A STUDY OF MATERNAL MORTALITY IN CANADA*

MARION KERR, M.D., TORONTO, ONTARIO

DURING the last ten years the maternal death rate for Canada has shown an encouraging improvement. In 1934 the rate was 5.3; 1936 to 1940, 4.6; 1941, 3.5; 1942, 3.0; 1943, 2.8; and 1944, 2.7. We owe this steady improvement to several factors, such as better hospital facilities and the increased desire on the part of patients to seek hospitalization, improved obstetric technique, and the many prenatal services now available, with the education of the lay public of their value. The use of blood and plasma, the sulfonamides, and penicillin have all contributed to the reduction of maternal mortality. The improved methods of anesthesia and the more efficient methods of relieving the pain of labor have also reduced the number of fatalities.

In 1934 there was a range in the maternal mortality rates for the provinces from 4.1 to 2.3, and in the rates for larger cities of 40,000 population and over, from 5.9 to 1.0. The range in 1940 for the provinces was from 4.8 to 2.9, and for cities of 40,000 population and over, 7.0 to 2.1.

In the study of statistics of the past ten years, the chief causes of death of puerperal women are infection, toxemia, and hemorrhage, and in the order stated. In 1939, 72.6 per cent of all maternal deaths were due to these causes: septicemia, 32.1 per cent; toxemia, 24 per cent; and hemorrhage, 16.5 per cent. In 1934 401 women died of septicemia and septic abortion. In 1944 there were 265 women who died from these causes. Although there has been this marked decrease in the number of deaths from sepsis, it still remains the most frequent cause of maternal mortality.

Many of these deaths may be deemed preventable, and the prevention is chiefly the responsibility of the physician. The causes of puerperal sepsis are found to be prolonged labor, anemia, or blood loss, cesarean section, and operative obstetrics. Prevention is accomplished only by good obstetrics. Deaths from septic abortions, of which there were 85 in 1944, are included. These cases are a problem unrelated to maternity for which the profession is seldom directly responsible. The medical profession, however, should lead the way in finding a means of preventing these deaths from septic abortion.

In 1934 toxemia, the second greatest cause of maternal mortality, was responsible for the loss of 260 mothers.

In 1940 mortalities from this cause numbered 234, or 23.9 per cent. In 1941 toxemia was the largest single cause of maternal deaths accounting for 222, or 24.7 per cent. In 1942 the rate was 22 per cent; 1943, 20.3 per cent; and in 1944 it had fallen to 15.7 per cent.

*Presented at the Second Annual meeting of the Society of Obstetricians and Gynecologists of Canada, Ste. Marguerite, Quebec, Oct. 27-29, 1946.

If excessive blood is lost, it should be replaced as soon as possible and in sufficiently large amounts. Blood is the puerperal woman's most powerful ally but if not immediately available, plasma is now procurable in even all outlying districts. We have become aware of its lifesaving qualities in cases of shock, yet more and more it becomes apparent that plasma will not save life if the blood loss has been great. Some method whereby hospitals can get blood replacement easily, cheaply, and promptly is very important. If veins cannot be entered, bone marrow infusion through the sternum is a procedure which should be used.

According to the statistics of the Chicago Lying-in Hospital, heart disease has been one of the major causes of maternal death. Our Canadian statistics of maternal death do not list death from cardiac disease. The rate of mortality from phlegmasia alba dolens, embolism, or sudden death does not run a parallel course with sepsis. An almost steady rise occurred since 1934, ending with a definite peak in 1940 with 156 deaths. The rates for all other conditions except accidents were the lowest in that year. The rate in 1944, however, was the lowest ever recorded—seventy-six deaths.

Under the heading of other accidents of childbirth are included cesarean operations, other surgical operations, instrumental deliveries, dystocias, ruptures of the uterus in parturition, together with other or unspecified conditions of the puerperal state, as puerperal diseases of the breast, etc. In 1940, ninety-nine deaths were attributed to these causes, which was 8.3 per cent. Since 1936 there has been a steady decrease in these numbers. The use of blood and plasma has decreased the number of fatalities from cesarean section. The careful selection of cases, improved preparation, better methods of anesthesia, and the lower uterine segment type of operation has made it a safer procedure.

The prevention of maternal mortality should begin in childhood. In the prevention of rickets, tuberculosis, syphilis, and the acute communicable diseases of childhood, we are laying the foundations for a healthier motherhood. The growth and normal development of girls are dependent largely upon proper nutrition, freedom from infections, and suitable exercise. It is well known that rachitic pelves, damaged hearts and kidneys, and chronic foci of infection increase the risks of pregnancy. Health should be regarded as a major objective of modern education. In all secondary schools ample provision should be made for mothercraft classes to be instructed by well-trained and experienced public health nurses. These should be made compulsory for all girls. They would be better equipped for motherhood, would also have a fund of knowledge which would help them to meet the broader problems of social hygiene. Another important factor in the reduction of maternal mortality is the puerperal woman herself. The ability to choose a skillful physician, a competent nurse, and a well-equipped hospital are of vital importance. Her capacity to grasp and to carry out simple hygienic rules and her "teachability" as to the importance of symptoms and signs, which indicate approaching danger, are large factors.

A well worked-out program of parental education should be available in every community in which parent-teacher associations, women's clubs, etc., should be encouraged to take an active part. Prospective mothers of all grades of

intelligence and of all social classes will take advantage of instruction for expectant mothers, if presented by thoroughly trained and experienced public health nurses.

This instruction should be made available to all prospective mothers and fathers, regardless of their economic condition.

If 85 per cent of the maternal deaths are preventable as one obstetric authority states, the time is ripe for action. Judging by accomplishment in other fields, a "*Canadian Safe Motherhood Association*" or some such name would serve to crystallize the energy awaiting leadership. Obstetric authorities are prepared to give expert advice; public health workers are accustomed to organize and promote, and the informed public will furnish the financial support.

Medical and hospital care should be supplemented by education of the public, through the work of public health nurses, the press, radio, and other media, regarding the need for, and value of, good maternity care. The public should be instructed as to the proper diet and hygiene for the mother during the maternity cycle. There can be no question that well-equipped maternity hospitals with skilled staffs, using conservative methods of treatment, are the safest places in which to have a baby. In Canada, one of our great needs is increased hospital accommodation. It is estimated that only 47 per cent of pregnant women in Canada are able to be delivered in hospitals. To assure maintenance of adequate hospital maternity services in any community, hospitals must not be dependent upon charity contributions and upon the extra charges of private patients to meet the loss through its free services. Any approved hospital should be supported from public funds on a cost basis for providing all in-patients maternity care, the cost of maintenance of facilities for the prenatal care and all laboratory and x-ray services. The maternity patient administration is a community responsibility, and a larger provision should be made from public funds.

We do want to have the best maternity care for all mothers that it is possible to provide, so that Canada will be a place of safe motherhood.