

# Intelligent decision support in labour:

## Computerised CTG analysis

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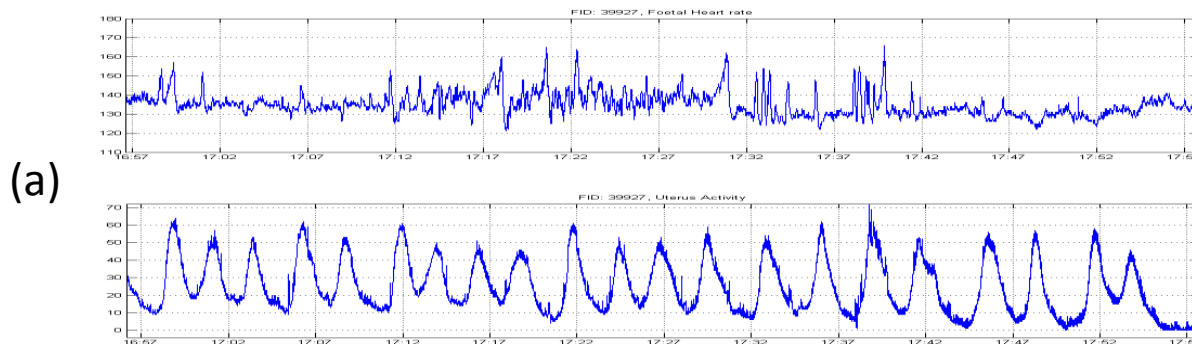
University of Oxford

# Introduction



## What is the cardiotocogram (CTG)?

Fetal Heart Rate (FHR) and uterus contractions are measured and displayed on paper (Fig. 1(a)). Often Doppler ultrasound is used (Fig. 1(b)).



(b)

Adapted from [www.doctoronline.nhs.uk](http://www.doctoronline.nhs.uk)

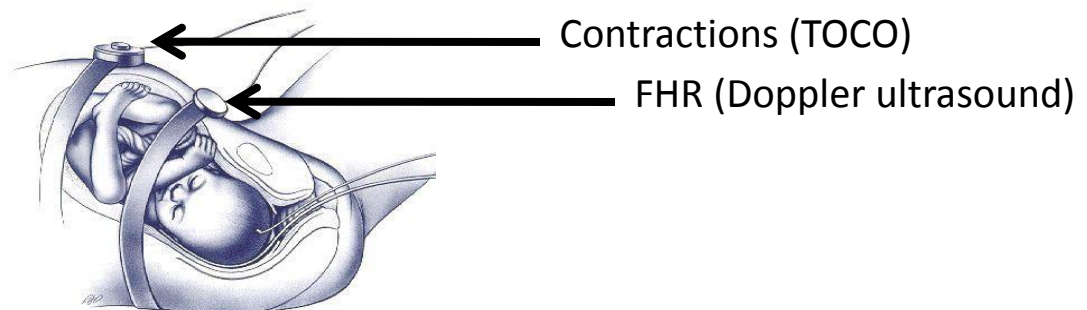


Figure 1. The CTG produced with a Doppler ultrasound.

# Introduction

## What is the CTG used for?

Non-invasive method for monitoring the condition of the fetus during labour.

The most common fetal problem is hypoxemia and/or metabolic acidaemia.

Failure to intervene when necessary can cause neurological damage and morbidity.

Misjudgement can lead to unnecessary caesarean birth.

# Introduction

## What do we do?

We are developing a real-time decision support computerised system (**OxSys**).

## The aims are:

assist diagnosis of birth asphyxia and objectively estimate the risk for compromise.

add to our knowledge of the fetal physiological responses to the stress of labour, not fully understood at present.

reduce the number of unnecessary interventions.



Ariana Smalley age 18 months, suffers from birth asphyxia which has resulted in delayed development ,seizure disorder and needs a feeding tube.

Craig Rubadoux, [www.pictopia.com](http://www.pictopia.com)

# Introduction

## What is the clinical staff looking for in the CTG?

A number of studies in the last 40 years have tried to identify the CTG *features* that are related to asphyxia.

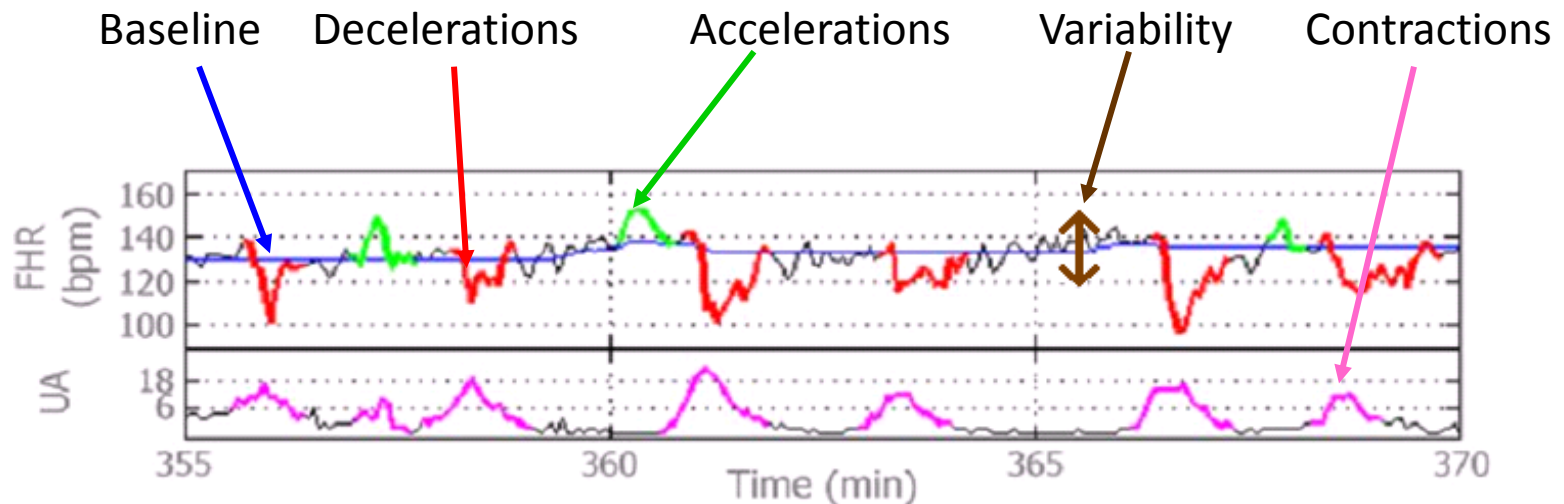


Figure 2. CTG in labour and signal features of interest.

# Outcome measures

APGAR scores:



Arterial and venous blood samples



<http://www.k2ms.com/>