Research spotlight

# Historical roots of race inclusion in the vaginal birth after cesarean section (VBAC) calculator

## Background

- The inclusion of race in the vaginal birth after cesarean section (VBAC) calculator is rooted in a long history of racist ideas about pelvic anatomy and childbirth. In the past, the "gynecoid" pelvis was considered ideal for vaginal delivery and more common in white women, while the "anthropoid" pelvis was considered less suitable and more common in non-white women. These ideas were used to support racist social hierarchies, with non-white women being viewed as anatomically deficient for childbirth.
- The VBAC calculator, endorsed by the National Institute of Child Health and Human Development, was designed to help providers assess the likelihood of successful VBAC by taking into account individual risk factors. However, the calculator included race and ethnicity, using correction factors that "subtract" from the overall likelihood of successful VBAC for Black and Hispanic women.
- The correction factors were based on observational data that showed white women had a greater chance of successful VBAC. However, this data reflected existing racial disparities, and using it to justify race-based correction in the calculator was a circular argument.
- The calculator assigned a lower chance of successful VBAC to Black or Hispanic women compared to white women of identical age and BMI. For example:
    - A 30-year-old woman with a BMI of 35 and one prior cesarean for arrest of labor was assigned a 46% chance of successful VBAC if she was identified as white and a 31% chance if she was identified as Black or Hispanic.

## Findings

- The historical context of the inclusion of race in the calculator was examined. Researchers showed how the concept of racial differences in pelvic architecture, which informed the original calculator, was rooted in racist ideas and the desire to support white hegemony.
- The original calculator used observational data that reflected existing racial disparities, and poorly defined racial categories that also did not account for mixed-race or ethnicity.

- Researchers worked to develop a new VBAC calculator that did not include race or ethnicity. Using the same dataset from the Maternal-Fetal Medicine Units (MFMU) Cesarean Registry as the original calculator, they identified other factors that significantly predict VBAC success such as maternal age, pre-pregnancy weight, height, indication for prior cesarean, obstetric history, and chronic hypertension.
- This new calculator was validated and shown to have similar predictive accuracy to the original, with excellent calibration between predicted and empirical probabilities (area under curve [AUC, a measure of predictive accuracy] of 0.75, with a 95% confidence interval (CI) of 0.74 – 0.77, which is similar to the previous calculator's AUC of 0.75.)
- The new VBAC calculator without race and ethnicity was made available online to allow for widespread use.

## Lessons learned

The new calculator is intended to be used as a tool to enhance patient-centered care through **shared decision-making**, rather than a tool to discourage certain groups from attempting a trial of labor after cesarean section (TOLAC). The new calculator provides patients and their providers with a personalized estimate of their likelihood of VBAC success, empowering them with the co-responsibility to make informed choices about their care, aligning with their values and preferences. By removing race, the new calculator may lead to an increase in the number of women offered and choosing TOLAC, particularly among Black and Hispanic women, who were disproportionately impacted by the old tool. For example:

- A study comparing the calculators with and without race and ethnicity found that 44.6% of Hispanic women and 43.9% of non-Hispanic Black women who had a successful VBAC would have been given an unfavorable score in the race-based calculation. When race and ethnicity were excluded, this was only 9.5% and 12.1%, respectively.

However, the new calculator is not without its own limitations. For example:

- It estimates the chance of a clinical event, not a physiologic standard. This means it predicts the likelihood of VBAC in a specific clinical setting but does not measure any inherent biological capacity for VBAC.
- The model does not indicate whether someone should or should not undergo a TOLAC. It is designed to provide an estimate for use in a shared decision-making process.
- The model includes factors such as chronic hypertension and BMI, which are themselves shaped by structural racism. This means that while the calculator does not explicitly include race and ethnicity, it still reflects the impact of systemic

inequalities.

While the new calculator removes race and ethnicity, the process of examining its factors highlighted the need to address the social determinants of health (SDOH) that contribute to racial disparities in maternal outcomes. Factors like income, education, and access to care, which are shaped by systemic racism, play a significant role in VBAC success. Addressing these factors is crucial to achieve true health equity.

## Citations


1. ACOG Practice Bulletin No. 205: Vaginal Birth After Cesarean Delivery. Obstet Gynecol. 2019 Feb;133(2):e110-e127.
2. Attanasio LB, Paterno MT. Racial/Ethnic Differences in Socioeconomic Status and Medical Correlates of Trial of Labor After Cesarean and Vaginal Birth After Cesarean. J Womens Health (Larchmt). 2021 Dec;30(12):1788-1794.
3. Bervell R, Hsiao CJ, Lu E, Rubashkin N, Tsai J, Khazanchi R, Joseph A, Maru D, Stein T, Morse M. Evaluating the Elimination of Race from VBAC Calculators. NYC Department of Health and Mental Hygiene. 2022
4. Faulkner S, Haas M, Wang D, Walker C, Lee-Parritz A, Perkins R, Chinkam S. The effects of removing race from the VBAC calculator: implications for counseling. Am J Obstet Gynecol. 2021 Feb; 224(2):s467-s468. doi: https://doi.org/10.1016/j.ajog.2020.12.769
5. Grobman WA, Sandoval G, Rice MM, Bailit JL, Chauhan SP, Costantine MM, Gyamfi-Bannerman C, Metz TD, Parry S, Rouse DJ, Saade GR, Simhan HN, Thorp JM Jr, Tita ATN, Longo M, Landon MB; Eunice Kennedy Shriver National Institute of Child Health and Human Development Maternal-Fetal Medicine Units Network. Prediction of vaginal birth after cesarean delivery in term gestations: a calculator without race and ethnicity. Am J Obstet Gynecol. 2021 May 24:S0002-9378(21)00587-1. doi: 10.1016/j.ajog.2021.05.021
6. Vyas DA, Jones DS, Meadows AR, Diouf K, Nour NM, Schantz-Dunn J. Challenging the Use of Race in the Vaginal Birth after Cesarean Section Calculator. Womens Health Issues. 2019 May-Jun;29(3):201-204.