

STV (Short Term Variation)

What is the STV?

Second-by-second trimming of the fetal heart rate is normal and causes a small 'jitter' on the baseline, in other words short term variation

How is it measured?

The STV is part of the Dawes-Redman analysis. It is calculated from 16 measurements of the fetal heart rate every minute. Decelerations are not included and signal loss must be low.

STV is measured in milliseconds. In healthy fetuses, it increases with gestational age, typically from about 6ms at 26 weeks to 8ms at term (Serra et al 2009. Ultras Obst Gynecol. 2009 Jul;34(1):74-9).

The problem of low STV – is it normal or not?

STV is not constant during a normal CTG. It changes up and down, doubling or even tripling rapidly when there are many accelerations, while it may be very low during quiet sleep. After the first 10 minutes it may not be "typical". If the baby is deeply asleep it will be very low. If the baby is awake and moving it will be high. This is why low STV does **not** reflect fetal stress/distress until it has been sustained for 60 minutes.

What does a low STV mean?

If it is **transient**, this is expected as part of the sleep cycle of healthy fetuses. If it is **sustained** (60 mins), this may indicate chronic hypoxia or other rare causes of fetal brain dysfunction. If the STV is low before 60 minutes this is not necessarily abnormal.

STV (ms) After 60 minutes when Dawes-Redman criteria are not met	Interpretation***
>4.0:	The fetus is not hypoxic or acidotic but can still have another serious problem
3.0-3.9	The fetus may be stressed but is NOT distressed by acidosis
<3.0:	High probability of metabolic acidosis and asphyxia (terminal trace)

*** Other cause of fetal cerebral dysfunction (drugs, intoxication etc must be excluded).

Street et al. Am J Obstet Gynecol. 1991 Sep;165(3):515-23.

Key points for clinical practice:

1. **A short term STV** (less than 60 minutes) **cannot be interpreted**. It is not helpful and may even be misleading. For this reason it is not reported by the most up-to-date versions of the Dawes-Redman system
2. **A low STV at 60 minutes** may indicate chronic fetal hypoxia or even acidosis typical of a terminal trace.
3. **Other problems affecting the fetal brain** are rare causes of a low STV that is sustained. These must be borne in mind according to the clinical context.
4. **A normal STV does not exclude a serious fetal problem** when criteria are not met.

PLEASE NOTE:

There is no algorithm to follow when criteria are not met. A plan of care must be made taking into account the context and the full clinical picture. It can never be a 'one size fits all'

Prof Chris Redman
Nuffield Department of Reproductive and Women's Health, Oxford.

Prof Manu Vatish
Professor of Obstetrics

Beth Albert
Specialist Midwife for Dawes-Redman CTG monitoring