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Changes in Rates of Spontaneous Fetal Deaths Reported in Upstate New York Vital Records by Gestational Age, 1968–78

PHILIP K. CROSS

Tearsheet requests to Mr. Cross, a research scientist in the Bureau of Maternal and Child Health, New York State Department of Health, Albany, N.Y. 12237. At the time of the study, he was with the Birth Defects Institute, Division of Laboratories and Research, New York State Department of Health. Dr. Ernest B. Hook, chief of the Birth Defects Section, Bureau of Maternal and Child Health, alerted Mr. Cross to the need for the amendments noted in the addendum.

Synopsis

Between 1968 and 1978, the rates for spontaneous deaths, recorded on Upstate New York fetal death certificates, that occurred after 28 or more weeks of gestation dropped 37 percent, and the rates for deaths that occurred at 20 to 27 completed weeks of gestation dropped 12 percent. However, the rates of reported spontaneous fetal deaths after 16 to 19 weeks gestation dropped only 4 percent. The rates for such deaths at 12–15 weeks of gestation increased by 21 percent and by 55 percent at less than 12 weeks of gestation. The decline in the late fetal death rate is probably attributable, at least in part, to medical and social advances during this period. The reported rise in early fetal deaths may be due, among other factors, to changes in reporting practices or to earlier deaths of conceptuses that formerly would have been lost after 20 weeks of gestation.

PUBLISHED DATA ON TRENDS IN FETAL DEATHS in the United States occurring at less than 20 weeks' gestation are lacking, as Wilcox has noted (*1*). This circumstance prompted me to examine vital record data for Upstate New York (New York State exclusive of New York City) for the period 1968–78.

A law requiring that all fetal deaths in New York State be reported was enacted Sept. 1, 1967. Before that date, only fetal deaths after 20 or more weeks of gestation were recorded. The data I analyze here were extracted for me by the Office of Biostatistics of the New York State Department of Health from more than 1.5 million birth and fetal death certificates, recorded in Upstate New York, for newborns and spontaneous abortuses of Upstate New York residents. I limited my analysis to two racial groups, whites and blacks. (In this report, gestation is measured from the first day of the last menstrual period. "Pregnancies" refers to live births plus spontaneous fetal deaths.) Rates of spontaneous fetal deaths per 1,000 pregnancies that lasted to the start of each gestation interval are presented in the table. Both crude rates and direct-maternal-age-standardized rates are presented. The age distribution of white Upstate New York mothers who gave birth to live infants in 1973 (the median year) was used for calculation of the standardized rates. Trends in the standardized rates are also shown in the chart.

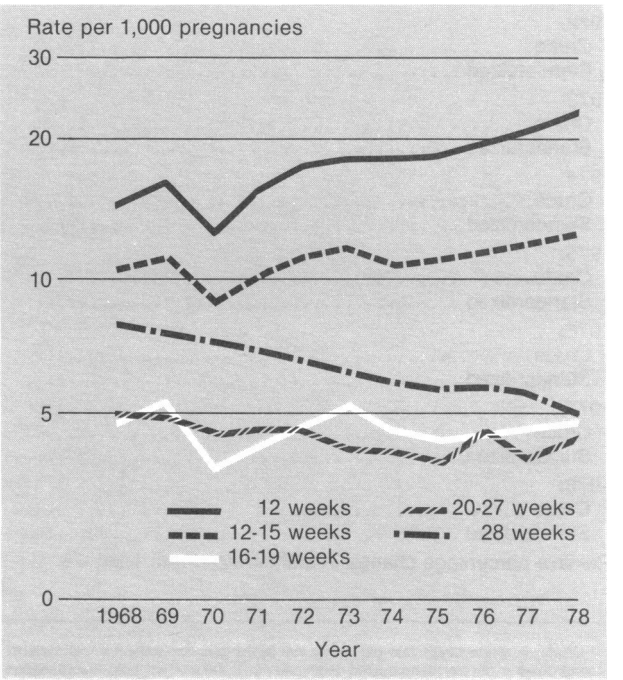
Although the rates for spontaneous fetal deaths are highly variable when examined on a yearly basis, I found a clear trend in Upstate New York for an increase in such deaths of white infants spontaneously aborted at less than 12 weeks of gestation; the rate of these deaths increased by 54.7 percent between 1968 and 1978. An increase of 21.2 percent also occurred in the rate of fetal deaths of whites aborted after gestations of 12–15 weeks. The corresponding rates for blacks are highly variable because of their much smaller numbers, but both the crude death rates and the maternal-age-standardized rates for blacks show an overall increase during the period 1968–78.

For Upstate New York whites, the increasing rates of early fetal deaths were in contrast with the trends for later fetal deaths. The rate of fetuses lost at 16–19 weeks was relatively stable, and there was a slight, but continuous, downward trend for those lost at 20–27 weeks. For later deaths (fetuses lost after 28 or more weeks of gestation), there was a marked drop of 36.7 percent between 1968 and 1978, a trend consistent with other observations (*2*). The decline in these late fetal deaths is probably attributable to a variety of social and medical changes, discussed in detail elsewhere (*3*), including the increasing proportion of births accounted for by cesarean sections.

The reasons for the rise during this period in the rate of reported fetal deaths occurring at less than 16 weeks' gestation—a rise that to my knowledge has not been reported previously—are not obvious. It appears unlikely that the rise is attributable to changes in maternal age, since age-standardized rates exhibit trends similar to those for crude rates, but it may be due to changes in reporting. The overall rate of these early fetal deaths is likely to be underreported on vital records. For example, the observed rates of all spontaneous fetal deaths in intensive surveys, (admittedly from earlier periods and different jurisdictions) are consistent with an approximately threefold higher rate of fetal deaths in earlier gestational intervals and with an approximately twofold higher rate in later intervals as compared with the rates presented here (*4*). Therefore, changes in reporting practices might well be responsible for the rise in the rate of early fetal deaths, particularly if there had been a growing trend between 1968 and 1978 for physicians to see pregnant women early in pregnancy or to hospitalize them early because of threatened abortion.

Another possibility is that at least some fetuses that would have been lost later are now being lost earlier in gestation, although this possibility appears unlikely to account for the entire change. Alternatively, some induced abortions, which are done primarily in the earlier stages of gestation, may be reported to an increasing

Spontaneous fetal death rates for white population of Upstate New York, standardized directly to maternal age, 1968-78, by length of gestation.



'Although the rates for spontaneous fetal deaths are highly variable when examined on a yearly basis, [there was] a clear trend . . . for an increase in such deaths of white infants spontaneously aborted at less than 12 weeks of gestation . . . '

extent as spontaneous fetal deaths to avoid regulations concerning the places in which induced abortions may be performed. Lastly, it is at least possible that some ubiquitous external factor has particularly affected the rate of early fetal deaths, although I have no direct evidence for this view.

It would be worthwhile for those in areas where more complete data may be available to examine temporal trends in early fetal deaths, stratified by gestational age, to determine whether the apparent increase in such deaths has actually occurred.

Addendum

While this paper was in press, a recent article by Susser (*5*) on the importance of adjusting for induced

Unstandardized and direct-material-age-standardized spontaneous fetal death rates for the white population of Upstate New York, by length of gestation, 1968–78

Year and rate[1]	Weeks of pregnancy					All gestations
	<12	12–15	16–19	20–27	≥28	
1968:						
Crude	15.7	10.7	5.0	5.2	8.3	52.4
Standardized	14.8	10.4	4.9	5.0	7.9	49.9
1969:						
Crude	17.0	11.5	5.2	5.3	7.9	54.6
Standardized	16.2	11.2	5.2	5.1	7.6	52.6
1970:						
Crude	12.7	8.9	3.8	4.6	7.2	45.0
Standardized	12.3	8.8	3.7	4.5	7.1	43.8
1971:						
Crude	16.1	10.1	4.2	4.6	7.0	49.7
Standardized	15.8	10.1	4.2	4.6	6.9	49.1
1972:						
Crude	17.7	11.0	4.6	4.7	6.5	52.3
Standardized	17.5	11.0	4.6	4.6	6.5	51.7
1973:						
Crude	18.1	11.5	5.1	4.3	6.4	53.7
Standardized	18.0	11.5	5.1	4.2	6.3	53.1
1974:						
Crude	18.2	10.6	4.5	4.2	6.0	50.6
Standardized	18.2	10.6	4.5	4.2	5.9	50.3
1975:						
Crude	18.4	10.8	4.3	3.9	5.7	50.1
Standardized	18.4	10.9	4.3	3.9	5.7	50.0
1976:						
Crude	19.6	11.7	4.5	4.5	5.7	51.2
Standardized	19.7	11.7	4.5	4.5	5.8	51.1
1977:						
Crude	20.4	11.9	4.5	4.1	5.5	50.3
Standardized	20.4	11.9	4.5	4.1	5.6	50.3
1978:						
Crude	23.0	12.7	4.6	4.4	5.0	53.6
Standardized	22.9	12.6	4.7	4.4	5.0	53.3
Relative percentage change in standardized rate 1968–78	54.7 increase	21.2 increase	4.1 decrease	12.0 decrease	36.7 decrease	6.8 increase

[1] Crude = crude death rate per 1,000 live births plus spontaneous fetal deaths. Standardized = directly standardized death rate per 1,000 live births plus spontaneous fetal deaths. (The standard is the maternal age distribution in 1973 for Upstate New York white newborns.)

abortions when estimating rates of spontaneous abortion was brought to my attention. He reports that excluding induced abortions from the denominator—the traditional method—may result in some distortion. Because of Susser's article and my having noted from the data used in my paper that there was an increase in the rate of induced abortions in New York State between 1968 and 1978, I realized that an adjustment, such as the simplified estimate of the "true" spontaneous abortion rate (STR) he proposes, should be made to restore the comparability of the rates I present in the table.

A liberalized abortion law became effective in New York State on July 1, 1970. The first calendar year for which estimates can be obtained of the number of induced abortions occurring to white residents of Upstate New York and recorded in that jurisdiction is 1971. The data by gestational interval are not readily available, but estimates of the number of induced abortions performed at less than 16 weeks' gestation and those performed after 16 or more weeks can be derived for 1971 and 1978.

In 1971 there were approximately 20,000 induced abortions performed at less than 16 weeks' gestation and 3,000 at 16 or more weeks. The corresponding figures for 1978 are about 32,500 and 2,500 respectively. If the data presented here for gestations of less than 16 weeks are pooled and analyzed using the fetal death ratio I describe, the crude rates per 1,000 pregnancies (excluding induced abortions) are 26.0 and 35.5 for 1971 and 1978 respectively, approximately a 37 percent increase for the period. The same data reanalyzed using Susser's simplified estimate of the "true" rate (that is, adding one-half of all the induced abortions to the denominator) results in crude rates of 24.1 for 1971 and 30.8 for 1978, a 28 percent increase.

These reanalyzed data suggest that at least part of the rise in the early spontaneous fetal death rate can be attributed to the increased frequency of induced abortions in New York State for 1968-78. However, even when an adjustment for the presence of induced abortions is made, the rise in spontaneous fetal deaths occurring at less than 16 weeks' gestation reported here still exists, although the percent increases reported in the table should be decreased somewhat. As would be expected, since the number of induced abortions performed after 16 or more weeks' gestation is relatively small when compared with the total number of pregnancies, adjusting for them in the spontaneous fetal death ratio would have little effect on the rates reported for these later fetal deaths.

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