

The decreasing trend in early-term repeat cesarean deliveries in the United States: 2005 through 2014



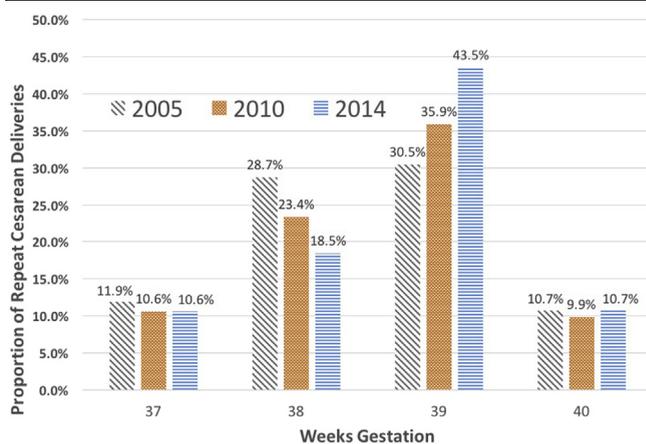
OBJECTIVE: Several studies in 2009, including a large cohort study from the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD) Maternal-Fetal Medicine Units Network, found that early term delivery (37 0/7-38 6/7 weeks' gestation) was associated with increased neonatal and infant morbidity and mortality compared to deliveries at ≥ 39 weeks.¹⁻⁴ The NICHD study also found that over one third of nonmedically indicated cesarean deliveries occurred < 39 weeks.³ Subsequently, in August 2009, the American Congress of Obstetricians and Gynecologists (ACOG)⁵ and later the Society for Maternal-Fetal Medicine (SMFM) published guidelines to discourage delivery < 39 weeks' gestation without a medical indication.⁶ Given that nearly one third of cesarean deliveries are done in the absence of labor or other recognized medical or obstetrical indications,³ this presented clinicians with an opportunity to change clinical practice and improve neonatal outcomes. Our objective was to examine the trend in early term repeat cesarean delivery rates from 2005 through 2014, before and after the publication of these recommendations.

STUDY DESIGN: This is a study of the trend in timing of term repeat cesarean delivery in the United States from 2005 through 2014. We calculated the distribution of deliveries for each week of gestation between 35-41 weeks for total and repeat cesarean deliveries for 3 one-year time periods preceding (2005), coinciding with (2010), and following (2014) implementation of new guidelines using the National Vital Statistics System birth certificate data set. Because this study analyzes nonidentified data, it was deemed exempt from review by the Weill Cornell Investigation Review Board.

RESULTS: The study population consisted of 8,667,268 total deliveries of which 1,099,783 were repeat cesarean deliveries. The proportion of repeat cesarean deliveries at 38 weeks decreased from 28.7% in 2005 to 18.5% in 2014 (55.1% decrease; $P < .001$) and increased at 39 weeks from 30.5% in 2005 to 43.5% in 2014 (42.6% increase; $P < .001$) (Figure). The proportion of all deliveries at 38 weeks decreased from 19.7% in 2005 to 16.8% in 2014 (17.3% decrease; $P < .001$) and increased at 39 weeks from 26.7% in 2005 to 31.8% in 2014 (16% increase; $P < .001$). There were no significant changes from 2005 through 2014 in the proportion of deliveries between 35-37 weeks and 40-41 weeks.

CONCLUSION: Our study confirms a significant decrease in the rate of early term deliveries at 38 weeks in the years following the early term birth guidelines published by ACOG and SMFM. We present evidence to support that this

FIGURE
Repeat cesarean deliveries: distribution by weeks gestation



Razavi. Decreasing trend in early-term repeat cesarean deliveries. *Am J Obstet Gynecol* 2017.

decrease was in large part due to a decrease in repeat cesarean deliveries.^{7,8}

While our study is the first to analyze national data of trends in early term deliveries, similar results have been published on a local and statewide level.^{7,9} An investigation of neonatal intensive care unit admission, respiratory morbidity, stillbirth, and other outcomes is needed to fully evaluate the impact of this change on neonatal outcome. This information could provide further encouragement for a national commitment to improve obstetric practice and optimize neonatal outcomes by delivering babies at ≥ 39 weeks unless otherwise medically indicated. ■

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The plateauing of cesarean rates in industrialized countries



OBJECTIVE: There has been growing concern with the increase in cesarean rates in industrialized, transition, and developing countries,¹ a concern reflected in the recent consensus statement on “Safe prevention of the primary cesarean delivery.”² This letter updates an earlier paper³ that examined trends in cesarean rates in industrialized countries through 2007.

METHODS: To enhance comparability we included only the 21 countries that met 3 criteria: (1) $\geq 50,000$ births annually; (2) per capita gross domestic product of at least \$20,000 in 2013; and (3) consistent reporting of national cesarean rates from 1988 through 2013 (Table). Data were drawn from 3 public use sources: (1) the Organization for Economic Co-operation and Development; (2) the World Health Organization (WHO) European Health for All database; and (3) country reports where available. The analysis compared 5-year intervals to examine if the annual change in cesarean rates in a given interval differed from the annual change in the next period. The slope of each country's trend line for a 5-year interval was compared by calculating an exponentiated change in rate (multiplicative scale), which measures the ratio of annual rate of change during 1 period (eg, 2008 through 2013) compared to a prior period (eg, 2003 through 2008). We had complete data for all countries from 2000 through 2013. From 1988 through 1999 we had complete data on 13 countries. In the case of some countries, data reporting did not begin until after 1990 (Israel 1998; Austria 1995) or there was a period of missing data (eg, Switzerland 1992 through 1997). The Table presents data back to 1988 for descriptive purposes, but analysis focuses on the period from 1993 through 2013 where data were relatively complete. Since the United States had almost half of all births, weighted averages are presented with and without the United States. The methods are described in more detail elsewhere.³

RESULTS: There was a marked increase in cesarean rates in the decade from 1993 through 2003 with countries reporting an average increase of 40% (45% without the United States) in their cesarean rate, whereas the average increase from 2003 through 2013, with or without the United States, was 11%. Every country reported a smaller percent increase from 2003 through 2013 than from 1993 through 2003. In the most recent 5-year period, 2008 through 2013, the average increase was only 1.5% (data not shown), with 6 of the countries reporting declines in their cesarean rates. The exponentiated rates show none of the 21 countries experienced a significant increase from 2008 through 2013 compared to the prior period, while 10 experienced a significant decrease.

Of the 5 countries with rates $>30\%$ in 2008, Italy reported a decline, 3 (Portugal, United States, and Switzerland) remained essentially unchanged, and only Australia increased by more than a single percentage point. Only the Czech Republic and Slovak Republic reported recent rapid increases.

DISCUSSION: Cesarean rates in industrialized countries have generally plateaued, but at rates that are higher than recommended by WHO.⁴ Industrialized countries' efforts to control their cesarean rates can serve as a model for rapidly industrializing countries, such as Brazil and China, with high current cesarean rates.⁵ ■

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