

## Screening through Oxygen Measurements



## General Information for Parents

General information about oxygen saturation measurements shortly after birth

# Screening through Oxygen Measurements

In the period 01-07-2015 till 01-12-2016 the POLAR trial ([www.polarstudie.nl](http://www.polarstudie.nl)) was performed in all hospitals and almost all midwifery practices in the regions Leiden, Haarlem/Hoofddorp, Amsterdam, Alkmaar and Purmerend.

Aim of this trial was to determine if by performing oxygen measurements after birth we could, in an early stage, detect critical congenital heart defects that were not detected at the 20 weeks ultrasound.

More than 23.000 newborns participated in this POLAR trial. Final results are not yet known or published, it is still too early for that. Would results of the trial be such that based on these results there would be a change national guidelines, this change will also take a while.

However, your obstetric caretaker has decided to continue performing these oxygen measurements in the period of waiting for these final results and decisions.

In this brochure you can read information about the background.

About 180,000 children are born in the Netherlands each year of which approximately 1250 have a heart defect. Fortunately, most congenital heart defects are well treatable. This generally requires heart surgery.

## ***Not all heart defects are detected***

A 20 week ultrasound scan is performed during pregnancy. This detects about 70% of all heart defects. So approximately 30% of congenital heart defects is not detected at the 20 weeks ultrasound. Shortly after birth, a baby may not show signs of the heart defect yet, which means that some are missed or diagnosed too late.

## ***Detection of heart defects***

A heart defect may cause a decrease in blood oxygen level. The baby often does not show any signs of this shortly after the birth, but this can be easily detected by measuring the oxygen level in the blood. This is done using an oxygen measuring device (pulse oximeter). Pulse oximeters are already being used in other countries to detect heart defects. In these countries this happens in the hospitals. In the Netherlands, most children are at home within one day after birth. We want to investigate whether this screening would be equally reliable and cost-effective in the Netherlands. This is why we performed the POLAR-trial with oxygen measurements in Leiden, Haarlem, Amsterdam and the surrounding areas.



Diagram 1: Pulse oximeter



Diagram 2: sensor on a baby's foot

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### ***Detecting other disorders***

Besides congenital heart defects, there are other disorders which may cause low blood oxygen levels. Babies with lung problems or an infection also commonly have a lower blood oxygen level. These disorders can be discovered earlier as well by measuring the oxygen level.

### ***What is a Pulse oximeter?***

An pulse oximeter is a device that measures the oxygen level in the blood. The device is wrapped around child's wrist and foot. It uses light to measure the oxygen level in the small blood vessels. This is not painful or uncomfortable for your baby.

### ***Who will perform the measurement?***

If your baby is born in hospital, the oxygen measurement will be done by a doctor, midwife or nurse. If you deliver your baby at home, the midwife will perform the measurement.

### ***How will the screening be performed?***

Approximately one hour after birth, the oxygen level will be measured on your baby's right wrist and on one of its feet. Chances are that the measurements are perfectly normal. If they are, the measurements will be repeated on day 2 or day 3 of your baby's life just to be sure. The results are not normal if the oxygen level is too low.

### ***What happens if the results are not normal?***

An abnormal result does not necessarily mean that your baby has a heart defect or another disorder. The measurement might be wrong, for example if the hands or feet of the baby are too cold, or the baby is moving a lot, or there might be other reasons why the oxygen level is too low.

Your caretaker will probably repeat the measurement on a later moment or, if he /she thinks that is appropriate, will consult a paediatrician to discuss what is best to do.

### ***What is additional to or different from usual?***

Normally, the midwife will examine the baby after birth to see if there are any abnormalities. The oxygen measurements taken during this standard examination are extra. Screening blood oxygen levels is already standard practice at some hospitals and midwifery practices.

### ***Safety***

The oxygen measurement is not dangerous for your baby. There are no known risks. Oxygen measurements have already been taken for years to monitor sick newborns admitted to hospital.

### ***Advantages and disadvantages of the screening***

Advantages:

- Symptoms of a heart defect are often not evident immediately after birth. This means that heart defects are sometimes discovered too late. The oxygen measurement may allow some heart defects and other serious disorders to be discovered sooner. This may allow treatment to be given sooner, before your baby becomes seriously ill.
- Other disorders associated with low oxygen levels may be discovered sooner by taking this measurement. Lung problems and infections can then be detected before your baby's health deteriorates.

Disadvantages:

- There is a small chance that the oxygen level is too low, even though your baby does not have a heart defect. This may make parents and midwives unnecessarily concerned.

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### ***Does the test offer 100% confidence?***

Your baby's oxygen level may be abnormal, but the follow-up examination may not detect a heart defect. There is also a small chance that the saturation measurement is normal while your baby does have a congenital heart defect. Normal results do not give a 100% guarantee that your baby's heart is completely normal. You should contact your General Practitioner if you are in any doubt about your child's health.

### ***More information***

If you have any questions after reading this information, feel free to ask your midwife.