

Aloita tästä – perusasioita KTG:sta

Tarvonen M, Stefanovic V, Jernman R. [Sikiön fysiologiaan perustuva kardiotokografian tulkinta](#). Lääkärilehti. 2021

Chandrahara, E. (editor). [Handbook of CTG Interpretation. From Patterns to Physiology](#). Cambridge University Press. 2017

McDonnell S, Chandrahara E. [Fetal Heart Rate Interpretation in the Second Stage of Labour: Pearls and Pitfalls](#). Br J Med Med Res. 2015

Uguwumandu A. [Understanding cardiotocographic patterns associated with intrapartum fetal hypoxia and neurologic injury](#). Best Pract Res Clin Obstet Gynaecol. 2013

Heuser CC. [Physiology of fetal heart rate monitoring](#). Clinical Obstet Gynecol. 2020

Jia YJ, Ghi T, Pereira S, Perez-Bonfils AG, Chandrahara E. [Pathophysiological interpretation of fetal heart rate tracings in clinical practice](#). Am J Obstet Gynecol 2023

Chandrahara E, Pereira S, Ghi T, Perez-Bonfils AG, Fieni S, Jia Y, Griffiths K, Sukumaran S, Ingram C, Reeves K, Bolten M, Loser K, Carreras E, Suy A, Garcia-Ruiz I, Galli L, Zaima A. [International expert consensus statement on physiological interpretation of cardiotocograph \(CTG\): First revision \(2024\)](#). Eur J Obstet Gynecol Reprod Biol 2024.

KTG:n hyödyt

Alfirevic Z, Gyte GML, Cuthbert A, Devane D. [Continuous cardiotocography \(CTG\) as a form of electronic fetal monitoring \(EFM\) for fetal assessment during labour](#). Cochrane Database of Systematic Reviews. 2017

Grivell RM, Alfirevic Z, Gyte GML, Devane D. [Antenatal cardiotocography for fetal assessment](#). Cochrane Database of Systematic Reviews. 2015

KTG-muutokset

Descourvieres L, Ghesquiere L, Drumez E, Martin C, Suvage A, Subtil D, Houfflin-Debarge V, Garabedian C. [Types of intrapartum hypoxia in the newborn at term with metabolic acidemia: A retrospective study](#). Acta Obstet Gynecol Scand. 2022

Esplin MS. [Identification of the fetus at risk for metabolic acidemia using continuous fetal heart rate monitoring](#). Clinical Obstet Gynecol. 2020

Tarvonen M, Lear C, Andersson S, Gunn A, Teramo K. [Increased variability of fetal heart rate during labour: a review of preclinical and clinical studies](#). BJOG. 2022

Tarvonen M, Hovi P, Sainio S, Vuorela P, Andersson S, Teramo K. [Intrapartum zigzag pattern of fetal heart rate is an early sign of fetal hypoxia: A large obstetric retrospective cohort study](#). Acta Obstet Gynecol Scand. 2020

Ekengard F, Cardell M, Herbst A. [Sporadic accelerations during labor strongly indicate normal pH, whereas periodic accelerations do not: a case-control study](#). Journal of Maternal-Fetal & Neonatal Medicine. 2023

Gyllencreutz E, Hulthen Varli I, Lindqvist PG, Holzmann M. [Variable deceleration features and intrapartum fetal acidemia – the role of deceleration area](#). Eur J Obstet Gynecol R B. 2021

Richards DS. [Unusual circumstances and additional procedures for fetal evaluation in labor](#). Clinical Obstet Gynecol. 2020

Cahill, AG. [Association and prediction of neonatal acidemia](#). Am J Obstet Gynecol. 2012

Vintzileos, AM, Smulian JC. [Abnormal fetal heart rate patterns caused by pathophysiologic processes other than fetal acidemia](#). Am J Obstet Gynecol. 2023

Al Fahdi B, Chandraran E. [True vs Spurious Intrapartum Fetal Heart Rate Accelerations on the Cardiotocograph \(CTG\): An Urgent Need for Caution](#). Glob J Reprod Med 2020; 7(5):5556722.

Tarvonen M ym. [Factors associated with intrapartum ZigZag pattern of fetal heart rate: A retrospective one-year cohort study of 5150 singleton childbirths](#). Eur J Obstet Gynecol reprod Biol 2021;258:118.

Ghi T, Di Pasquo E, Dall'Asta A, Commare A, Melandri E, Casciaro A, et al. [Intrapartum fetal heart rate between 150 and 160 bpm at or after 40 weeks and labor outcome](#). Acta Obstet Gynecol Scand. 2021;100:548–54.

Mekonium lapsivedessä

Gallo DM, Romero R, Bosco M, Gotsch F, Jaiman S, Eunjung J, et al. [Meconium-stained amniotic fluid](#). Am J Obstet Gynecol. 2023

Lisämenetelmät

Amer-Wählin I, Ugwumadu A, Yli BM, Kwee A, Timonen S, Cole V, et al. [Fetal electrocardiography ST-segment analysis for intrapartum monitoring: a critical appraisal of conflicting evidence and a way forward](#). Am J Obstet Gynecol. 2019

Knupp RH, Andrews WW, Tita ATN. [The future of electronic fetal monitoring](#). Best Pract Res Clin Obstet Gynaecol. 2020

Pereira S, Bakker P, Zaima A, Ghi T, Kessler J, Timonen S, Vayssière C, Löser K, Holmberg K, Jacquemyn Y, Chandraran E, Wertheim D, Olofsson P, [Is the fetus fit for labor? Introducing fast-and-frugal trees \(FFTrees\)](#) Acta Obstet Gynecol Scand 2023

Analyysi-KTG

Stampalija T, Bhide A, Heazell AEP, Sharp A, Lees C. [Computerized cardiotocography and Dawes-Redman criteria: how should we interpret criteria not-met?](#) Ultrasound Obstet Gynecol. 2023

Jones GD, Cooke WR, Vatish M, Redman CWG. [Computerized Analysis of Antepartum Cardiotocography: A Review](#). Maternal-Fetal Medicine. 2022

Wolf H, Arabin B, Lees CC, Oepkes D, Prefumo F, Thilagana- than B, et al. [A longitudinal study of computerised cardiotocography in early fetal growth restriction.](#) Ultrasound Obstet Gynecol. 2017

[Greater Manchester and Eastern Cheshire SCN: Antenatal CTG interpretation guide 2023.](#)

KTG:hen vaikuttavat tekijät

Infektio

Sukumaran S, Pereira V, Mallur S, Chandraharan E. [Cardiotocograph \(CTG\) changes and maternal and neonatal outcomes in chorioamnionitis and/or funisitis confirmed on histopathology.](#) Eur J Obstet Gynecol R B. 2021

Galli L, DallAsta A, Whelehan V, Archer A, Chandraharan E. [Intrapartum cardiotocography patterns observed in suspected clinical and subclinical chorioamnionitis in term fetuses.](#) J Obstet Gynaecol Res. 2019

Kortikosteroidit

Verdurmen KMJ, Renckens J, van Laar JOEH, Oei SG. [The Influence of Corticosteroids on Fetal Heart Rate Variability A Systematic Review of the Literature.](#) Obstet Gynecol Survey. 2013

Noben L, Verdurmen KMJ, Warmerdam GJJ, Vullings R, Oei SG, van Laar JOEH. [The fetal electrocardiogram to detect the effects of betamethasone on fetal heart rate variability.](#) Early Hum Dev. 2019

Magnesiumsulfaatti

Nensi A, De Silva DA, von Dadelszen P, Sawchuck D, Synnes AR, Crane J, Magee LA. [Effect of Magnesium Sulphate on Fetal Heart Rate Parameters: A Systematic Review.](#) J Obstet Gynaecol Cam. 2014

Tokolyysi ja kohdunsisäinen resuskitaatio

Chandraharan E, Arulkumaran S. [Acute tocolysis.](#) Curr Opin Obstet Gynecol.

Xodo S, de Heus R, Berghella V, Londero AP. [Acute tocolysis for intrapartum nonreassuring fetal status: how often does it prevent cesarean delivery? A systematic review and meta-analysis of randomized controlled trials.](#) Am J Obstet Gynecol MFM. 2022

Reddy U, Weiner SJ, Saade GR, Warner MW, Blacwell SC, Thorp J, et al. [Intrapartum resuscitation interventions for category II fetal heart rate tracings and improvement to category I.](#) Obstet Gynecol. 2021

Eller AG, Esplin MS. [Management of the Category II Fetal Heart Rate Tracing](#). Clinical Obstet Gynecol. 2020

de Heus R, Mulder EJ, Derks JB, Kurver PH, van Wolfswinkel L, Visser GH. [A prospective randomized trial of acute tocolysis in term labour with atosiban or ritodrine](#). Eur J Obstet Gynecol Reprod Biol. 2008 Aug;139(2):139-45.

Sikiön tai äidin sairaus

Feduniw S, Muzyka-Placzynska K, Kajdy A, Wrona M, Sys D, Szymkiewicz-Dangel J. [Intrapartum cardiotocography in pregnancies with and without fetal CHD](#). J Perinat Med. 2022

Sinaci S, Ocal DF, Tokalioglu EO, Ozturk FH, Senel SA, Keskin LH, Tekin OM, Sahin D. [Cardiotocographic features in COVID-19 infected pregnant women](#). J Perinat Med. 2022

Tarvonen M, Hovi P, Sainio S, Vuorela P, Andersson S, Teramo K. [Intrapartal cardiotocographic patterns and hypoxia-related perinatal outcomes in pregnancies complicated by gestational diabetes mellitus](#). Acta Diabetologica. 2021

Ennenaikaisuus

Hurtado-Sanchez MF, Perez-Melero D, Pinto-Ibanez A, Gonzalez-Mesa E, Mozas-Moreno J, Puertas-Prieto A. [Characteristics of heart rate tracings in preterm fetus](#). Medicina. 2021

Sikiön hapettuminen ja vastasyntyneen voinnin mittarit

Olofsson P. [Umbilical cord ph, blood gases, and lactate at birth: normal values, interpretation, and clinical utility](#). Am J Obstet Gynecol. 2023

Williams K, Singh A. [The Correlation of Seizures in Newborn Infants With Significant Acidosis at Birth With Umbilical Artery Cord Gas Values](#). Obstet Gynecol. 2002

Vastasyntyneen voinnin mittarit ja pitkäaikaisennuste

Elina Rancken. [Perinatal Asphyxia: Apgar Scores and Umbilical Blood Biomarkers in Predicting Neurodevelopmental Outcome](#)

Oksitosiinin käyttö

Nunes I et al. [European Guidelines on perinatal Care – Oxytocin for induction and augmentation of labor](#). Yhe J Mat-Fet and Neonat Med 2021:1-7.

Frenken MWE, van der Woude DAA, Dieleman JP, Oei SG, van Laar JOEH. [The association between uterine contraction frequency and fetal scalp pH in women with suspicious or pathological fetal heart rate tracings: A retrospective study.](#) Eur J Obstet Gynecol Reprod Biol 2022;271:1-6

Reynolds AJ, Murray ML, Geary MP, Ater SB, Hayes BC. [Uterine activity in labour and the risk of neonatal encephalopathy: a case control study.](#) Eur J Obstet Gynecol Reprod Biol 2022;274:73-79

Evans MI, Britt DW, Worth J, Mussalli G, Evans SM, Devoe LD. [Uterine contraction frequency in the last hour of labor: how many contractions are too many?](#) J Matern Fetal Neonatal Med 2022;35:8698-8705. doi: 10.1080/14767058.2021.1998893.

Simpson K, James DC. [Effects of oxytocin-induced uterine hyperstimulation during labor on fetal oxygen status and fetal heart rate patterns.](#) Am J Obstet Gynecol. 2008;199:34.e1-5. doi: 10.1016/j.ajog.2007.12.015

Burgod C, Pant S, Moreno Morales M, Montaldo P, Ivain P, Elangovan R, Bassett P, Thayyil S. [Effect of intra-partum Oxytocin on neonatal encephalopathy: a systematic review and meta-analysis.](#) BMC Pregnancy Childbirth. 2021;21:736. doi: 10.1186/s12884-021-04216-3

