64	486	349 (72.8)
1965-74	150	131 (87.3)
1975-82	62	45 (72.6)

years until in the 1965-74 period about six out of every seven deaths from whooping cough were in infants under 1 year. The proportion has decreased slightly in recent years, though the numbers of deaths are now small.

Fifty three (42%) of the 127 deaths since 1969 have been in babies under 3 months, although only 3750 (1.4%) of all notifications were in this age group. The case fatality ratios show a threefold fall from 0-2 months to 3-5 months, a sixfold fall from 3-5 months to 6-11 months, and a further eightfold fall once the age of 1 year has been reached.

Analysis of the social class of those who have died from whooping cough since 1974 show lowest rates in social class I and highest in social class V. In most years there was a gradient from social class I to social class V.

## Correction

### BCG vaccination

We regret that an incorrect address was given for the Welsh Office in the article on "BCG vaccination" (12 March, p 876). This should have read Welsh Office, New Crown Building, Cathays Park, Cardiff CF1 3NQ.