TEST

Cord blood testing

Cord blood testing examines blood left in the umbilical cord after birth.

WHAT IT MEASURES
Blood type, antibodies, cells, infection, or birth blood gases

SAMPLE
Blood from the clamped umbilical cord after birth

FASTING NEEDED?
No

HOW LONG IT TAKES
A few minutes after the cord is clamped

RESULTS IN
Minutes to several days, depending on test and laboratory

USED FOR
Screening and assessing selected newborn risks after birth

MAIN LIMITATION
Maternal blood contamination can mislead some cord blood results

Overview

Cord blood testing examines blood left in the umbilical cord and placenta after a baby is born. The blood comes from the baby's circulation, although it may contain some of the birthing parent's blood.

It is not one specific test. Depending on the circumstances, tests may include:

Cord blood testing is different from cord blood banking, which stores blood-forming stem cells. It is also different from standard newborn screening, usually performed later with blood from a heel prick [2,5].

- Blood group and RhD type
- A direct antiglobulin test (DAT) for antibodies on red blood cells
- Blood gases showing oxygen, carbon dioxide, and acid levels around birth
- A complete blood count
- Tests for infection, such as a blood culture

Why the test is ordered

Blood group and DAT testing may be ordered when antibodies from the birthing parent could affect the baby's red blood cells. Results help assess the risk of jaundice or anemia but cannot show by themselves whether either condition will develop [3].

Blood gases may be tested after a difficult birth, concerns about the baby's condition, or significant breathing support. They provide a snapshot of acid and oxygen balance near birth [1,4].

A blood count may help investigate anemia, excess red blood cells, low platelets, or infection. A culture may be requested when infection is suspected, although blood taken directly from the baby may be preferred. Specialist genetic tests are sometimes performed but are separate from routine newborn screening.

Who should have the test

Not every baby needs cord blood testing. It may be considered when:

Cord blood testing does not replace routine heel-prick screening unless the local programme specifically says it does.

- The birthing parent has blood-group antibodies or is RhD negative
- The baby is at increased risk of jaundice or anemia
- There were concerns about oxygen supply during labour or birth
- The baby needed substantial resuscitation
- Infection, abnormal blood counts, or a genetic condition is being investigated
- A local screening programme uses cord blood for a particular test

How to prepare

No fasting or special preparation is needed. You do not need to change what you eat or drink during labour.

Tell the maternity team about medicines taken during pregnancy, blood-group antibodies, and any blood transfusions. These can affect test selection and interpretation.

Consent practices vary. You can ask which tests are planned, why they are needed, and whether any blood will be stored afterward.

What happens during the test

After birth, the cord is clamped and cut. A clinician collects blood from a vessel in the clamped cord and places it in labelled tubes. This takes a few minutes and does not involve putting a needle into the baby.

For blood gases, samples may be collected from both an umbilical artery and vein. Arterial blood usually gives more direct information about the baby's condition around birth [1,4]. Blood-gas samples are analyzed promptly; other samples go to the laboratory.

Understanding your results

Results depend on the test performed.

Blood group and RhD type identify the baby's main blood-group markers.

DAT shows whether antibodies are attached to the baby's red blood cells. A positive result may lead to closer monitoring for jaundice or anemia, but some babies with a positive DAT remain well. A negative DAT does not rule out jaundice [3].

Cord blood gases include pH, carbon dioxide, oxygen, and base deficit. These indicate whether acid built up near birth. Results are interpreted with the labour, delivery, resuscitation, Apgar scores, and the baby's condition.

Blood counts measure red cells, white cells, and platelets. Newborn values differ from adult values.

Blood cultures look for bacteria or fungi. A preliminary report may be available before the final result.

Ranges vary by laboratory, gestational age, birth circumstances, medicines, and clinical context. Use the range on the report.

What affects the results

Maternal blood contamination can confuse blood typing, genetic tests, cell counts, and antibody results.

For blood gases, collecting from the wrong vessel, delayed clamping or collection, delayed analysis, air bubbles, or incorrect storage can alter results. Paired artery and vein samples may help confirm correct identification [1,4].

Clots, cord tissue, or breakdown of red cells during collection can interfere with some tests.

Labour, gestational age, mode of birth, maternal illness, medicines, and the baby's first breaths also create real biological differences.

A transfusion before collection may affect blood typing, cell counts, and some screening results. Antibiotics like amoxicillin or doxycycline given before a culture may make infection harder to detect.

Accuracy and limitations

No cord blood result answers every clinical question. A normal blood gas does not exclude every birth-related problem, while an abnormal result alone does not prove injury or predict future development [1,4].

DAT cannot reliably predict which babies will develop significant jaundice. Bilirubin measurements and the baby's age provide more direct information [3].

Cultures may be contaminated during collection or miss infection, particularly after antibiotics or when the sample is small. If infection is a serious concern, blood taken directly from the baby is often more useful.

Cord blood is generally unsuitable for the full newborn metabolic screening panel because some conditions are easier to detect after feeding and adjustment to life outside the womb [5]. Unexpected or treatment-changing results may need confirmation with blood taken directly from the baby.

Risks and complications

Collecting blood from a clamped cord does not cause the baby pain, bleeding, or bruising. The main risks are contamination, incorrect labelling, or an unusable sample. If another sample is needed from the baby, a needle or heel prick may cause brief discomfort and a small bruise.

What happens next

Blood-gas results may be reviewed within minutes. Blood group, DAT, and blood count results are often available the same day; cultures and specialist tests take longer.

Follow-up may include bilirubin checks, a repeat blood count, feeding support, or an appointment after discharge. Borderline or unexpected results are often repeated using blood collected directly from the baby.

After discharge, seek urgent medical advice if your baby develops a fever, worsening yellowing of the skin or eyes, poor feeding, unusual sleepiness, or noticeably fewer wet diapers.

Call emergency services if your baby has severe trouble breathing, blue or grey lips, a seizure, or cannot be woken. These signs need assessment regardless of cord blood results.

Common questions

Can I eat or drink coffee before cord blood testing?

Yes. No fasting is required. Follow any separate instructions for labour, anesthesia, or a planned procedure.

Does the time of day matter?

No. Timing in relation to birth, cord clamping, and analysis matters more.

Can I exercise beforehand?

Ordinary activity needs no special restriction. Follow pregnancy and labour advice from your care team.

Will collecting cord blood hurt my baby?

No. Blood is taken from the cord after it has been clamped and cut.

Is this the same as newborn screening?

Usually not. Standard newborn screening commonly uses a heel-prick sample after birth.

Is this the same as cord blood banking?

No. Testing answers a medical question; banking stores stem-cell-rich cord blood for possible future treatment [2].

Sources

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