

Tip of the month

Capillary blood collection

“Gentle collection of small blood samples”



Capillary blood collection

It is not only in paediatrics where capillary blood collection is the method of choice when it comes to obtaining the smallest samples of blood. Blood gas analyses and blood sugar determinations are frequently carried out using capillary blood collection.

The process is sometimes described as simple blood collection. "It's 'only' a little prick of the finger or earlobe, what could possibly go wrong?"

But is it really that simple?

Below, you will learn how to carry out capillary blood collection and which sources of error to avoid in order to obtain the optimum sample.

What actually is capillary blood?

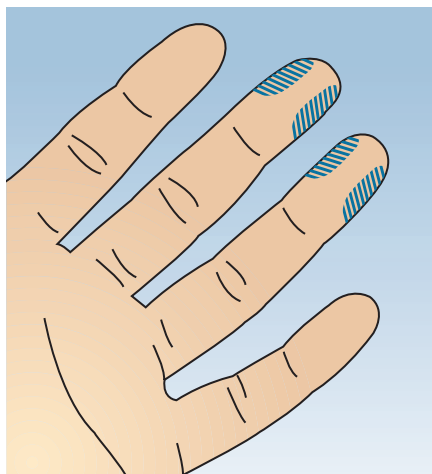
Capillary blood is a mixture of fluids comprised of the blood from arterioles, venules and capillaries, as well as tissue fluid.

Where is capillary blood collection used?

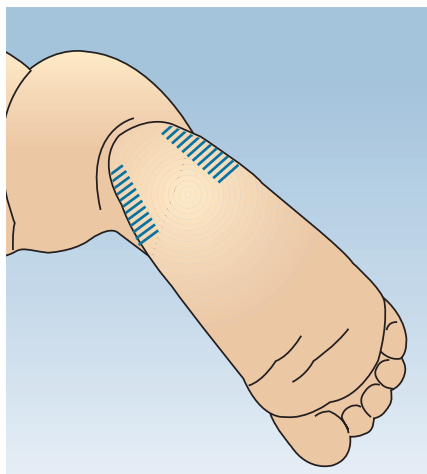
In paediatrics, capillary blood collection remains the method of choice for obtaining samples. However, capillary blood is also taken in hospitals for blood gas and blood sugar determination. Likewise, capillary blood collection is used in patients at their point of care with the aid of POCT devices (**P**oint **o**f **C**are **T**ests).

What are the best puncture sites?

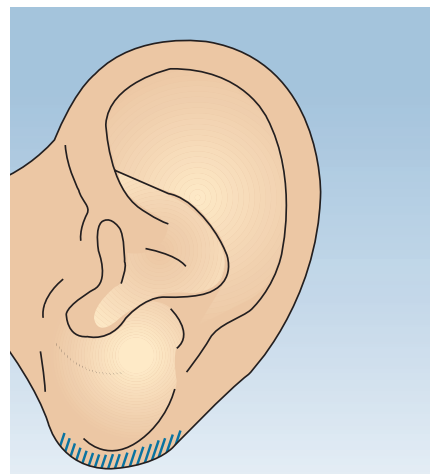
1 Fingertip



2 Heel



3 Earlobe



As shown in the figure above, suitable puncture sites are the sides of the fingertip, the earlobe and the heel.

Note:

When puncturing the fingertip, it is important not to prick the centre of the fingertip, as the blood flow is weaker and it may be very painful for the patient. Likewise, the thumb is not recommended for capillary blood collection.

In infants, the puncturing of the fingertip should be avoided as it could damage the bone.

Capillary blood collection

! After puncturing, it is important that the initial drop of blood is discarded, as this consists largely of tissue fluid.

What do I need for capillary blood collection?

Disinfectant, sterile swabs, sterile gloves, a Safety-Lancet or Safety-Heel®, appropriate sample containers (Microvette®, Minivette®, Multivette®), plasters and a waste container

What should be taken into account when collecting capillary blood?

It is helpful to warm the puncture site in advance, e.g. by massaging, to stimulate blood flow. After disinfecting the puncture site, ensure that the site is completely dry, as otherwise a haemolytic sample may be obtained or the sample may become diluted.



The most significant capillary vessels are located 0.35 to 1.6 mm below the surface of the skin. You can select the correct lancet size from the Safety-Lancet and Safety-Heel® product ranges, depending on the puncture site and the quantity of blood required.

In principle, care should be taken to ensure that the puncture site is not bruised during blood sample collection, as otherwise the blood becomes diluted with tissue fluid and this leads to erroneous measurement results.

Safety-Lancet

					
Design	Mini	Normal	Extra	Super	Neonatal
Penetration depth	1.6 mm	1.8 mm	1.8 mm	1.6 mm	1.2 mm
Needle size	28 G	21 G	18 G	Blade 1.5 mm	Blade 1.5 mm
Blood volume	Low	Medium	Medium to High	High	Medium to High

Safety-Heel®

Design	Application	Penetration depth	Incision length
	Neonates	1.0 mm	2.5 mm
	Premature infants	0.85 mm	1.75 mm

Capillary blood collection

How do I use the sample containers?

You can either collect capillary blood using the capillary technique with the End-to-End capillary or using the collection rim.

Whether an End-to-End capillary or sample tube is to be used depends on the patient and the parameters to be analysed. Please note that the capillaries or vessels should be kept horizontal or slightly inclined.



Capillary technique with an End-to-End capillary



Blood sample collection using the collection rim

! It is important that the sample container is inverted after being filled with blood.

When should I refrain from collecting capillary blood?

When collecting capillary blood, only small amounts of blood are taken. If an extensive analysis spectrum is to be carried out in the laboratory, the amount of blood taken is frequently insufficient. Furthermore, it should be noted that blood coagulation analyses cannot be carried out due to the blood composition.

If the patient is in shock or undercooled, capillary blood collection is not recommended.

Conclusion:

Capillary blood collection is a quick and easy method for taking small blood samples. Selecting the correct puncture site and lancet size can significantly reduce the pain sensation felt by the patient.

