

Investigation of an Increase in Postpartum Hemorrhage in Canada.

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Postpartum hemorrhage continues to account for a substantial fraction of maternal deaths and serious morbidity. An examination of temporal trends by the Maternal Health Study Group of the Canadian Perinatal Surveillance System found that the rate of postpartum hemorrhage with hysterectomy in Canada almost doubled between 1991 and 2000. The current study investigated the causes for this increase, hypothesizing that they would include changes in obstetric practice (favoring hysterectomy for severe postpartum hemorrhage over blood transfusion) and increases in maternal age, labor induction, and adherent placenta in women with previous cesarean deliveries.

The population included all hospital deliveries in Canada, as documented in the Discharge Abstract Database of the Canadian Institute for Health Information, from 1991 to 2004, excluding Quebec, Manitoba, and Nova Scotia (incomplete data). Primary outcome measures were postpartum hemorrhage, with and without hysterectomy, with blood transfusions, and by subtype (retained placenta, uterine atony, coagulation defects, and delayed and secondary postpartum hemorrhages). Logistic regression analysis was used to examine independent effects of each factor on postpartum hemorrhage.

The rate of postpartum hemorrhage increased from 4.1% in 1991 to 5.1% in 2004 (a 23% increase, 95% confidence interval 20%-26%) and the rate of postpartum hemorrhage with hysterectomy increased from 24/100,000 deliveries to 41.7/100,000 in the same period. By subtypes, postpartum hemorrhage caused by retained placenta, secondary hemorrhage, and coagulation defects showed no significant change. The rates of atonic postpartum hemorrhage—the most common form—however, showed a substantial increase, from 29.4/1000 deliveries in 1991 to 39.5/1000 in 2004 (34% increase, 95% confidence interval 31%-38%). This trend was seen in all provinces and among women of all age groups. A significant increase in hysterectomy was seen among women who had atonic postpartum hemorrhage and coagulation defects, while rates were unstable among women with hemorrhage caused by retained placenta and unchanged in women with secondary postpartum hemorrhage. Blood transfusion rates showed a declining temporal trend among all postpartum hemorrhage subtypes, except those caused by coagulation defects. Large changes were observed in risk factors for all postpartum hemorrhage, including substantial increases in the frequency of older mothers and in elderly primigravidas and with regard to epidural anesthesia, labor induction, and cesarean deliveries, although adjustment for these changes did not explain the increase in atonic

postpartum hemorrhage. Of 178 in-hospital maternal deaths during the study period, 53 occurred among women with postpartum hemorrhage.

The conclusion was that the rising rate of postpartum hemorrhage with hysterectomy is a manifestation of an underlying increase in the frequency and, possibly, the severity of atonic postpartum hemorrhage. The causes of the increase in atonic postpartum hemorrhage, however, remain unclear and the authors suggest further studies using large perinatal databases in other industrialized countries.