The authors used billing records to identify all obstetric deliveries from 2001 to 2011 at MGH and UMHS. Deliveries were identified using ICD, Ninth Revision, Clinical Modification (ICD-9-CM) codes indicative of severe maternal morbidity, and were then categorized into 1 of 18 preselected clinical categories. Such categories have previously been used in health care utilization data to reflect high acuity and the most severe maternal morbidity and end-organ damage. Twenty patients, all with complete medical charts, were chosen at random from each clinical category. Medical charts were reviewed for operative procedure note, laboratory data, physician assessment, length of stay (MGH only) and intensive care unit admission (MGH only). After reviewing the charts, two physicians independently determined whether or not the ICD-9-CM code was correct, indicating a true positive. PPV was defined as the number of true positives divided by the sum of all positives identified from parturient billing records, which included true positives and false positives. Interrater consistency was assessed through analysis of the rate of disagreement between physicians.

A total of 443 patient billing records and associated medical charts were reviewed (N_MGH = 255; N_UMHS = 188). At MGH, 85% of deliveries were assigned correct ICD-9-CM codes [218/255; confidence interval (CI), 79%-90%]. At UMHS, 82% of deliveries were assigned correct codes (154/188; CI, 74%-88%). These results yielded a combined PPV of 84% (372/443; CI, 79%-88%). In regards to 99% lower confidence limits, 6 categories had a limit of <50%, 8 categories had a limit between 50% and 74%, and 4 categories had a limit of ≥75%. Procedure coding indicated high PPV categories were Hysterectomy (PPV, 100%; CI, 86%-100%) and Ventilation (PPV, 92%; CI, 74%-98%). Physicians disagreed 9.5% of the time, either due to overlooking of data or misinterpretation (27/42; 64%).

ICD-9-CM codes used to record severe maternal morbidity categories may be subject to error. Codes have a high PPV when supporting medical information containing objective data, and low PPV when greater judgment, interpretation, and synthesis of clinical information are needed. Limitations of this study were a small number of cases, variances in regional or institutional coding practices, miscoding, lack of negative predictive value analysis, restrictions based on length of stay or ICU admission, and varying disease prevalence (affects PPV).

Association Between Rates of Cesarean Section and Maternal and Neonatal Mortality in the 21st Century: A Worldwide Population-based Ecological Study With Longitudinal Data

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Topics: Maternal Morbidity and Mortality, Neonatal Morbidity and Mortality

A significant increase in cesarean deliveries has been reported worldwide over the past few decades. Earlier studies analyzed the association between delivery mode and maternal and neonatal mortality using various statistical methods and found a nonlinear relationship between the 2. However, these studies did not control for socioeconomic conditions. The objective of this study was to compile the data available on cesarean section rates worldwide, determine the association between mode of delivery and maternal and neonatal mortality when adjusting for socioeconomic development, and determine a population level cesarean section rate that is associated with the least maternal and neonatal mortality.

Data on cesarean section rates from 1980 to 2012 were compiled from several sources including the Demographic and Health Surveys program, Multiple Indicator Cluster Surveys, statistical reports, and journal articles from MEDLINE, EMBASE, and reference lists. Maternal and neonatal mortality data were procured from the World Health Statistics Report. The Human Development Index for each country, which assesses overall social welfare, was used as a comprehensive proxy for confounding factors. The relationship between cesarean section rates and mortality outcomes (maternal mortality ratio and neonatal mortality rate) was determined using fractional polynomial regression statistical models.

In the year 2000, the least, less, and more developed countries had maternal mortality ratios of 607.0, 288.8, and 17.5 per 100,000 live births, respectively. The average world cesarean section rate was 12.0%, with the highest average rate in the more developed countries (19.5%) and the lowest average rate in the least developed countries (2.0%). In the year 2012, the maternal mortality ratio had decreased sharply to 432.3 and 175.6 per 100,000 live births in the least and less developed countries, respectively, but decreased only slightly in the more developed countries, to 16.2 per 100,000 live births. Neonatal mortality rates displayed a similar pattern to that of maternal mortality.
Second-stage Labor: How Long is Too Long?

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Topics: Systems-based Practice, Obstetric Complications, Anesthetic Complications, Maternal Morbidity and Mortality

Data available show that the rates of cesarean delivery are increasing continually (reaching a record high of 32.9% in the United States in 2009), especially in the management of first and second stages of labor. Hence there is an increased scrutiny of the management of labor. The Society for Maternal-Fetal Medicine, the Eunice Kennedy Shriver National Institute of Child Health and Human Development, and the American Congress of Obstetricians and Gynecologists convened a workshop to address this issue of rising cesarean delivery rates. One of their recommendations was that the accepted upper limit of the second stage of labor should be increased to ≥4 hours in nulliparous women with epidural analgesia and to >3 hours in parous women with epidural analgesia. These recommendations were presented in a document entitled “Safe Prevention of the Primary Cesarean Delivery,” which was the inaugural publication in the Obstetric Care Consensus series.

This document was promulgated nationally and because of this the now acceptable maximum length of the second stage of labor exceeds the obstetric precepts that have been in use for more than 50 years. This article reviewed the data on infant safety, vis-a-vis length of the second stage of labor. The review examined evidence available over a range of time, starting from the outset of the 20th century through to the very recent (2014) recommendation to abandon the long accepted obstetric paradigm that second-stage labor >3 hours in nulliparous women with labor epidural is unsafe for the unborn infant. The authors concluded that whatever data are currently available are inadequate to support the Obstetric Care Consensus position that longer second-stage labor is safe for the unborn infant. In contrast, these authors proposed that the evidence suggests quite the opposite. The study recommended that when infant safety is at stake the evidence should be robust before a new clinical road is taken.

Wide Differences in Mode of Delivery Within Europe: Risk-stratified Analyses of Aggregated Routine Data from the Euro-Peristat Study

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Topics: Systems-based Practice

Cesarean section rates have been on the rise in many developed countries over the past few decades. Cesarean section is a necessity in some high-risk conditions like placenta previa or fetal distress. Performance of the surgery is often governed by factors like parity, previous cesarean section, fetal presentation and multiplicity. The objectives of this study were two-fold: first to use aggregated population-based data from routine sources to review and understand the differences between obstetric intervention rates for European countries, and second to analyze the extent to which clinicians were likely to intervene in high-risk situations in countries with high overall cesarean rates.