# Impact of the ARRIVE Trial on Induction of Labor

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**Background**

In 2018, a multi-center, randomized clinical trial known as the ARRIVE trial (A Randomized Trial of Induction Versus Expectant Management) compared expectant management and elective induction of labor at 39 weeks of gestation on perinatal and maternal outcomes of low-risk nulliparous individuals. No significant difference in perinatal death or severe neonatal complications was found in either group. Although the long-term implications are unknown, recent data suggest the ARRIVE trial was pivotal in shaping the clinical practice of induction of labor, specifically the appropriate timing at which to perform this intervention.

**Objective**

We sought to assess the impact of the ARRIVE trial on induction of labor in both late preterm and term deliveries at 34 to 41 weeks of gestation across the U.S.

**Study Design**

Publicly available U.S. period-linked birth and infant death data along with fetal death data from the National Vital Statistics System (NVSS) were utilized. Eligibility criteria remained similar to the ARRIVE trial, which included low-risk nulliparous individuals. In the primary analysis, the preARRIVE period included any births or infant deaths from 2013 to 2017, and the postARRIVE period included any births or infant deaths from 2019 to 2023. Births and infant deaths in the year 2018, which is the publication year of the ARRIVE trial, were excluded. A secondary analysis excluding the COVID-19 pandemic was conducted where the preARRIVE period was adjusted to only include November 2016 to December 2017, and the adjusted postARRIVE period included January 2019 to February 2020. The primary outcome was the rate of induction of labor. Secondary outcomes included the rate of stillbirth, infant mortality, and perinatal mortality. Outcomes were compared between the preARRIVE and postARRIVE periods, across each week of gestation from 34 to 41 weeks using a cohort study risk ratio.

**Results**

Of the 38,545,900 births, there were 6,228,053 births during the preARRIVE period and 5,376,409 births during the postARRIVE period. Compared to the preARRIVE period, the postARRIVE period was associated with a significant increase in induction of labor from 34 to 41 weeks of gestation. Between 34 and 38 weeks, there was a significant decrease in stillbirth and no change in infant or perinatal mortality. At 39 weeks, there was a significant decrease in stillbirth and perinatal mortality (RR=0.88, 95% CI: [0.83-0.94]; RR=0.97, 95% CI: [0.937-0.996]) along with no change in infant mortality in the postARRIVE period. From 40 to 41 weeks, there was no difference in stillbirth, infant mortality, and perinatal mortality. In the secondary analysis

excluding the COVID-19 pandemic, the changes in induction of labor were analogous to the primary analysis and reflected a significant increase across all gestational ages. Otherwise, no difference in stillbirth, infant, or perinatal mortality was seen.

**Conclusion**

Following the ARRIVE trial, there was a widespread increase in induction of labor across all late preterm and term deliveries, attesting to the extensive impact of the ARRIVE trial. Although not intentional, this pivotal trial has drastically altered clinical practice, inadvertently allowing the results to be generalized to patients beyond the original eligible criteria.