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## Study: Neonatal outcomes not associated with hyperoxygenation use

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News Article



Research in AJOG: Maternal hyperoxygenation doesn't boost neonatal Apgar scores in pathologic fetal heart rate tracing, showing no FiO2 benefit.

### Key takeaways:

- Maternal hyperoxygenation, despite being a considered intervention for managing suspicious fetal heart rate tracings, did not result in improved neonatal Apgar scores in cases of pathologic tracings.
- This conclusion was drawn from a clinical trial that compared the outcomes of women receiving high fractional inspiration of oxygen (FiO2 of 80%) with those receiving standard care (FiO2 of 40%).
- While there were no significant differences in 5-minute Apgar scores between the intervention and usual care groups, the prevalence of 1-minute Apgar scores of 7 or less was lower in the intervention group.
- The study included 148 women with common comorbidities including thyroid disorders and diabetes mellitus, providing a comprehensive sample for analysis.
- Despite the lack of improvement in neonatal outcomes, no cases of perinatal death were reported, indicating the overall safety of both approaches.



Study: Neonatal outcomes not associated with hyperoxygenation use  
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Hyperoxygenation does not improve neonatal Apgar score among women with pathologic fetal heart rate (FHR) tracing,



according to a recent study published in the American Journal of Obstetrics & Gynecology.

An association has been reported between perinatal asphyxia and neonatal mortality, as well as increased risks of neurologic



International Federation of Gynecology and Obstetrics (FIGO), and other organizations.

Pathologic FHR tracing may be used because of impaired fetal oxygen delivery, which can lead to fetal growth restriction, clinical chorioamnionitis, preterm birth, postterm birth, and other adverse outcomes. Intrauterine resuscitation measures such as intravenous fluid bolus, amnioinfusion, maternal repositioning, and tocolytics are necessary to reduce risks.

Data has indicated efficacy from maternal hyperoxygenation in managing suspicious FHR tracings. However, a change in neonatal outcomes following hyperoxygenation use has not been established.

To evaluate the impact of maternal hyperoxygenation on neonatal outcomes using 5-minute Apgar score, investigators conducted a 2-arm parallel, outcome assessor-blinded clinical trial. Participants included women aged 18 years or older with a singleton pregnancy at term and in the active phase of labor with pathologic cardiotocography.

Exclusion criteria included fetal growth restriction, cord prolapse, multifetal pregnancy, placental abruption, prior cesarean delivery, fetal congenital malformation, heart disease, chorioamnionitis, and mechanically ventilated parturients. Screening was provided to all women in labor, with a partogram used to monitor progress of labor.

FIGO guidelines were followed during FHR tracing, and a cardiotocograph was used to measure FHR. Women with pathologic FHR tracings were randomized into 2 groups. Group A was the intervention arm, where patients received high fractional inspiration of oxygen (FiO<sub>2</sub> of 80%).

In group B, patients received the standard care of FiO<sub>2</sub> of 40%. Additionally, patients in group A received 10 L/min of oxygen through a nonrebreathing mask, while those in group B received 6 L/min of oxygen through a simple face or venturi mask.

Emergency cesarean delivery was performed following pathologic FHR tracing of more than 25 minutes. Patients with emergency cesarean delivery continued to receive FiO<sub>2</sub> of 80%.

FiO<sub>2</sub> of 40% was administered after cord clamping, and other intrauterine resuscitation techniques were provided to patients in both groups.

Apgar scores at 1 minute and 5 minutes were recorded, as well as the requirements of neonatal resuscitation measures. Neonatal Apgar score was reported as the primary outcome of the analysis, while secondary neonatal outcomes included neonatal intensive care unit (NICU) admission, neonatal morbidity, and neonatal mortality.

There were 148 women included in the final analysis, with a median gestational age of 277 days in the intervention group and 276.5 days in the usual care group. Common comorbidities among patients included thyroid disorders and diabetes mellitus.

Recurrent late deceleration was reported in 41.9% of patients, making it the most common pathologic FHR tracing pattern, followed by recurrent variable deceleration at 36.5%. Similar pathologic FHR tracing pattern distribution was reported.

The intervention group had a median Apgar score of 8 at 1 minute and 9 at 5 minutes. No significant difference was found between 1-minute and 5-minute Apgar scores, but the prevalence of 1-minute Apgar scores of 7 or less was greater in the usual care group vs the intervention group, at 17.6% and 10.8%, respectively.

Similar NICU admission, noninvasive ventilation, and invasive ventilation rates were reported between groups. Blood gas parameters were also mostly similar between groups, though base deficit in the umbilical vein and lactate level in the umbilical artery were significantly higher in the intervention group.

Vaginal delivery was conducted for 95.9% of the intervention group and 74.3% of the usual care group, while cesarean delivery was performed in 4.1% and 25.7%, respectively. No cases of perinatal death were reported.

These results indicated no improvement in neonatal outcomes from maternal hyperoxygenation therapy among women with pathologic FHR tracing. Investigators concluded FiO<sub>2</sub> supplementation does not benefit neonatal outcomes.

**Reference:**

Sulaiman SP, Jha N, Bethou A, et al. Effect of maternal hyperoxygenation on neonatal outcomes among women in labour with pathological cardiotocography: an open-label

randomized controlled trial. *Am J Obstet Gynecol.*  
2024;230:454.e1-11. doi:10.1016/j.ajog.2023.09.093

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