In low-risk pregnant women in labor, does continuous fetal heart monitoring lead to improved maternal and perinatal outcomes compared to intermittent fetal heart rate auscultation?

EVIDENCE-BASED ANSWER

No. In moderate-risk laboring women, continuous compared to intermittent fetal heart monitoring does not reduce the perinatal risk of cerebral palsy, acidosis, or death, but does slightly decrease the risk of perinatal seizures (number needed to treat=500); however, it increases the risk of Cesarean section with a number needed to harm (NNH) of 24 and instrumental vaginal delivery with a NNH of 30 (SOR: **A**, meta-analysis of randomized controlled trials). The American College of Obstetrics recommends the use of continuous cardiotocography for high-risk deliveries (SOR: **C**, expert opinion).

DOI 10.1097/EBP.0000000000000445

A 2017 systematic review and meta-analysis, of 13 randomized and quasi-randomized controlled trials (RCTs) of women in labor at all levels of risk (N=37,715), compared the effects of continuous electronic fetal monitoring and intermittent auscultation on maternal and infant outcomes.[1] This systematic review was an update of the previous review published in 2013, and no new studies were added. The trials compared continuous cardiotocography with intermittent auscultation with a hand-held Doppler ultrasound or fetal stethoscope or intermittent cardiotocography. Most trials specified protocols for intermittent monitoring with auscultation for 60 seconds every 15 minutes during the first stage of labor and every five minutes during the second stage of labor. The systematic review authors calculated the absolute risk reductions in the trial populations as well as a moderate risk population. The number needed to treat (NNT) and number needed to harm (NNH) reported in this evidence summary are based on moderate risk population prevalences, which could be more relevant to community settings. Cardiotocography increased the risk of Cesarean section (11 trials, N=18,861; risk ratio [RR] 1.6; 95% CI, 1.3–2.1; NNH=24) and instrumental vaginal births (10 trials, N=18,615; RR 1.2; 95% CI, 1.0–1.3; NNH=30) but did not reduce the risk of cerebral palsy (two trials, N=13,252; RR 1.8; 95% CI, 0.84–3.6), cord blood acidosis (two trials, N=2,494; RR 0.92; 95% CI, 0.27–3.1), or perinatal death (11 trials, N=33,513; RR 0.86; 95% CI, 0.59–1.2) compared to intermittent auscultation. Continuous cardiotocography did reduce the risk of neonatal seizures compared to intermittent cardiotocography (nine trials, N=32,386; RR 0.50; 95% CI, 0.31–0.80; NNT=500). The impact of neonatal seizures on neonatal health and long-term neurodevelopmental outcomes is unknown. The trial populations included a wide spectrum of pregnancy risk levels, and overall results were generalizable based on subgroup analyses showing similar results in both low- and high-risk pregnancies. Trials were limited by inability to blind participants, treating nurses and physicians, lack of long-term follow up, and selection bias.

The 2009 practice bulletin of the American College of Obstetrics (ACOG) stated that the use of external fetal monitoring is associated with an increased rate of operative vaginal delivery and Cesarean delivery and does not reduce perinatal mortality or cerebral palsy (level A, systematic review of RCTs).[2] ACOG recommended either intermittent auscultation or continuous electronic fetal monitoring for low-risk pregnancies and that the decision should consider hospital staffing and feasibility (no level of recommendation; based on systematic review evidence). ACOG recommended the use of continuous cardiotocography for high-risk deliveries (level C, based on consensus opinion). EBP

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The authors declare no conflicts of interest. AU1

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