

## Early and total neonatal mortality in relation to birth setting in the United States, 2006-2009

**TO THE EDITORS:** The recent study by Grünebaum et al<sup>1</sup> demonstrated statistically significant, although incremental, increases in the unadjusted rates of total neonatal mortality in midwife-attended birth center births (0.59 per 1000; n = 39,523) compared with midwife-attended hospital births, particularly among nulliparas and gestations longer than 41 weeks.

There are 270 freestanding birth centers in the United States, and of these, only 71 are accredited by the Commission for Accreditation of Birth Centers (CABC). CABC accreditation indicates that a birth center has met a high standard of evidence-based benchmarks for maternity and neonatal care. Accreditation requires that birth center care be limited to women with singleton, cephalic-presenting fetuses between 36 and 42 weeks' gestation with no medical or obstetric complications precluding a spontaneous labor and vaginal birth.

The birth center must have a transfer arrangement with a hospital; licensed providers trained in risk stratification to determine the need for antepartum, intrapartum, or postpartum transfer; fetal monitoring protocols meeting American College of Obstetricians and Gynecologists standards; skills and equipment to perform neonatal resuscitation meeting Neonatal Resuscitation Program standards; and the ability to manage issues such as postpartum hemorrhage.

In 2013, the American Association of Birth Centers published prospectively collected data on birth centers practicing according to these standards from 2007 to 2010.<sup>2</sup> Among neonates more than 37 weeks and greater than 2500 g without congenital anomalies (n = 13,030), the neonatal mortality rate was 0.23 per 1000, statistically similar to the hospital midwifery birth reference group in the study by Grünebaum et al<sup>1</sup> (0.34 per 1000;  $P = .55$ ). In an intent-to-treat analysis (n = 15,574), including those women who entered labor in the birth center care but ultimately delivered in hospitals, the overall neonatal mortality rate was 0.38 per 1000 ( $P = .68$ ).

The higher neonatal mortality rate of 0.59 per 1000 in all US birth centers over a similar time period reported by Grünebaum et al<sup>1</sup> should be of great concern because the rate is likely even higher among the subset of birth centers not practicing according to widely recognized standards of maternity care as outlined by the American Association of Birth Centers, the CABC, the American College of Nurse-Midwives, the American College of Obstetricians and Gynecologists, and the American Academy of Pediatrics. These other birth centers may attempt deliveries of breech and multiple gestations and may not have appropriate training or equipment for neonatal resuscitation or adequate arrangements for access to hospital obstetrical and neonatal services.

The findings of Grünebaum et al<sup>1</sup> highlight a marked heterogeneity in birth centers in the United States. Many

states do not yet require birth center accreditation. In addition to the authors' recommendation to improve the nature of hospital birth experience, these results should also sound a call to action among collaborating providers, insurers, payers, and birthing families to demand accreditation of birth centers in all states. ■

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### REPLY

We appreciate the letter by Illuzzi et al concerning our publication<sup>1</sup> that showed the incremental increased neonatal mortality risks in out-of-hospital births.

The authors of the letter cite a study<sup>2</sup> that purportedly shows in accredited birthing centers a lower neonatal mortality rate than we reported for free-standing birthing centers. However, that study was based on voluntary data and was not comprehensive. The authors themselves state in their publication that their data are not generalizable. Therefore, the data they cite do not support their claim that birthing centers, even when accredited, generally have low neonatal mortality rates.

Our study used the Centers for Disease Control and Prevention (CDC) birth certificate database, which is comprehensive and includes all births in the United States. The CDC category for birthing centers included only free-standing birthing centers. Outcomes of hospital-based birthing centers in the CDC data are included in hospital outcomes.

We believe that it is the absence of essential services, personnel, expeditious access to cesarean deliveries, and sufficiently trained pediatricians and neonatologists, and advanced equipment as well as the extended time transporting patients to the hospital that unnecessarily increase neonatal risks in out-of-hospital births, whether births occur in free-standing birthing centers or homes.

Physicians and other health care providers have a professional responsibility to understand, identify, and address the root causes motivating patients' desire for out-of-hospital birth by providing evidence-based, compassionate hospital care, improving hospital settings, addressing obstetric interventions, and providing excellent, supportive, and nonjudgmental hospital care to women transported from a planned home or birthing center birth.<sup>1,3</sup> ■

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## Urinary nerve growth factor in patients with symptomatic detrusor overactivity

**TO THE EDITORS:** We read with great interest the article by Shalom et al<sup>1</sup> entitled "Sacral nerve stimulation reduces elevated urinary nerve growth factor levels in women with symptomatic detrusor overactivity." The authors suggest that detrusor overactivity patients had significantly higher urinary nerve growth factor (NGF) at baseline than healthy control subjects. However, we think that some points should be discussed.

NGF, a small secreted protein has an important role for growth, maintenance, and survival of neurons. In this study, the authors assessed NGF in a poorly defined study group. The authors should state whether the patients have any neuropsychiatric diseases or cardiometabolic diseases. It is known that neuropsychiatric diseases such as epilepsy, depression, schizophrenia, migraine, primary headache, eating disorders, or cardiometabolic diseases such as atherosclerosis, metabolic syndrome, and type 2 diabetes mellitus affect NGF levels.<sup>2</sup>

The authors note the control group was age-matched ( $\pm 5$  years) with the study group, but the baseline demographics table shows a difference of approximately 14 years, which is statistically significant. Another statistically significant difference between the 2 groups is a body mass index of 6 units. Previous studies show that obesity itself is a cause of higher

NGF levels.<sup>2</sup> Older age is also shown as a NGF-affecting factor.<sup>3</sup> Therefore, the control group selection seems unsuitable and likely could have caused an incorrect assessment.

When we consider the mean age of the control group, participants could have been using vitamin D analogues to prevent postmenopausal osteoporosis. Vitamin D analogues probably affect NGF levels.<sup>4</sup> Other supplements such as zinc, vitamin A, vitamin B12, omega 3 fatty acid, or herbal medicines and some drugs such as glucocorticoids, estrogen, acetyl-L-carnitine, antipsychotics should be noted. If participants were taking these, then NGF factors may be affected.<sup>4</sup>

In conclusion, the explanation of these concerns certainly will provide clearer information for the readers. ■

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