

CTG-training programmes – are they evidence-based?

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Introduction:

The aim of this study was to search the literature for training strategies concerning CTG interpretation and decision-making skills, and to analyse the evaluation and impact of such training programmes.

Method:

Databases were searched for publications concerning CTG-education. The described programmes were analysed using Kirkpatrick's four-level approach (see below) to evaluation of educational programmes.

Results:

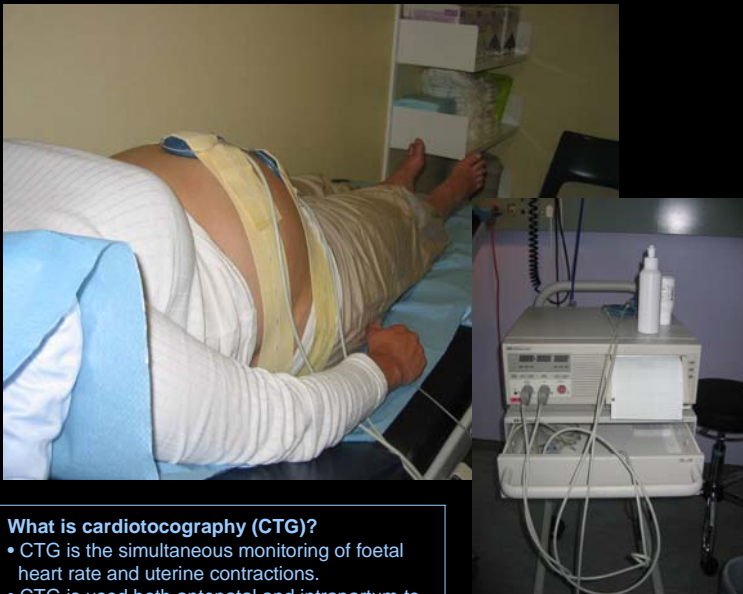
Nine papers describing and/or evaluating training approaches were identified. CTG-training was associated with increased knowledge, higher levels of interobserver agreement, changes in behaviour and increased quality of care. All papers except one (3) evaluated only in accordance with Kirkpatrick level one and two.

Conclusion:

- There is evidence that training programmes can improve
 - CTG-knowledge (1)
 - interobserver agreement (2)
 - quality of care (3)
- Junior doctors need proper CTG-education, as they are more frequently involved in cases with failure to recognise and act on abnormal CTG-tracings (3).
- Better understanding of underlying physiologic events may lead to higher interobserver agreement (2).
- Computer assisted learning programmes might result in the same amount of knowledge gain in a shorter time (1).

Future perspectives:

Further research into CTG training programmes and their effect on neonatal outcome is necessary. New training methods need to be developed and evaluated and compared to traditional training methods. Retention of knowledge and skills after different training approaches ought to be investigated. Whether the effects of a training program are transferable between different professional groups as well between students and postgraduates need to be considered when a training program is used in different target groups.



What is cardiotocography (CTG)?

- CTG is the simultaneous monitoring of foetal heart rate and uterine contractions.
- CTG is used both antenatal and intrapartum to detect foetal distress.
- The interpretation of CTG-recordings is based on foetal heart rate baseline, heart rate variability, accelerations and decelerations and uterine contractions.
- The interpretation of CTG-strips is complicated by a low positive predictive value and significant interobserver variability.

The ability to interpret CTG tracings is of great importance, as failure to act on a pathological CTG may result in an asphyxiated infant. The usefulness of CTG has been questioned, and a Cochrane review found that except for a reduction in neonatal seizures, routine intrapartum CTG had no measurable effect on neonatal morbidity and mortality when compared to intermittent auscultation (4). However, a British study found a decrease in number of cases with suboptimal intrapartum care after intensely focusing on improving CTG-skills (3). This implies that training might affect the usefulness of CTG.

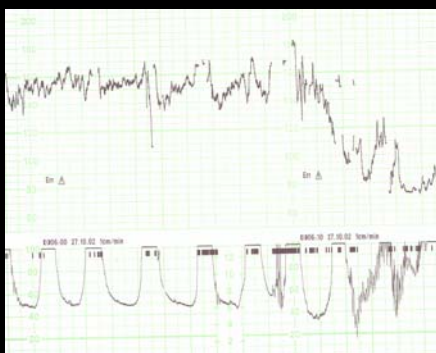


Kirkpatrick's four level approach to evaluation

The evaluation of training programmes was analysed using Kirkpatrick's goal-based evaluation approach. Kirkpatrick's four level model was developed in the 1950s, and is still widely known and used for evaluation of educational programmes. It operates with the four levels

- 1) Reaction
- 2) Learning
- 3) Behaviour – transfer of learning
- 4) Results

To fully understand the impact of a training programme, evaluation should be performed on all four levels (5).



References

- 1) Murray ML, Higgins P. Computer Versus Lecture: Strategies for teaching Fetal Monitoring. *J Perinatol* 1996; 16(1): 15-9.
- 2) Ayres-de-Campos D, Bernardes J, Marsal K, Nickelsen C, Makarainen L et al. Can the reproducibility of fetal heart rate estimation be improved? *Eur J Obstet Gynecol Reprod Biol* 2004; 112(1): 49-54.
- 3) Young P, Hamilton R, Hodgett S, Moss M, Rigby C, Jones P, Johanson R. Reduced risk by improving standard of intrapartum fetal care. *J R Soc Med* 2001; 94: 226-231
- 4) Thacker SB, Stroup D, Chang M. Continuous electronic heart rate monitoring for fetal assessment during labor. *The Cochrane Database of Systematic Reviews* 2001, Issue 2. Art. No.: CD000063. DOI: 10.1002/14651858.CD000063.
- 5) Kirkpatrick DL. *Evaluating training programmes: the four levels*. 2nd edition. Berret-Koehler Publishers, 1998.