

## Incidence of pertussis in Canada

Since pertussis became notifiable in Canada, in 1924, years in which epidemics occurred have been recorded. Remarkably high incidence rates occurred in the 1930s and early 1940s (Fig. 1); 19 484 cases (182/100 000) were reported in 1934. A significant decline followed that coincided with the introduction of the combined diphtheria-pertussis vaccine, in 1943. Until the mid-1970s there were epidemic peaks at intervals of 3 to 5 years. Since then the incidence has been low and stable. The rate of decline varied from decade to decade, with the greatest decline occurring during the mid-1960s and early 1970s (Table I). During the last decade (1974-83) the reported incidence was less than 7% of that in the prevaccine era. In 1984 approximately 1300 cases were reported, a reduction of 40% compared with 1983.

Pertussis activity is lowest in the summer. It increases gradually in the fall, generally peaking in November-December (Fig. 2).

Based on material previously published in *Canada Diseases Weekly Report* (a publication of the Bureau of Epidemiology, Laboratory Centre for Disease Control, Department of National Health and Welfare, Tunney's Pasture, Ottawa, Ont. K1A 0L2) by P. Varughese, DVM, MSc, Bureau of Epidemiology (1985; 11: 33-35). Publication in *CMAJ* is with permission of the author and the bureau.

Reprint requests to: Dr. P. Varughese, Bureau of Epidemiology, Laboratory Centre for Disease Control, Tunney's Pasture, Ottawa, Ont. K1A 0L2

In 1984 the highest incidence rate was reported from Prince Edward Island (47.9/100 000); Ontario had the next highest rate (10.2/100 000) and accounted for nearly 70% of all cases. The reported incidence in the Atlantic provinces has generally been higher than that in the western provinces.

### Age distribution

Of all reported cases in 1984 in which age was specified, infants accounted for 29%, preschoolers for 40% and children aged 5 to 9 years for 21%. The overall proportion of cases in infants and preschoolers increased during the period 1960-84, especially in the 1970s.

The age-specific incidence rates in 1960-84 are shown in Fig. 3. All three age groups showed a slight decline. The highest rate has continued to occur in infants. In recent years (1980-84) the rate among infants has been two to three times

Table I—Average annual incidence rate of pertussis in Canada, 1934-83, per 100 000

Decade	Incidence rate	Reduction from previous decade, %
1934-43	159.7	
1944-53	74.1	53.6
1954-63	48.3	34.8
1964-73	13.7	71.6
1974-83	10.6	22.6

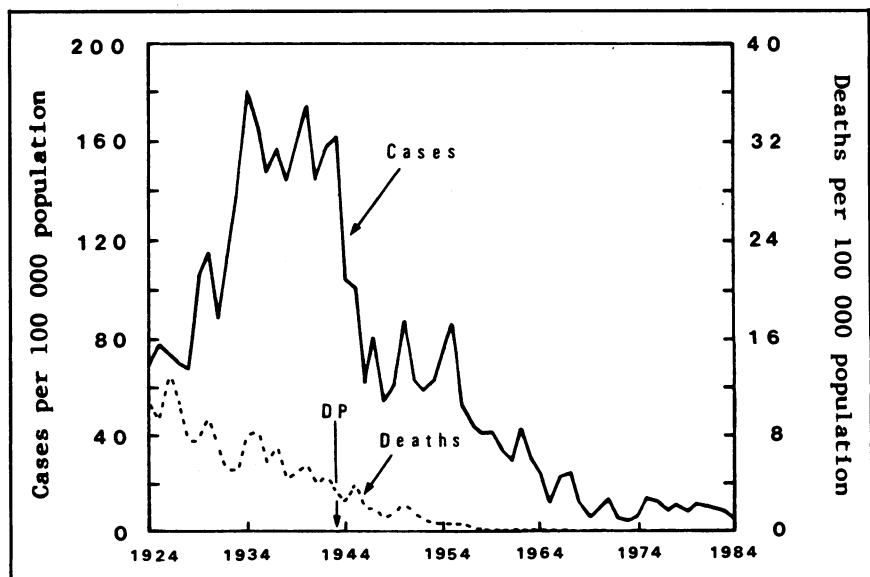


Fig. 1—Number of cases of pertussis and of deaths due to pertussis in Canada, 1924-84. DP = introduction of combined diphtheria-pertussis vaccine, 1943.

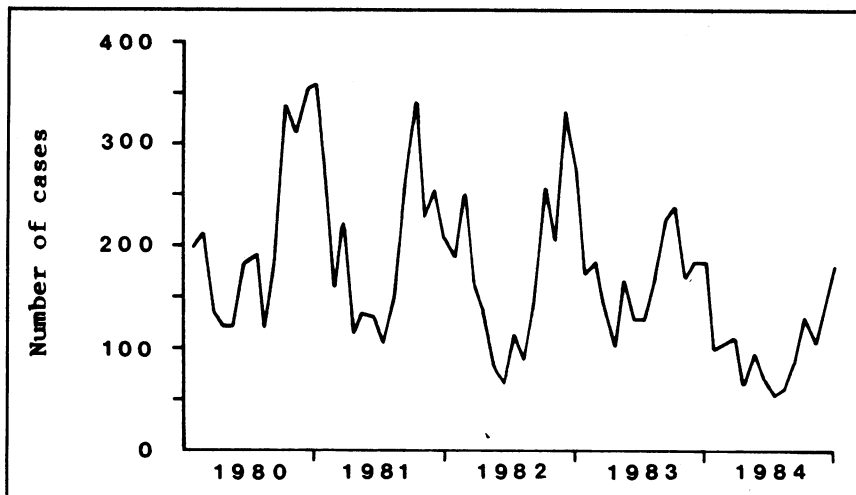


Fig. 2—Number of reported cases of pertussis in Canada, 1980–84, by 4-week periods.

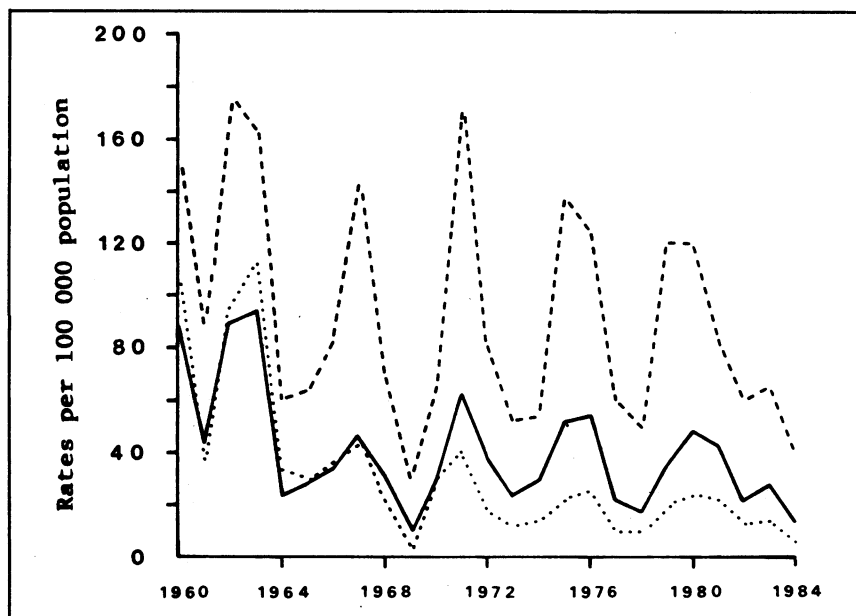


Fig. 3—Age-specific incidence rates of pertussis in Canada, 1960–84. Dashed line represents rates in infants; solid line represents rates in children aged 1 to 4 years; dotted line represents rates in children aged 5 to 9 years.

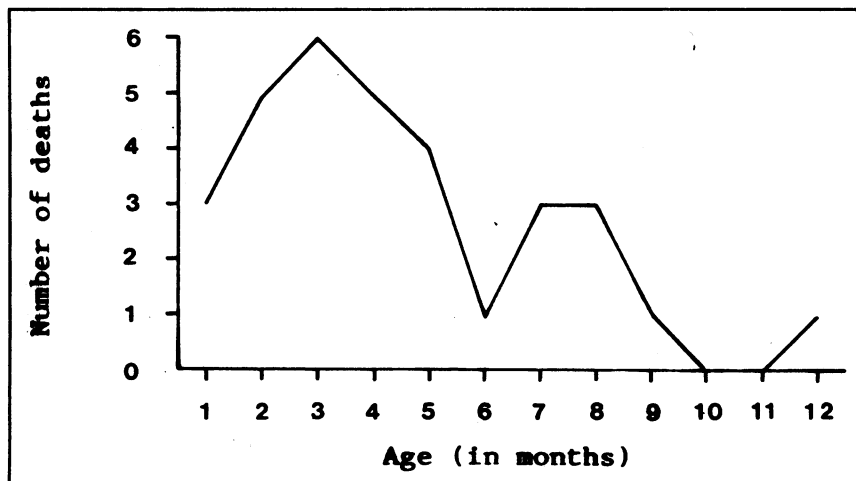


Fig. 4—Number of deaths due to pertussis in infants in Canada, 1970–82.

higher than that among preschoolers. Since 1967 preschoolers have had the second highest incidence rate and children aged 5 to 9 years the third highest. All age groups have exhibited parallel trends in incidence.

### Hospitalization

Cases of pertussis in which hospitalization was required show a trend that coincides with incidence. During the period April 1980 to March 1981, 2245 cases in which the diagnosis at the time of discharge was pertussis were recorded. Over half (52%) were in infants, and 36% were in preschoolers. Infants were admitted to hospital almost six times as often as preschoolers.

### Mortality

Over the past 60 years the annual number of pertussis-related deaths has ranged from 0 to a high of 1374, in 1923. In recent years deaths due to pertussis have been rare; none were recorded in 1976, 1977 or 1982. Between 1970 and 1982, 40 deaths (average 3 per year) occurred, of which 37 (92%) were in children under 5 years of age (32 infants and 4 1-year-olds). Fig. 4 shows that among the infants a peak number of deaths occurred at 3 months of age.

The frequency of pertussis-related death has decreased with increasing age. Fatality rates have also shown a steady decline. In 1934–43, before the vaccine was introduced, 35 deaths were reported for every 1000 cases notified, whereas in a more recent period (1974–82) only 1 death was reported per 1000 cases, a reduction of 97%.

### Comment

Data for recent years show that the number of cases of pertussis in which hospitalization was required was approximately the same as the number of cases notified. Obviously there has been incomplete reporting. The true annual incidence of pertussis is probably in the area of 3000 to 4000 cases.

The assistance of the Health Division of Statistics Canada was appreciated. ■